



## INNOVATIONS FOR SUCCESSFUL SOCIETIES

### DEFENDING THE ENVIRONMENT AT THE LOCAL LEVEL: DOM ELISEU, BRAZIL, 2008–2014

#### SYNOPSIS

A former center of the timber industry in the Brazilian Amazon, the municipality of Dom Eliseu had built its economy around deforestation—much of it illegal. In 2008, as part of a strategy to enforce the country's environmental policies, the federal Ministry of the Environment included Dom Eliseu on a list of the worst violators of deforestation laws. The blacklist cut off residents' access to markets and credit and made the municipality the target of intensive law enforcement. To get off the blacklist, the community had to overcome a collective-action problem. The local government had to persuade the owners of 80% of private land—more than 1,000 properties—to map their property boundaries, declare the extent of deforestation, enter their properties in the state environmental registration system, and adopt more-sustainable methods of production. The municipality also had to build the capacity to take on new responsibilities for environmental protection—most important, environmental licensing, which would enable the local government to regulate land use. With support from nongovernmental organizations and the state, Dom Eliseu successfully coordinated private compliance with the national policy and left the blacklist in 2012.

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#### INTRODUCTION

Sitting in his office, halfway through his second term as mayor of Dom Eliseu, Joaquim Nogueira Neto recalled the challenges he confronted when he first took office in 2009: “We had so many problems, we didn’t know where to start. Everything was an emergency.”

The municipality, an administrative division of Pará state with an area of more than 5,000 square kilometers, was in economic upheaval as a result of the federal government’s newly

strengthened environmental policies. In January 2008, the Ministry of the Environment had included Dom Eliseu on its list of 36 municipalities that together generated more than 50% of the total destruction of the Brazilian Amazon rain forest.<sup>1</sup> Federal enforcement efforts targeted the blacklisted areas, and landholders lost access to agricultural credit and to markets.

To avoid the sanctions and get off the blacklist, government leaders in Dom Eliseu had to persuade over 1,000 private landowners to

comply with federal environmental laws. Achieving that level of compliance was no easy feat in a region with a long history of economic growth derived from clearing native rain forest.

In the 1970s, under a military dictatorship, Brazil's federal government had encouraged deforestation as a way to develop the remote Amazon region and alleviate land conflicts in more-densely-populated areas. Settlers were offered ownership of land in exchange for clearing *at least* 50% of the property claimed. However, due to mismanagement, not all settlers received official land titles from the government. The result was a mishmash of ownership claims that would hinder later efforts to identify violators of environmental laws. Furthermore, speculators often simply cleared land and then sold it using falsified documents, which added to the challenge of verifying ownership.

In the 1990s, the growing appreciation of the Amazon rain forest as an ecosystem of prime importance in preserving the global climate triggered policy change. The federal government amended its Forest Code to require that rural landowners in the Amazon preserve 80% of their property as native forest. However, there was limited enforcement of the preservation rule in remote areas like Dom Eliseu. The size of Pará — about 1.2 million square kilometers, or nearly twice the size of France—and the lack of good rural roads made on-site monitoring extremely difficult.

By the mid 1990s, Dom Eliseu was a center of the timber and charcoal industries, relying largely on illegally extracted wood. Economic reliance on illegal deforestation was a fact of life for many municipalities in Pará. Logging was one of the state's major industries, and others included ranching and agriculture on cleared land.

Sometimes dubbed Brazil's "Wild West" because of its remote and lawless areas, Pará also had a reputation as an especially hostile place for environmentalists.<sup>2</sup> Environmental-enforcement

operations frequently faced armed resistance. Collusion between officials and illegal loggers deepened the problem at the state level.<sup>3</sup>

In response to the accelerated disappearance of the Amazon rain forest, President Luiz Inácio Lula da Silva's administration introduced the Action Plan for Prevention and Control of Deforestation in the Legal Amazon (Plano de Ação para Prevenção e Controle do Desmatamento na Amazônia Legal). Launched in 2004, the strategy brought together 13 government ministries, the federal police, and the military to coordinate forest preservation and strengthen enforcement actions in Brazil's legally demarcated Amazon region.

Satellite monitoring by the National Institute for Space Research (Instituto Nacional de Pesquisas Espaciais) enabled the Ministry of the Environment and the Brazilian Institute of Environment and Renewable Natural Resources (Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis, or IBAMA), Brazil's environmental enforcement agency, to pinpoint the location of deforestation in remote areas and to target raids precisely. From 2004 to 2007, IBAMA and the federal police increased the frequency of raids, and the rate of clearing in Brazil's Amazon region dropped by more than half.<sup>4</sup> However, deforestation rates remained high in some pockets like Dom Eliseu. By 2008, the municipality's forest cover had dropped to 37% from 46% just five years earlier.<sup>5</sup> Enforcement efforts "weren't durable," said Pará's chief prosecutor, Daniel César Azeredo Avelino. "They go to a place, they scare people, and then they leave."

With the publication of the blacklist in January 2008, the federal action plan entered a new phase designed to pressure local leaders to combat deforestation more actively. IBAMA, the federal police, and the military conducted a series of raids called Operation Arc of Fire that targeted illegal land clearing in the listed municipalities. A

presidential decree barred landowners who had violated environmental rules from selling their products and prevented residents of the blacklisted municipalities from obtaining the rural property registrations necessary to access agricultural credit.

In February 2008, the Central Bank of Brazil tightened the restrictions by requiring landowners in the Amazon region to get a rural environmental registration (*cadastro ambiental rural*, or CAR) in order to secure federally subsidized credit. Pará's CAR system required landowners to submit personal information and documentation of property boundaries, land use, and deforestation. Landowners that did not meet the 80% preservation requirement set out in the Forest Code had to reforest their properties.

As Dom Eliseu's new mayor in 2009, Neto recognized that getting off the blacklist was crucially important to the municipal economy. Upon taking office, Neto appointed Edilberto Poggi as secretary of the environment. Poggi had served as secretary of the environment in Dom Eliseu from 2001 to 2005 and in the city of Marabá during 2005–08. His experience in environmental matters was invaluable as he took on the task of erasing the municipality's name from the national blacklist.

## THE CHALLENGE

When Poggi became Dom Eliseu's secretary of the environment, "the city was in chaos," he said. Enforcement operations against the illegal timber industry, as well as overexploitation of forest reserves, had all but ended what had once been the municipality's main economic activity. Poggi and Neto recalled that many workers in the timber and charcoal industries had lost their jobs, and poverty and crime had worsened. Agriculture, which had become a driver of the local economy, was also under pressure. Many producers had lost access to markets because of embargoes on the sale of crops and cattle produced on land where violations had taken place.

To leave the blacklist, the Ministry of the Environment required municipalities to register at least 80% of privately owned land, reduce annual deforestation within their borders to less than 40 square kilometers, and bring the deforestation rate below 60% of the average of three benchmark years.

The new policies meant Neto and Poggi had to persuade hundreds of landowners to register their properties and stop clear-cutting. The entire municipality would gain from exiting the blacklist. But given the potential costs of cooperating, some landowners might decide not to act, in the hope of being in the small group that could avoid doing anything and still reap the benefits of others' efforts. If too many took that approach, Dom Eliseu would never leave the list.

Dom Eliseu's leaders confronted several other challenges. First, landowners were skeptical of environmental initiatives. During several years of intense enforcement, their primary interactions with environmental policies had involved the confiscation and destruction of their products and equipment. Resentment ran especially high because the federal government had encouraged settlement and deforestation decades earlier.

Second, the nature of landownership in Dom Eliseu created another hurdle: Although some landowners held large parcels, most properties were small. The large number of smallholders meant more properties to register in the CAR system and more people to monitor. At the same time, participation by the large landowners was vital because the sizes of their properties meant they could stall the entire process if they failed to cooperate.

Third, the lack of clear land titling complicated environmental enforcement efforts in Dom Eliseu—and in Pará more broadly. Land deeds, or titles, could help IBAMA identify those responsible for environmental violations and collect fines from landholders. Producers also had to have land titles in order to access loans for

investing in alternatives to deforestation. However, the titling system in Pará was cumbersome and disorganized.

Finally, the municipality had to find ways to make conservation appealing to those who believed that deforestation was in their economic interest. The local government had to ensure producers could continue to earn profits without further clearing of their property and, due to requirements to reforest illegally cleared areas, often with less land under cultivation.

### FRAMING A RESPONSE

In addition to the immediate goal of getting Dom Eliseu off the blacklist, Poggi set two other goals for the municipal environmental secretariat to achieve by 2016: first, to register all properties in the CAR system, and second, to issue environmental licenses locally for 60% of properties. Property registration would create a record of ownership and establish a baseline level of environmental damage to facilitate future monitoring. Licenses would regulate agricultural production and ensure that future land use complied with the law.

Based on his experience in promoting sustainability in the forest products industry, Poggi understood the importance of good relations with producers, whose livelihoods depended on the profitable use of their land. To change producers' views of environmental protection, Poggi said, "We needed to convince them that we weren't here just to repress them; we were partners. We needed them to support us, and we needed to support them as well."

Poggi sought support from the local Union of Rural Producers, an association that represented the interests of individuals and businesses in the agriculture industry. The organization shared the local government's goal of getting off the blacklist and agreed to help educate its members about environmental protection and why it mattered for their businesses.

José Antonio Feitosa Coutinho, the union's president, recalled that he appealed to producers' self-interest: "We needed people to understand that if they do things like illegal deforestation, we're all going to have problems . . . if one of them creates this kind of situation, the whole city is going to suffer."

Poggi drew ideas from the neighboring municipality of Paragominas in shaping Dom Eliseu's response to the blacklist. In April 2010, Paragominas became the first municipality to leave the federal blacklist, thanks to a cooperative approach that involved close coordination with the state government and environmental nongovernmental organizations (NGOs). The success of its consensus-driven model influenced the strategies adopted by many municipalities throughout Brazil, including Dom Eliseu.

After meeting with Paragominas's secretary of the environment, Felipe Zagalo, and his staff, Poggi noted that Paragominas had emphasized local issuance of environmental licenses—which was not a requirement to leave the blacklist—in addition to CAR registration. The licensing process regulated activities such as agriculture, and it required more information than the CAR system did. Producers had to have licenses to operate legally, and the process of obtaining one from the state environmental secretariat, nearly 500 kilometers away in the state capital of Belém, was time-consuming and expensive. Recognizing the value of local licensing as both an environmental tool and an incentive for producers, Poggi made the issuing of licenses at the municipal level a longer-term goal.

Dom Eliseu needed technical and financial support to get off the blacklist quickly. One of those organizations that had helped Paragominas was the Amazonian Institute of People and the Environment (Instituto de Homem e Meio Ambiente da Amazônia, or Imazon), an NGO. In 2010, Imazon received a grant of 9.74 million reais (US\$4 million) from the Amazon Fund, a

program of the Brazilian Development Bank, to support CAR registration and environmental management in Dom Eliseu, Paragominas, and nine other municipalities.

Amazon representatives and Dom Eliseu officials met and discussed how to work together. Paulo Amaral, a senior researcher at Amazon who coordinated the project, said the NGO was eager to expand its work after its success in Paragominas. “We wanted to develop a green region, not just a green municipality,” he said.

Dom Eliseu also benefited from a federal program to assist municipalities. In the same year, the federal Ministry of the Environment received US\$4.3 million from the government of Norway through the United Nations Development Programme (UNDP) to fund a series of environmental initiatives, including a pilot project supporting CAR registration.<sup>6</sup> The ministry asked Pará’s state environmental secretariat (Secretaria de Estado de Meio Ambiente, or SEMA) to help select municipalities to participate.

Yvens Cordeiro, environmental planning coordinator at SEMA, said the secretariat chose Dom Eliseu and neighboring Ulianópolis because of their proximity and structural similarity to Paragominas. Both lacked the resources to get off the list without help, he said, and “As neighbors, we thought they should have the same treatment as Paragominas.” In a 2011 article, the UNDP said it had chosen the two municipalities because they were especially far along in negotiations with agricultural producers, thereby increasing their chances of success.<sup>7</sup>

The funding helped reduce producers’ CAR registration costs, which would otherwise have been significant barriers to compliance. The pilot project covered the costs of technicians to handle geographic referencing and data entry, thereby eliminating a substantial expense that all but the smallest landowners would have had to pay.

Dom Eliseu did not have to address the property ownership situation immediately because

federal and state policies permitted municipalities to leave the blacklist even if properties were untitled. The CAR process created a database of properties separate from the land title system, and landowners did not have to have an official title to register. Although producers still had to obtain legal titles to access credit and sell land, the municipality could work around the widespread lack of land titles to accomplish its short-term goal of leaving the blacklist.

Dom Eliseu also had to find ways to help landholders adopt more-sustainable practices, such as making crop cultivation more efficient and introducing environmentally friendly products. Under a previous administration, the municipal agriculture secretariat had created programs to promote cultivation of soy, corn, and guava as an alternative to logging. In 2009, Neto brought back Adálio Victorino Silva Jr., agriculture secretary during that period, to fill the same role—this time with an even stronger focus on environmental sustainability.

## GETTING DOWN TO WORK

The municipal government’s immediate priority—leaving the blacklist—required that officials persuade producers to register their properties in the CAR system and help them do so. However, getting off the blacklist was only the first step. After meeting the initial goal, Dom Eliseu’s environmental secretariat had to develop the capacity to take on broader environmental management issues, and the government had to help producers meet reforestation requirements and adopt more-sustainable techniques.

### *Building support*

Upon taking office in 2009, Poggi began to meet with producers to discuss the importance of getting off the blacklist and to explain how—with their help—Dom Eliseu would do so. In meetings across the municipality, Poggi stressed what producers stood to gain from compliance with

environmental regulations and laws. Although the CAR system did not grant official ownership of land, registration was the first step toward securing licenses to use the land legally, and it would pave the way for local control of licensing.

Many producers feared they would become targets of enforcement operations by IBAMA and the Ministry of the Environment if they reported the full extent of deforestation on their land and registered their personal data in the CAR system. Silva recalled, “There was a myth that the producers would be penalized if they shared the data.” With support from the mayor’s office, the agriculture secretariat, and the Union of Rural Producers, Poggi’s team at the environmental secretariat stressed that CAR registration would not result in penalties for past deforestation, but landowners were required to gradually reforest legal reserves and permanent preservation areas.

Federal and state agencies supported Dom Eliseu’s efforts. As part of Operation Green Arc, a series of activities designed to provide support for municipalities targeted by Operation Arc of Fire, federal officials explained the importance of environmental preservation. They also outlined the steps necessary to achieve compliance. In preparation for the CAR process, SEMA, supported by producers groups, the federal Ministry of the Environment, and the agricultural extension agency, held informational events about the registration process and its benefits.

During the first half of 2011, Dom Eliseu formalized its environmental commitments through two agreements: one with the federal prosecution service (Ministério Público Federal, or MPF) and the other with community leaders and local organizations.

The MPF agreement was a legally binding commitment to work toward zero deforestation and the registration of 80% of properties through the CAR system.<sup>8</sup> The agreement ensured that environmental policies would remain on course regardless of new priorities or changes in political

leadership. Once municipal leaders signed, Avelino said, “we can create a lawsuit against them if they don’t do what they have agreed to do,” although the MPF preferred to use incentives instead.

Dom Eliseu also developed a civic pact, a concept pioneered in Paragominas. Under that agreement, local officials, civil society leaders, business associations, and state officials pledged to work to reduce the deforestation rate to less than 40 square kilometers per year and to obtain CARs for all properties. In addition to helping ensure the continued cooperation of civil society, the civic pact signaled Dom Eliseu’s environmental commitment to state and federal agencies.

#### *Registering rural properties*

To leave the blacklist, Dom Eliseu had to register 80% of private land in the CAR system. Property registration strengthened monitoring and enforcement by providing a clearer record of landownership in the absence of official titling. CARs also provided information that enabled all levels of government to assess the municipality’s environmental situation and plan conservation and restoration policies.

The first step was to develop a land-use map of the entire municipality, an area of roughly 5,300 square kilometers, to identify the remaining forests and cleared or degraded areas. Imazon used satellite technology to provide more-detailed maps than Dom Eliseu had used previously. Imazon also trained local officials to analyze satellite imagery and to use GPS technology and geographic information systems in preparation for the registration process.

With an overview in hand, the municipal environmental secretariat and SEMA set out to map each property and collect information on the holders. Originally, the CAR process required each landholder to pay for land surveys and geocoding. However, as part of the pilot project by the Ministry of the Environment and the

UNDP, Dom Eliseu could provide those services free for all landowners, who simply had to grant the UNDP-funded surveyors access to their properties.

The project team hired Satélite-GeoAmbiente, a Brazil-based consortium that specialized in geographic information systems and environmental assessment, to handle the technical aspects of the registration process. For each property, GeoAmbiente documented the GPS coordinates of boundaries, the extent of deforestation, legal reserves and permanent preservation areas, and land use. The consortium also collected information on the owners. It then entered the information into SEMA's monitoring and environmental licensing system. Because many landowners had not maintained the required reserves, SEMA had to determine the extent of each existing reserve and the boundaries of the area the owner would need to reforest before it issued an official CAR.

Seeking to accelerate the measurement process, the municipal environmental secretariat enlisted the help of landholders. Poggi said, "When we had meetings with the producers, we created a schedule; and when we went with one producer to find the boundaries of his farm, the neighbors went with us and would show their boundaries as well."

Winning cooperation was a difficult but vital step toward the success of the project. "At first, it was only the consortium [Satélite-GeoAmbiente], and there were some problems with that because producers didn't want the company on their land without any government presence, so we accompanied them at every step of the project," SEMA's Cordeiro said.

When a small group of landholders remained reluctant to register, the environmental team and the Union of Rural Producers worked hard to persuade them and to assuage their fears of being penalized. As more joined the system, the project gained momentum. Coutinho of the producers

group said, "After the majority of people accepted these activities, the ones who were resisting came along."

After completing the mapping, GeoAmbiente, with assistance from municipal staff and volunteers, entered the data into the state-level registration system for SEMA's analysis.

By September 2012, Dom Eliseu had registered 81% of privately held properties in the CAR system, topping the 80% required and earning removal from the federal blacklist.

#### *Expanding municipal responsibilities*

Freed of the short-term economic and political pressures created by the blacklist, Dom Eliseu moved ahead with efforts to further the long-term goal of environmental sustainability. High on Poggi's list was the local issuance of environmental licenses for agricultural activities. At the time, such licenses were issued by the state.

In July 2012, SEMA had granted the municipality the authority to license properties that had up to 3,000 hectares of usable area.

Partnerships with the state government and Amazon helped Dom Eliseu develop the capacity to issue environmental licenses and take greater responsibility for inspections to identify and penalize deforestation. An important contributor was the state Green Municipalities Program (Programa Municípios Verdes, or PMV), established in 2011 with the goal of helping municipalities adopt sustainability initiatives after the Paragominas model. The PMV and SEMA trained municipal staff on the environmental licensing process, which, unlike the CAR system, required the issuer to analyze years of satellite imagery and as many as 24 documents in order to determine whether the proposed activity was legal.

To obtain a license, each producer had to submit documents that included personal identification; a CAR certificate; a rural property registration, which provided evidence of

ownership and allowed the holder to access credit and sell land; georeferenced maps of the property showing the area to be used, legal reserves, permanent protection areas, and degraded areas to be restored; a plan for the reforestation of areas cleared illegally; and satellite images of the property from 2007 to 2014.

After analyzing the documents, staff at the municipal environmental secretariat had to inspect each property to verify the information before issuing a license that allowed the land to be used for cultivation, ranching, or other specified activities.

In December 2012, the secretariat began issuing environmental licenses. A problem quickly emerged. Many producers lacked the required rural property registrations, and the process of obtaining one from the state or federal land agencies was often prohibitively slow. However, the environmental licensing system offered an alternative. In accordance with state regulations, the mayor's office worked with the Union of Rural Producers to develop a declaration that would provide sufficient evidence of ownership for licensing. Leticia Ramos, an engineer in the secretariat, explained: "Landowners who have lived on the land for more than five years can get a document from the municipality that works as a temporary [rural] property registration, because in the state of Pará there are many land problems and it would be impossible to issue licenses only for titled areas. Otherwise, landowners who want to work legally would be excluded."

Shortly before Dom Eliseu began issuing licenses the federal legislature changed the Forest Code, Brazil's main law regulating forest preservation and use. The revised code allowed producers to continue using land deforested before July 2008, so when Ramos and other staff in Dom Eliseu issued licenses, they looked at old satellite images to determine whether an area had been cleared before the cutoff date.

The new Forest Code also loosened requirements for reforestation in areas that Pará's macrolevel zoning regulations labeled as "consolidated," including Dom Eliseu. Landowners who had maintained their legally mandated reserves had to keep them, but for those whose properties had to be reforested, the federal government could reduce the required area to 50%.<sup>9</sup>

The municipality also conducted inspections to verify deforestation and punish violators. Using its satellite monitoring system, Imazon sent monthly alerts that specified the exact location of each instance of clearing. Municipal staff then visited the property to verify that deforestation had taken place, and they issued fines based on the size of the cleared area, on whether the area was native or secondary growth, and on other factors such as whether the area had been burned. Ramos explained, "This is why the CAR is so important: just by clicking, we know the owner, the name of the property, where it is."

The state Green Municipalities Program provided training and information as Dom Eliseu's environmental secretariat expanded its role. Throughout 2012, the PMV held training sessions on licensing, environmental laws, monitoring, and inspection.

The program also dispensed guidance and advice. PMV environmental management staff either answered questions based on their own experience in municipal environmental secretariats or connected the officials with the appropriate staff at SEMA and other agencies. In the case of Dom Eliseu, the PMV provided frequent support regarding licensing.

#### *Developing sustainable alternatives*

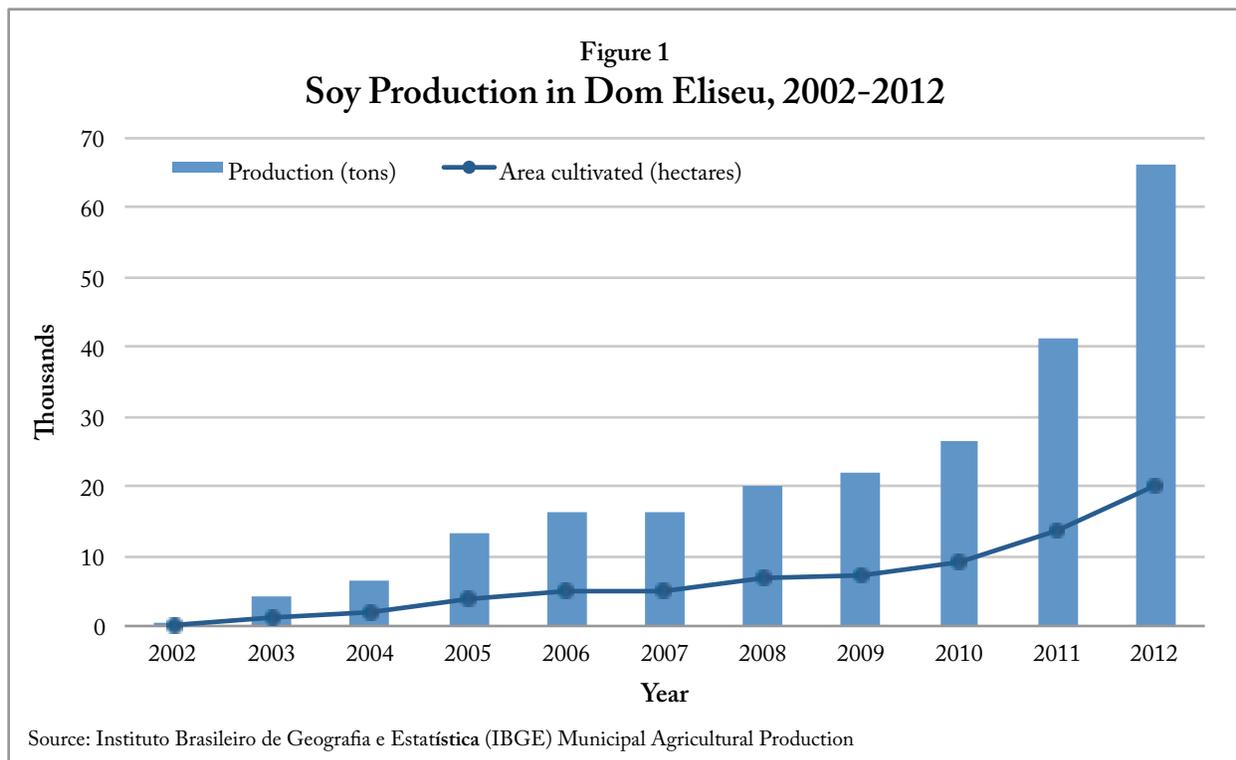
Municipal officials knew that the sustainability of any environmental gains depended on producers' ability to maintain livelihoods while complying with environmental

laws. “We wanted a way where the producer could work, make money, and, at the same time, preserve the environment,” Silva said. However, developing sustainable livelihoods and reforestation cleared areas would be long-term processes.

Increasing yields was one way to improve profits for landholders facing restrictions on the areas they could plant. Owners of larger parcels, who cultivated mostly soy and corn, could boost production by adopting rotational systems for both crops and livestock. Planting a primary crop of soy, followed by a second planting of corn and a cover crop such as capim gordura (a hardy type of grass), and then using the land to graze cattle enabled the soil to regenerate while maximizing profitability. The use of machinery and high-yielding seeds also helped farmers increase production. The production of soy, Dom Eliseu’s primary crop, rose as farmers dedicated more of their land to it and yields increased. After dropping from 2007 to 2008, soy yields rose from 2.9 tons per hectare in 2008 to 3.3 tons in 2012 (figure 1).<sup>10</sup>

For smallholders, diversifying into new products offered an opportunity for both economic and environmental benefits. For instance, Dom Eliseu’s agriculture secretariat worked with 40 small producers to create a beekeeping cooperative. The agriculture secretariat also distributed free seedlings of native fruit trees such as acai to make reforestation profitable. Because the species were native to the area, the trees could be planted to restore legal reserves and preservation areas. The fruit tree project began in 2009, and Silva estimated in 2014 that 80 producers had started working with native fruit. He said he expected fruit cultivation to expand gradually as early adopters demonstrated the benefits to others.

However, even with producers’ access to free seedlings, restoring cleared areas remained a challenge. Although producers had to submit reforestation plans as part of the licensing process, the new Forest Code gave them 20 years to follow through. “Because of the new Forest Code, right now they are just signing commitments, but they



have not started the process of reforesting these areas,” Poggi said.

The agriculture secretariat worked with federal training institutions to teach producers effective practices in agriculture and ranching, and it purchased tractors for smallholders to clear fields rather than resorting to unsustainable slash-and-burn techniques. However, the municipality could provide little direct financial support for farmers seeking to adapt their practices, and the lack of land titles made it difficult for many landowners to obtain credit to invest in improvements in productivity.

Compensation for maintaining forests provided another option to make conservation economically viable. Under the new Forest Code, landowners who had to increase their legal reserves could pay another producer who had more than the required amount to preserve those reserves rather than planting trees on their own property. However, Amaral noted that “the important thing is to have the monitoring, to check the producer who sells the area all the time, so he can’t break this commitment.”

## OVERCOMING OBSTACLES

Even after Dom Eliseu left the blacklist in September 2012, enforcement remained an important part of the effort to reduce deforestation. Federal raids on suspected violators were never popular, and the municipal government found it difficult to maintain good relationships with both the community and IBAMA, the federal environmental enforcement agency.

In December 2012, IBAMA conducted an operation to counter illegal charcoal production in Dom Eliseu. The IBAMA team confiscated timber and equipment, but the next day an angry crowd, led by the loggers whose timber had been confiscated, threatened to burn down the hotel where the IBAMA officials were staying. To calm

the situation, Poggi arranged a meeting between representatives of the protesters and IBAMA.

Hugo Américo Rubert Schaedler, superintendent of IBAMA in Pará, said that from his perspective, “We were there to help the city, because they had made a huge effort to get off the list, and just a few people were trying to spoil that.” Poggi, he recalled, helped persuade the protesters that a few people should not be allowed to threaten the city’s progress.

Poggi said that simply acknowledging the protesters’ resentment of their treatment by IBAMA helped cool tempers. “In that situation, it was more about showing the community that the people who were wrong needed to follow the law; and the people who were doing the inspection needed to be more humble, more open to dialogue,” he said. However, the goodwill did not last. Shortly after the municipality began to issue environmental licenses in December 2012, a dispute with IBAMA over the validity of one license threatened to erode Dom Eliseu’s relationship with the enforcement agency.

In February 2013, IBAMA conducted a raid on the property of a farmer who had received one of the municipal environmental secretariat’s first licenses. According to Poggi, the license in question permitted the farmer who received it to use land deforested before 2008; Schaedler said that although the license had been issued for previously cleared land, the forest had substantially regenerated, and the land therefore could not be used without legal authorization to clear it again.

Although the dispute concerned a single license, officials in Dom Eliseu saw it as a serious threat to their credibility. Both Poggi and Neto believed IBAMA’s action in this case would undermine the community’s confidence in their work. Poggi was concerned people would think “the work we were doing here wasn’t good enough, and we didn’t have the power to decide

these kinds of things.” If producers believed that the locally issued environmental licenses would not be respected by enforcement agencies, Poggi and Neto feared, the producers would see no reason to follow the process.

Poggi asked the PMV for help. Working together with the federal prosecution service, the PMV brought together representatives of the municipality and IBAMA in a series of meetings in Belém. Mediation by agencies that had relationships with both sides helped turn the disagreement into an opportunity to air issues and develop a strategy to work together effectively.

Representatives of Dom Eliseu stressed the need for more cooperation and consultation from IBAMA. “They needed to understand that they had to create a relationship with us and not just come here and say we were doing everything wrong,” Neto said.

Schaedler recalled discussing ways to strengthen the licensing process in order to avoid future conflicts, and he acknowledged that Dom Eliseu was trying hard. “We said it was important to follow all the steps and get all the documents, but we also recognized that they were doing good work and were very serious about their procedures,” he said.

After the meetings, IBAMA moderated its tone while maintaining its hard line against violators. The next time IBAMA came to the municipality, in May 2013, the agency named the operation Bom Conselho, or Good Advice, and emphasized dialogue in addition to confiscating tons of illegally produced soy.

Dom Eliseu officials appreciated the conciliatory approach. As a result of the meetings, Poggi said, “We developed a better relationship with IBAMA, and we are really partners . . . The producers aren’t so scared of IBAMA, and IBAMA doesn’t see them as bad guys.”

The focus on consultation improved enforcement. Leandro Cortese Aranha, alternate superintendent of IBAMA in Pará, noted that

because of IBAMA’s relationships with municipal officials, “the city is the first one to call us and say there’s a problem here.”

Poggi agreed. “We knew the people who wanted to be legal, and we also knew the people who were illegal, didn’t care about the environment, and just wanted to destroy,” he said. “So they needed to understand that we were their eyes here.”

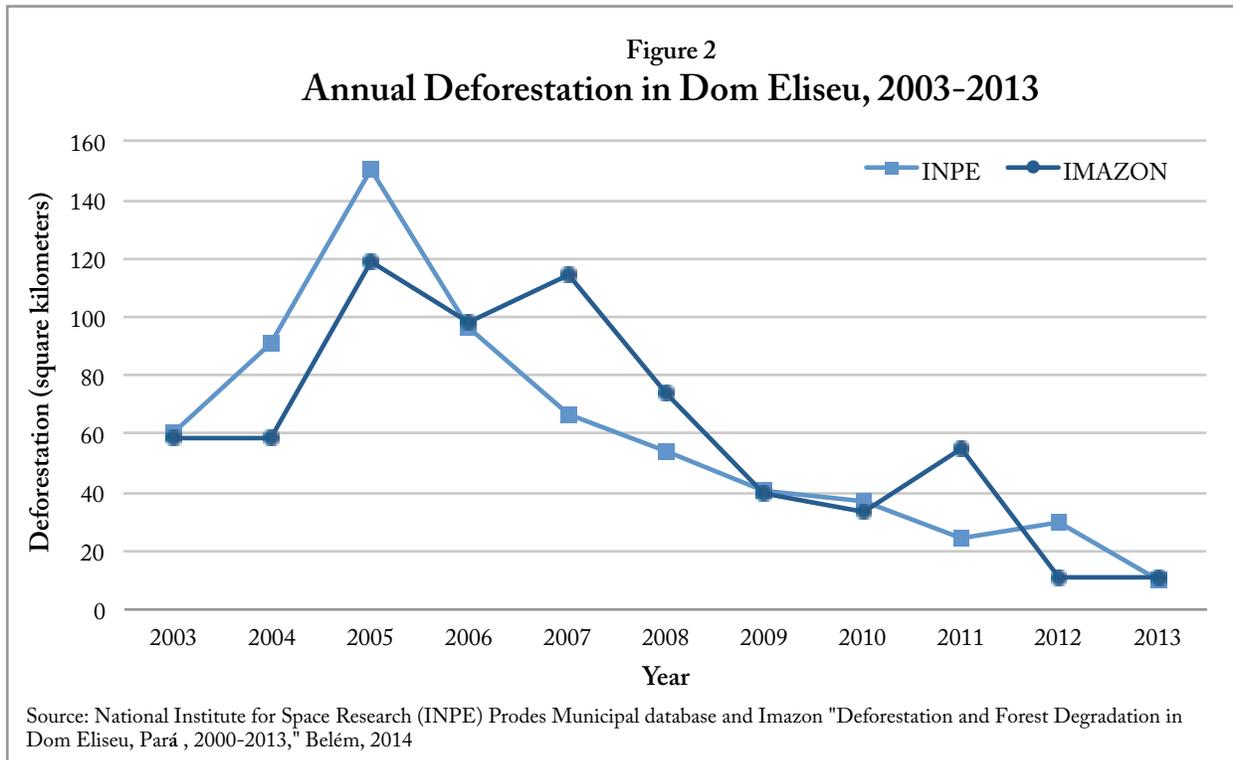
## ASSESSING RESULTS

By September 2012, when Dom Eliseu earned its release from the Ministry of the Environment’s blacklist, local officials had registered 1,108 properties covering 4,282 square kilometers in the CAR system, which amounted to 81% of the municipality.<sup>11</sup>

From 2012 to 2014, Poggi said, the secretariat had issued 92 licenses covering approximately 45,000 hectares. Through the licensing process, producers developed plans to restore a total of about 570 hectares of degraded permanent preservation areas.

Results in other areas were not as clear. Although Dom Eliseu’s agriculture secretariat had developed pilot projects to help small producers adopt more-sustainable practices, the extent of success was uncertain. In 2014, Silva estimated that 40 holders of small parcels had received training in beekeeping and an additional 80 had begun working with native fruits. Municipal officials hoped those projects would motivate others to make their own investments, but as of 2014, uptake remained limited. Reforestation of cleared and degraded legal reserves and permanent preservation areas also remained in the early stages, and given the 20-year timeline, results would not be clear for almost two decades.

Two sources of data presented different pictures of the impact of the two phases of federal policies. Trends monitored by the National Institute for Space Research showed that the sharpest drop in deforestation took place from



2005 to 2007, indicating that the federal government’s command-and-control policies had a greater land-area impact on deforestation than the blacklist had. According to the space institute, annual land clearing in Dom Eliseu shrank from a peak of 150.2 square kilometers in 2005 to 66.8 square kilometers in 2007, a decline of 55%. In 2013, the total was just 10.22 square kilometers.<sup>12</sup> That pattern aligned with the general trend in Amazon states: the area of deforested land dropped sharply as enforcement increased from 2004 to 2007, and it declined more gradually after introduction of the blacklist policy targeting municipalities in 2008.

Because of different methodologies—mapping scales, calculations to annualize deforestation rates, dates of satellite images, and measurement of forest degradation—Imazon’s monitoring data told a different story. According to the NGO, deforestation remained high in Dom Eliseu from 2005 to 2007 and fell after the municipality was put on the blacklist in early

2008. Imazon’s data show land clearing peaked in 2005, at 119 square kilometers, and remained high in 2007, at 114 square kilometers. The rate then fell to 74 square kilometers in 2008 and continued to drop to 11 square kilometers in 2013<sup>13</sup> (figure 2).

Land titling was an ongoing challenge. Unlike in the municipality of Alta Floresta, for instance, the municipal and state governments did not adapt the CAR registration process to also help producers obtain rural property registration certificates. A Ministry of the Environment paper on the CAR project that included Dom Eliseu said that the more detailed mapping required to obtain the certificates was too time-consuming and expensive, which may have tied the hands of the municipality.<sup>14</sup> Neto said the agency responsible for issuing titles for land officially owned by the federal government had made some progress in granting titles, but that action by the state agency, which performed the same function for land owned by the Pará state government, was

“almost zero.” Although environmental policies enabled municipalities to work around the issue, the core problem remained unresolved.

## REFLECTIONS

Policies in Dom Eliseu and the state of Pará as a whole emphasized dialogue and community participation to develop sustainable solutions to environmental problems.

Edilberto Poggi, the municipality’s secretary of the environment, said the most important part of his work was the cooperative relationship he and his staff developed with agricultural producers. “The important thing is to be humble, to show that you really care about them,” Poggi said. “You can’t just act with reason; you have to have emotion in this process as well. You need to understand what they are feeling, their expectations, their problems.”

Partner institutions viewed Poggi’s leadership as critical to Dom Eliseu’s success. “He created the dialogue with the producers,” said Paulo Amaral, a senior researcher at Imazon, the Belém-based nongovernmental organization. Because Poggi emphasized how the environmental secretariat could work with producers, Amaral added, “Producers didn’t see him as just someone who was there to control, but as someone who was looking for alternatives for the municipality.”

Camilla de Miranda Figueiredo, institutional relations and governance coordinator at the state Green Municipalities Program, stressed the importance of Poggi’s engagement with other institutions. “He’s always questioning, always asking for our help,” she said. “He’s a very active person.”

Dom Eliseu’s battle to escape the blacklist relied heavily on outside financial support through the Ministry of the Environment and United Nations Development Programme registration pilot project, and a partnership with Imazon. (Ulianópolis, another municipality in Pará that also participated in both projects, left the blacklist

at the same time.) Achieving the required CARs would have been far more difficult without funding to underwrite the cost of property surveys.

In 2014, Dom Eliseu officials emphasized the need for continued funding to sustain environmental gains, to increase the environmental secretariat’s capacity, to help producers adopt more-sustainable practices, and to support those struggling to find alternative livelihoods. “We needed better support from the federal and the state government,” Mayor Joaquim Nogueira Neto said. However, he added, “you can’t keep complaining about it; you have to do something.”

In addition to financial partnerships, Dom Eliseu benefited from cooperative relationships with government institutions and civil society. Local officials worked closely with the state environmental secretariat throughout the registration process. With the introduction of the Green Municipalities Program, Pará’s state government prioritized the reduction of deforestation and created a structure to support municipal governments. Imazon also played an active role by training local officials and applying its technical expertise in mapping and monitoring. “Partnerships were responsible for making us stronger,” Poggi recalled.

Although Poggi emphasized building relationships, the community-wide fallout from the federal blacklist served an important function in getting residents of Dom Eliseu to act together. Individual producers could try to free ride on the efforts of others, but recognition of the need for collective action created social pressure for everyone to comply.

After feeling the effects of the blacklist, Neto said, producers “were checking their neighbors, making sure there wasn’t any kind of illegal activity or deforestation. They knew we needed to share the responsibility, because the embargo wouldn’t be for just one piece of land; it would be for the whole city.”

These behavior changes depended on a credible threat of enforcement. “Everything starts with the enforcement,” said Leandro Cortese Aranha, alternate superintendent of IBAMA, Brazil’s environmental enforcement agency. “That pushes everybody to say, OK, we have to work together.”

Analysis by the Climate Policy Initiative–Rio de Janeiro, a research organization focused on issues involving climate change, indicated that heightened monitoring and enforcement drove the deforestation drop in blacklisted municipalities, whereas other aspects of the policy “appear to have had no significant effect on Amazon deforestation.” According to the study, municipal responses to the policy mattered less than targeted enforcement.<sup>15</sup>

Municipal and state officials recognized that to control deforestation in the long term, they would have to not only convince producers of the importance of conservation but also provide alternatives to clearing land. However, in both Dom Eliseu and elsewhere in the state of Pará, the development of sustainable alternatives remained in the early stages in late 2014.

With its long history of deforestation, Dom Eliseu already had significant amounts of cleared land available for agricultural uses. Municipal Secretary of Agriculture Adálio Victorino Silva Jr. estimated the municipality could double its cultivated land from roughly 50,000 hectares to 100,000 hectares “without cutting a single tree.” The pressure to improve production was therefore less intense in Dom Eliseu than in municipalities where land clearing had been less extensive.

Joice Ferreira, a senior researcher at the Brazilian Agricultural Research Corporation, a government research entity affiliated with the federal Ministry of Agriculture, noted that across the state, municipalities prioritized their most-pressing needs—typically CAR registration and

reduction of deforestation rates—rather than the longer-term issue of changing production techniques. “Although essential, this focus on securing land titles and georeferencing property boundaries has meant that less attention has been paid to date to more-complex issues such as a shift to more-sustainable production practices,” Ferreira said. “People are trying to solve those very basic issues first, so it’s difficult to progress rapidly to the next level.”

Reforestation also remained a challenge, particularly after passage of the new Forest Code in 2012. The new law reduced the areas required for reforestation in comparison to preservation, which created a signaling problem that could discourage producers from replanting trees on cleared land. After observing the process that led to the 2012 changes, producers might defer reforestation in the hopes that a similar measure would be passed in the future.

Municipal officials acknowledged that there was more work to do. “We were able to leave the list, but we need to face many social problems,” Neto said. Of particular concern was the lack of alternative employment for low-level workers from the timber and charcoal industries who lacked the skills and resources to start new careers. Although social programs provided some support for poor families, he said, “it’s not enough.” Addressing unemployment and poverty remained a major challenge for Neto and his administration.

Overall, state and local responses to the federal blacklist marked a new way of conducting environmental policy. According to Daniel César Azeredo Avelino, chief federal prosecutor in Pará, “Environmental issues in Brazil were always governed from the top down: the federal government inspected the states and the municipalities. So, this was the first time you have a municipality taking care of the rural areas.”

## APPENDIX: STATE-LEVEL INITIATIVES IN PARÁ

For years, the state of Pará had a reputation as Brazil's most challenging place for environmental initiatives. However, as preserving the Amazon became a national and global priority, officials in Pará developed strong environmental protections at the state level.

### *Targeting the supply chain*

The federal prosecution service (Ministério Público Federal, or MPF) in Pará was a national leader of initiatives to stop buyers from purchasing commodities that contributed to deforestation. In 2009, Daniel César Azeredo Avelino, Pará's chief prosecutor, brought lawsuits against 20 large ranches and 11 slaughterhouses, seeking R\$2.1 billion (US\$822 million) in compensation for environmental damage.<sup>16</sup>

Avelino said that targeting the supply chain was an efficient strategy to correct the state's widespread environmental problems. "Here we have about 10 big [slaughterhouses] and 90 small ones, and we have 300,000 farms," he said. "If we can control [the slaughterhouses], we can control the 300,000 farms." The MPF also issued warnings to 69 other buyers—from supermarket chains to shoe companies—that if their suppliers caused deforestation, they too would face charges. The lawsuits created economic upheaval across Pará as companies refused to buy cattle products from the state because of their uncertainty about producers' environmental records.

However, Avelino said, "The situation couldn't be fixed in one or two months. It would take at least two years to fix the whole thing." Halting sales for that long would have disastrous consequences. Instead, the MPF and the state government negotiated an agreement with the buyers that suspended the lawsuits as long as the buyers worked to meet environmental requirements. The agreement legally committed buyers to a series of environmental goals,

including to purchase cattle only from ranches that had rural environmental registrations and had not engaged in illegal deforestation after 2008.

Although the lawsuits angered ranchers and their allies in the Brazilian Congress, the prosecutors held firm. Pressure from NGOs, particularly Greenpeace, helped the MPF reach an agreement with the buyers, as did international companies' fears of having their brands associated with Amazon deforestation.

After the initial agreement with the cattle industry, the MPF adapted the model to target other commodities. As of 2014, the MPF had reached similar agreements with the grain and wood industries and was in negotiations with the iron industry.

### *The Green Municipalities Program*

In March 2011, Pará Governor Simão Jatene created the Green Municipalities Program (Programa Municípios Verdes, or PMV), with the goal of transferring the best practices the state and municipal governments had developed in Paragominas throughout Pará. By 2014, 104 of Pará's 144 municipalities had signed on.

Participation in the program required municipalities to create social pacts to reduce deforestation, developed through a series of community meetings and educational events. Justiniano de Queiroz Netto, special secretary for coordination of the PMV, said the process of forming pacts was essential to lay the groundwork for future actions: "We have to talk to those people and explain that deforestation doesn't equal development; it is quite the opposite." The pacts committed signatories to work toward lower rates of land clearing and targets for the rural environmental registration (*cadastro ambiental rural*, or CAR) system.

In practical terms, Netto said, "the CAR is the heart of this organization." As a monitoring tool, environmental diagnostic, and first step toward licenses and land titles, the CAR laid the

foundation for the PMV's other activities. To support the CAR process, the PMV provided municipalities with technical assistance and conducted statewide campaigns to encourage producers to register.

The program also developed manuals and held training sessions to build the capacity of local staff. As of 2014, projects to promote sustainable production remained in the early stages as the PMV focused on CAR registration and municipal environmental management, but the program's goals included developing a more sustainable economy.

In addition to its core activities, the PMV facilitated information sharing among municipalities, state agencies, and the Pará branches of federal agencies. PMV staff connected local officials with relevant state or federal personnel when such officials had questions, and the staff helped mediate disagreements. Netto said, "The biggest achievement is that we were able to create an open dialogue with NGOs, society, municipalities, all the levels of

government . . . Before, people didn't talk about sustainability in the municipalities. There was a lack of trust in one another."

To provide a forum for coordination and problem solving, the program held quarterly meetings—one per year in Belém and the others in municipalities throughout the state. Representatives from the participating agencies and municipalities met to discuss new initiatives and share information about their activities. The program also created smaller working groups to address common problems.

In June 2013, to reward municipalities that prioritized environmental preservation, the state government created the Green Value-Added Tax. The initiative set aside a portion of revenues from Pará's value-added tax for distribution to municipalities based on reduction of deforestation rates, size of conservation areas, and extent of CAR registration. In 2014, Pará planned to allocate R\$35 million (US\$14.35 million) through the program, with the amount rising to R\$140 million (US\$57.4 million) by 2017.<sup>17</sup>

## References

- <sup>1</sup>Ane Alencar, Daniel Nepstad, David McGrath, Paulo Moutinho, Pablo Pacheco, Maria Del Carmen Vera Diaz, and Britaldo Soares Filho, "Desmatamento na Amazônia: Indo Além da 'Emergência Crônica,'" Instituto de Pesquisa Ambiental da Amazônia, Belém, 2004; <http://www.ipam.org.br/biblioteca/livro/Desmatamento-na-Amazonia-Indo-Alem-da-Emergencia-Cronica-319>.
- <sup>2</sup>David Rothschild, "Seeing Deforestation Solutions Firsthand," Skoll Foundation, 12 June 2013; <http://www.skollfoundation.org/david-rothschilds-trip-to-brazil-seeing-deforestation-solutions-firsthand/>
- <sup>3</sup>Carlos Mendes, "PF prende acusados de fraudes ambientais no Pará," *Estadão*, 12 November 2010; <http://www.estadao.com.br/noticias/geral,pf-prende-acusados-de-fraudes-ambientais-no-para,639097>
- <sup>4</sup>Instituto Nacional de Pesquisas Espaciais, "Projecto PRODES: Monitoramento da Floresta Amazonica Brasileira por Satelite," 2014; <http://www.obt.inpe.br/prodes/index.php>.
- <sup>5</sup>Instituto Nacional de Pesquisas Espaciais, "Desflorestamento nos Municípios da Amazônia Legal," 2014; <http://www.dpi.inpe.br/prodesdigital/prodesmunicipal.php>.
- <sup>6</sup>United Nations Development Programme, "Com apoio do PNUD, municípios controlam desmatamento e recuperam áreas degradadas," 2012; <http://www.pnud.org.br/Noticia.aspx?id=3662>.
- <sup>7</sup>Bruno Meirelles, "Iniciativa conjunta de PNUD com o governo federal vai documentar proprietários de seis dos municípios que mais desmatam no país," United Nations Development Programme, 3 June 2011; <http://www.pnud.org.br/Noticia.aspx?id=1327>.
- <sup>8</sup>Jayne Guimarães, Adalberto Veríssimo, Paulo Amaral, Andréia Pinto, and Adnan Demachki, *Municípios Verdes: caminhos para a sustentabilidade*, Imazon, Belém, 2013; 54.

<sup>9</sup>Programa Municípios Verdes. *Série Gestão Ambiental Municipal para a Área Rural: Organizando a área de controle ambiental do município*. Belém, 2014; 94.

<sup>10</sup>Instituto Brasileiro de Geografia e Estatística, “Produção Agrícola Municipal”; <http://www.sidra.ibge.gov.br>.

<sup>11</sup>Programa Municípios Verdes. “Ficha Completa: Dom Eliseu”; [http://municipiosverdes.com.br/relatorios/ficha\\_completa/1502939/](http://municipiosverdes.com.br/relatorios/ficha_completa/1502939/).

<sup>12</sup>Instituto Nacional de Pesquisas Espaciais, “Desflorestamento nos Municípios da Amazônia Legal,” 2014; <http://www.dpi.inpe.br/prodesdigital/prodesmunicipal.php>.

<sup>13</sup>Imazon, “Deforestation and Forest Degradation in Dom Eliseu, Pará, 2000–2013,” Belém, 2014.

<sup>14</sup>Rejane Ennes Cicerelli, Alexandre Resende Tofeti, Aline Menke, Nazaré Soares, Mauro Pires, “Utilização de geotecnologias para implementação do Cadastramento Ambiental Rural: Estudo de caso na Amazônia Legal,” Simpósio Brasileiro de Sensoriamento Remoto, Foz do Iguaçu, Brazil, 2013; <http://www.dsr.inpe.br/sbsr2013/files/p0847.pdf>.

<sup>15</sup>Juliano Asunção and Romero Rocha, “Getting Greener by Going Black: The Priority Municipalities in Brazil,” Climate Policy Initiative, Rio de Janeiro, 2014; <http://climatepolicyinitiative.org/wp-content/uploads/2014/08/Getting-Greener-by-Going-Black-Technical-Paper.pdf>.

<sup>16</sup>Ministério Público Federal–Pará, “Apresentacao TAC Bois Desmatamento,” 2009; <http://www.prpa.mpf.gov.br/news/2009/ppt/Apresentacao%20TAC%20Bois%20Desmatamento.ppt/view?searchterm=TAC>.

<sup>17</sup>Raphael Pacheco, “Green Municipalities Program: Activities and Results 2013,” Belém, 2014.

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