Strategy for setting national restoration targets

Capacity-building workshop for Latin America on the restoration of forest and other ecosystems to support achievement of the Aichi Biodiversity Targets

Bogotá, Colombia

4 – 8 April 2016

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Law of Native Vegetation Protection (old Forest Code 12,651/2012)

- the central piece of legislation regulating land use and management on private properties
- designated environmentally sensitive areas as Areas of Permanent Preservation (APPs), aiming to conserve water resources and prevent soil erosion
  - Riparian Preservation Areas (RPAs): protect riverside forest buffers
  - Hilltop Preservation Areas (HPAs): hilltops, high elevations, and steep slopes
- required landowners to conserve native vegetation on their rural properties, setting aside a Legal Reserve (LR) that occupies 80% of the property area in the Amazon and 20% in other biomes => can be managed

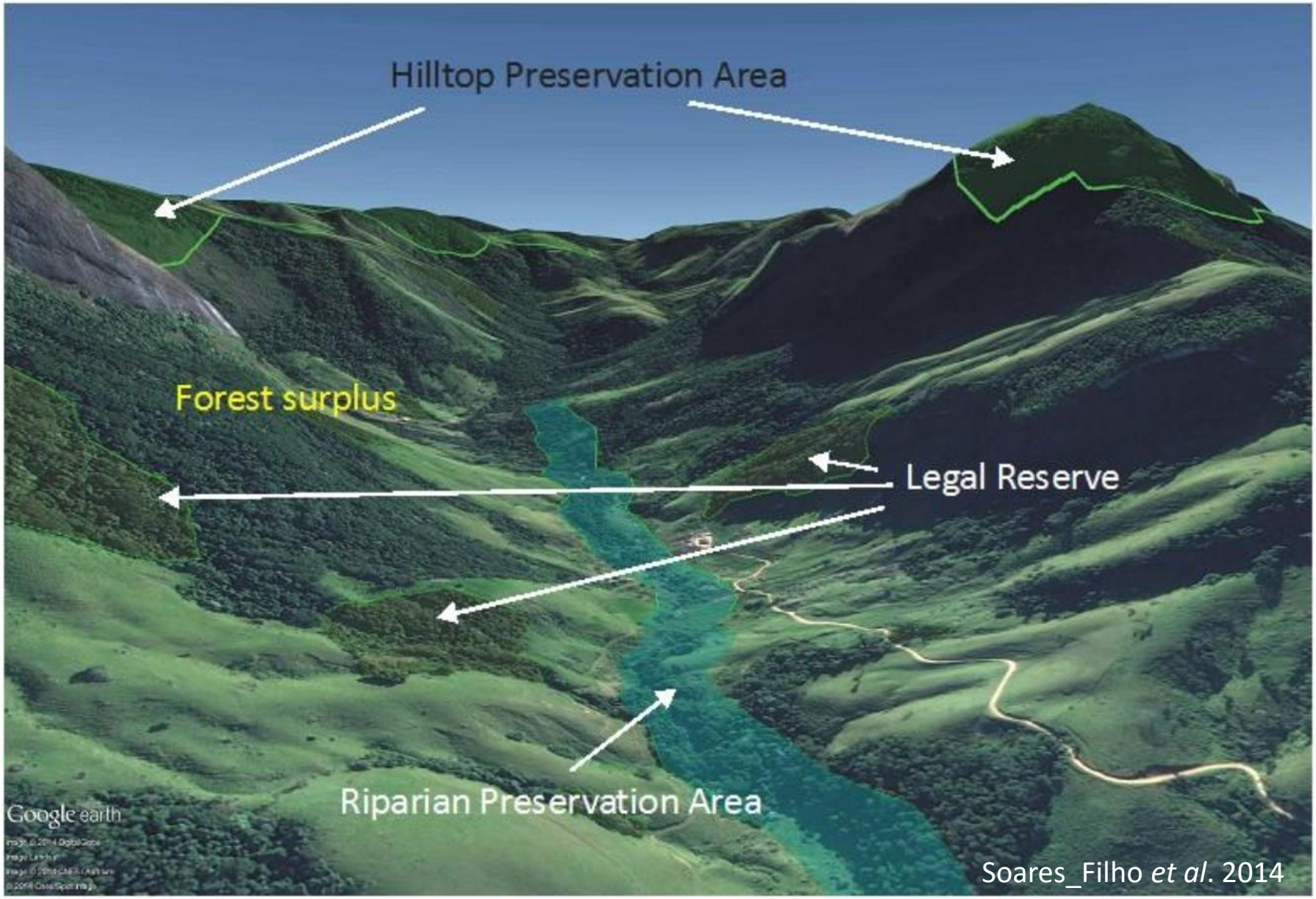


Fig. S1. Spatial representation of the main requirements of the FC on a Google Earth 3D view. Forest surplus represents extent of native vegetation that exceeds FC requirements.

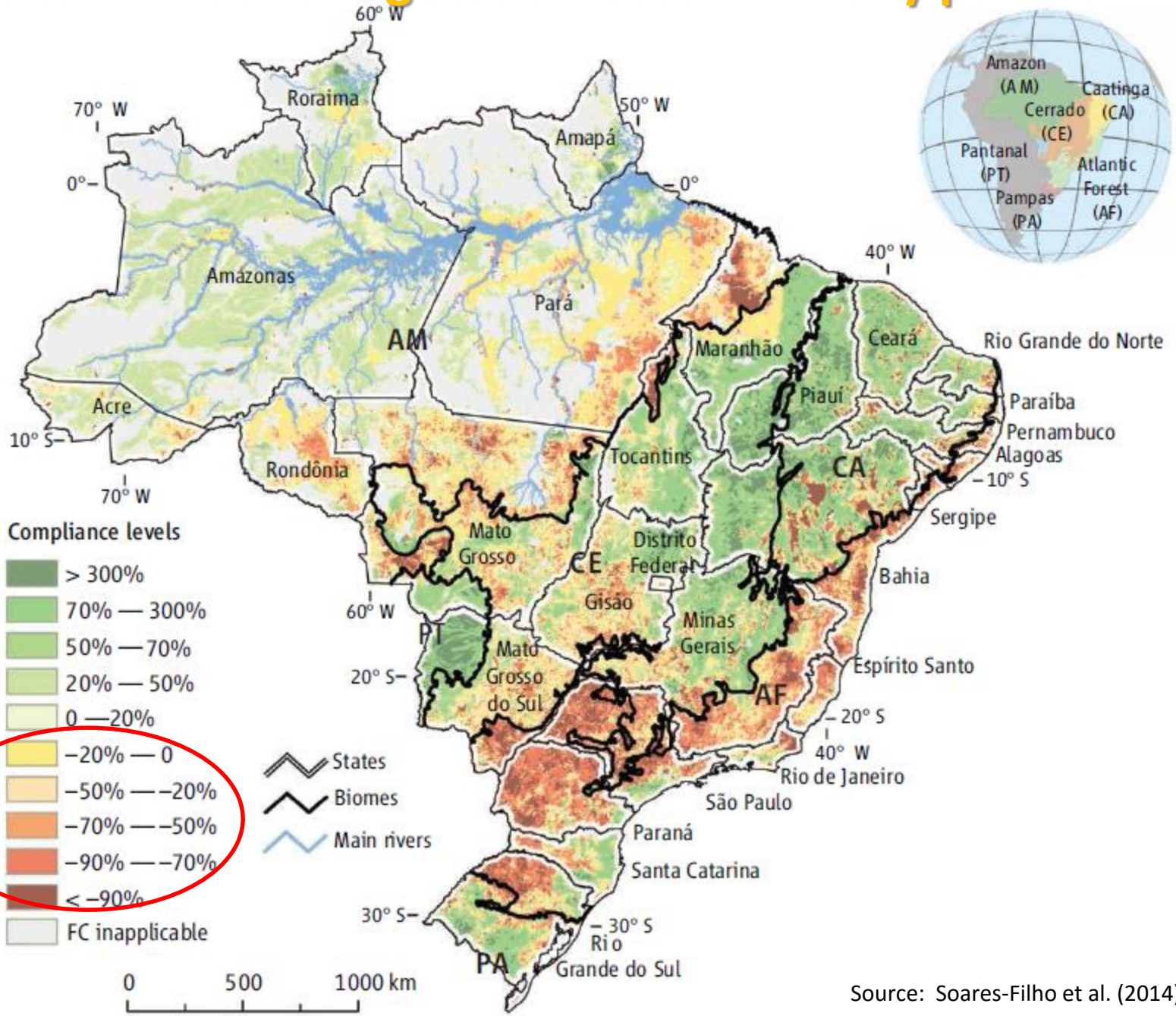
Brazilian Forest Code (Law 12,651/2012)

- Set general requirements for restoration of APPs and LRs
- General requirements for restoration of APPs:
  - natural or assisted regeneration
  - native species planting
  - Both
  - Exotic ligneous (perennial or of long lifecycle) intercalated with native species planting (up to 50% of exotic), for small rural properties

Brazilian Forest Code (Law 12,651/2012)

- For restoration of LRs (up to 20 years), it's allowed to:
  - plant native species intercalated with exotic or fruitful ones (up to 50%) in an agroforestry system
  - earn revenue

"Deficits" in native vegetation occur in many parts of Brazil



Source: Soares-Filho et al. (2014)

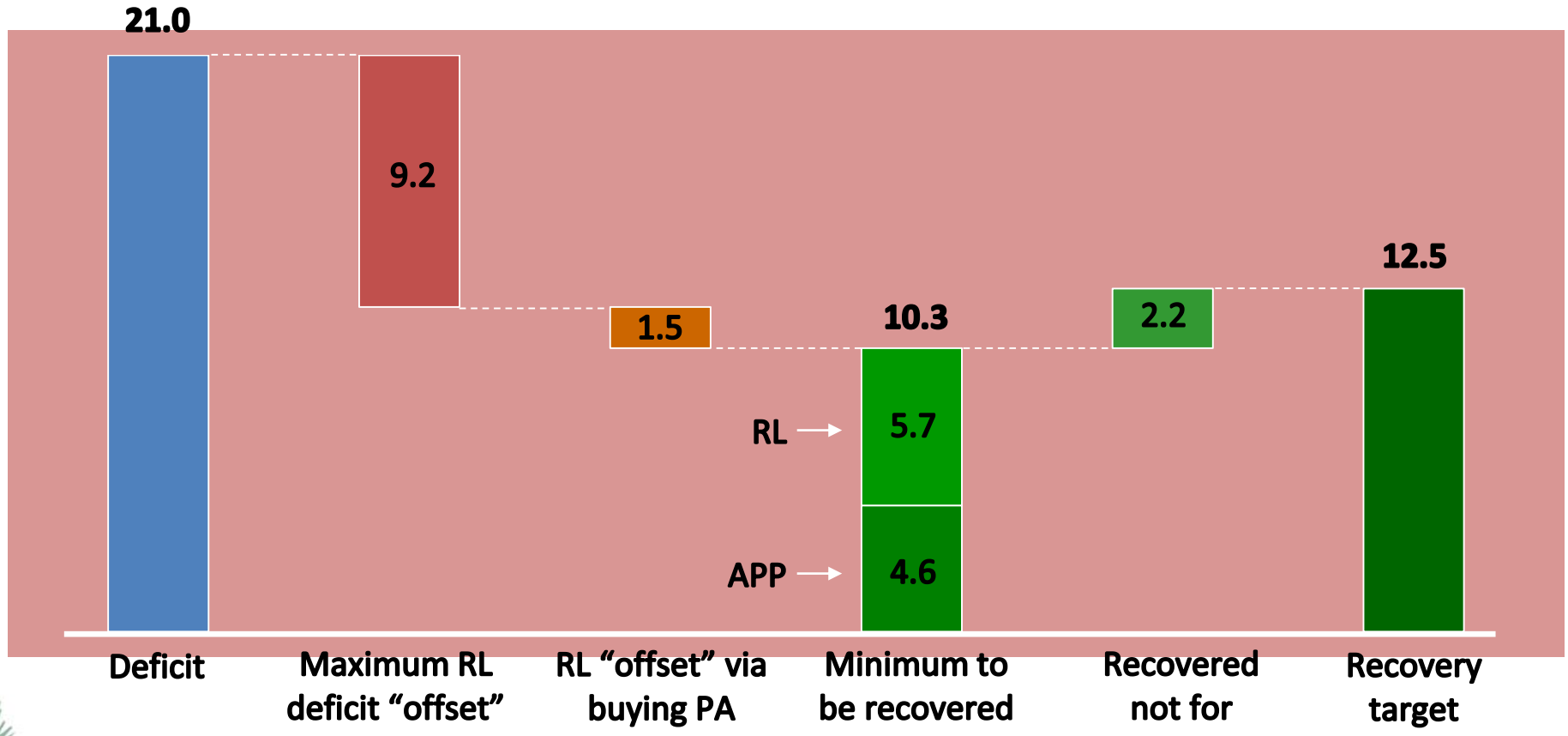
LR and RPA deficits per biome

Biome	LR deficit (ha)	RPA deficit (ha)
Amazon	7,200,000	899,200
Atlantic Forest	4,800,000	1,400,000
Cerrado	3,700,000	1,600,000
Caatinga	332,000	417,700
Pampas	287,300	213,800
Pantanal	37,700	42,200
Total	16,357,000	4,572,900

Source: Soares et al. Cracking Brazil's Forest Code. Science, vol 344, 25 April 2014.

Calculating the native vegetation recovery target

Million hectares



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Note: "RL" = legal reserve. "APP" = Permanent Protected Area. "PA" = Protected Area.

Source: Soares-Filho et al. (2013); Sparovek et al. (2014); MMA

CAR
CADASTRO AMBIENTAL RURAL

EXTRATO – GERAL

ÁREA PASSÍVEL DE CADASTRO (em hectares)	ÁREA TOTAL CADASTRADA (em hectares)	ÁREA CADASTRADA (em %)
397.836.864	268.863.661	67,58 %

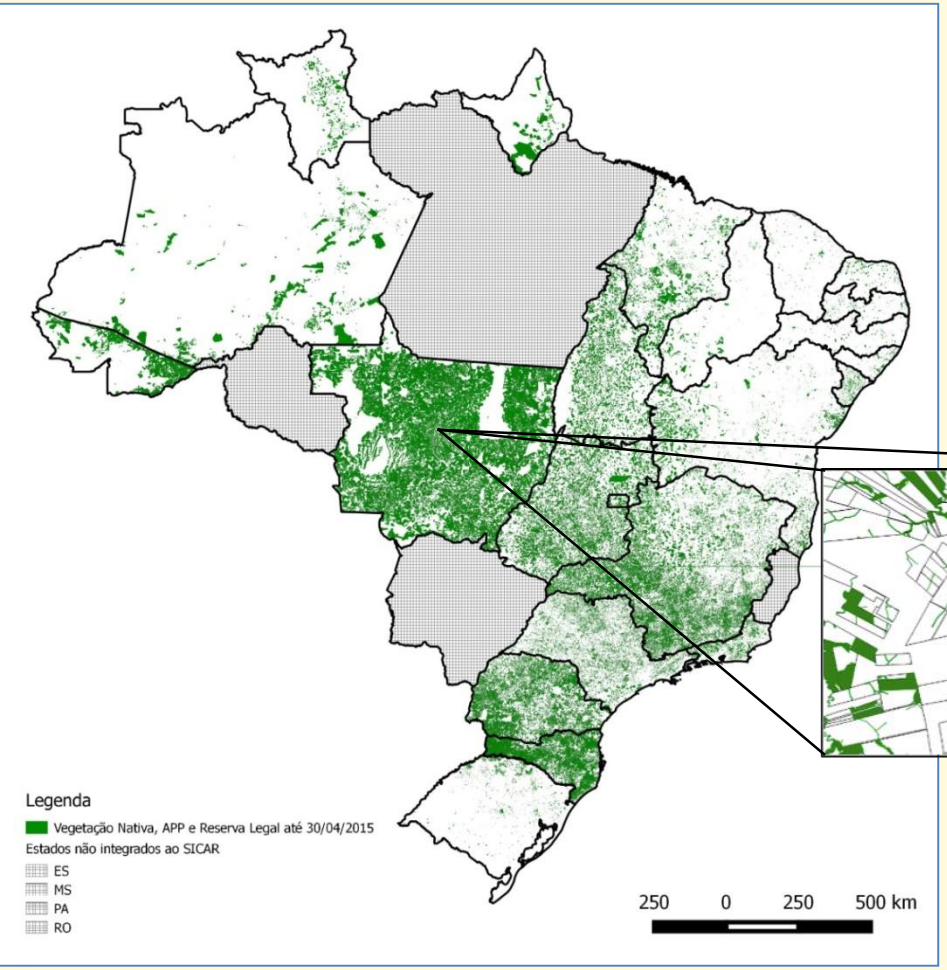
Número de Imóveis Cadastrados: 2.436.014

1. A área passível de cadastro é estimada com base no Censo Agropecuário IBGE 2006, e nas atualizações do Distrito Federal e dos estados do Amapá, Amazonas, Pará e Mato Grosso
2. A área total cadastrada corresponde à soma das áreas cadastradas no Sistema Nacional de Cadastro Ambiental Rural (Sicar) e nos sistemas estaduais do Pará, Espírito Santo, Mato Grosso do Sul, Rondônia e São Paulo, além das áreas cadastradas dos projetos de assentamentos do Incra
3. Percentual calculado com base na Área Passível de Cadastro

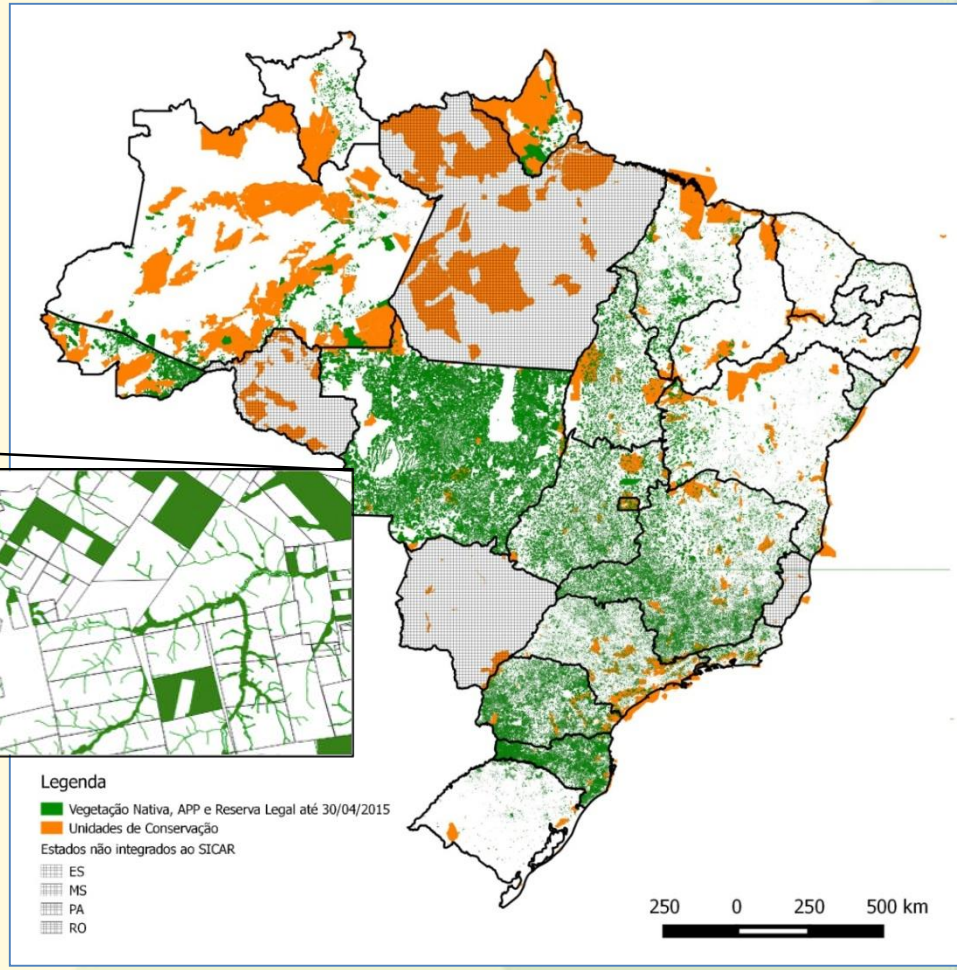
Incremento Mensal
6.050.164 hectares
105.620 imóveis

Incremento Mensal (área)
2,30%

Vegetação Nativa, APP e Reserva Legal Cadastrados



Vegetação Nativa, APP e Reserva Legal Cadastrados e Unidades de Conservação



EXTRATO – BRASIL

Perfil dos Imóveis Rurais Cadastrados[1]

Tamanho dos Imóveis - Em Hectares

Tamanho do Imóvel (ha)	Imóveis Cadastrados	Percentual
0 a 100 ha	879.274	85,62%
100 a 500 ha	105.071	10,23%
500 a 1.000 ha	19.148	1,86%
superior a 1.000 ha	23.511	2,29%

Tamanho dos Imóveis - Em Módulos

Tamanho do Imóvel (MF)	Imóveis Cadastrados	Percentual
0 a 4 MF	916.964	89,29%
4 e 15 MF	77.596	7,56%
superior a 15MF	32.444	3,16%

Solicitações de adesão ao Programa de Regularização Ambiental - PRA:

46,26%

Área Total dos Imóveis Cadastrados	Remanescentes de Vegetação Nativa	Reserva Legal[2]	Reserva Legal com Vegetação Nativa[3]	APP[4]	APP com Vegetação Nativa[5]
142.916.267 há	49.514.671 ha	28.946.741 ha	13.602.306 ha	6.345.655 ha	1.666.990 ha
100%	35%	20,25%	47%	4%	26%

[1] O extrato considera apenas os dados incluídos na base do SICAR, não considerando os dados de assentamentos do INCRA em fase de envio e os dados dos estados do Pará, Mato Grosso do Sul e Espírito Santo

[2] Os dados não consideram o estado de São Paulo e Paraná

[3] Os dados não consideram os estados de São Paulo, Bahia, Mato Grosso e Paraná

[4] Os dados não consideram os estados de Tocantins

[5] Os dados não consideram os estados de Minas Gerais, Bahia, Mato Grosso e São Paulo

Potential deficit in July was 21.1 millions of ha with 58,6 % of farms area registered in SICAR (16,4 RL + 4.7 APP)

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Development of a National Plan for Recovery of Native Vegetation ("Planaveg")

Vision

Recover native vegetation in permanent preservation areas, legal reserves, and low-productive lands on at least 12.5 Mha within 20 years

Ultimate goal: implementation of the LNVP - Law 12,651/2012

- Large-scale restoration
- restoration with economic rewards and social inclusion

Objectives of the Plan

Establish and strengthen the policies, incentives, practices, and other measures to:

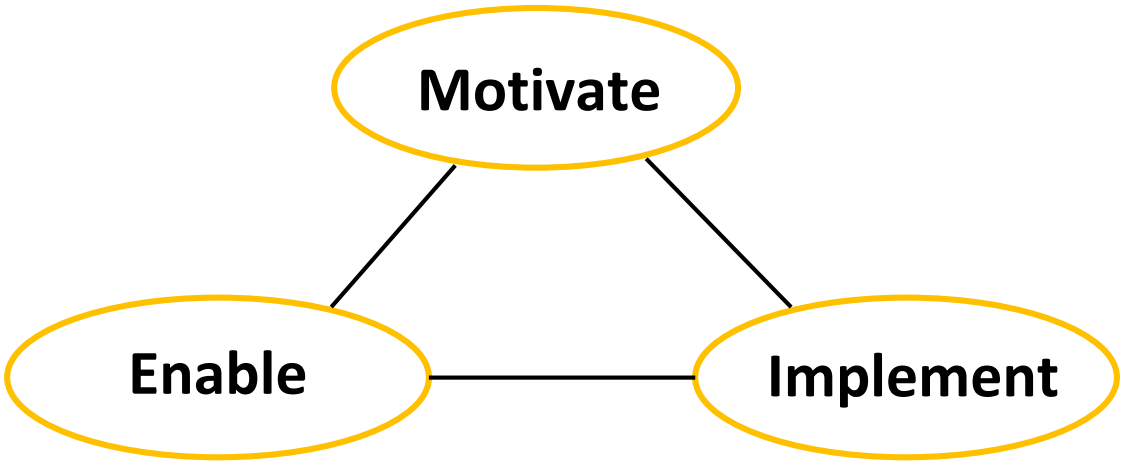
- Achieve large-scale recovery in a landscape management approach
  - For climate, water, and biodiversity
  - Ensure market access
  - Achieve compliance
- Reduce cost per hectare
  - Decrease upfront and transaction costs
  - Increase natural regeneration (where possible)
  - Increase access to “know how”
  - Increase economic benefits to landowners
- Enable economic benefits to landowners
- Contribute to REDD+ and CBD commitments

Benefits sought

- Native Vegetation Protection Law compliance
- Poverty eradication, not alleviation, and job creation
- Economic development for farmers
- Water security
- Climate security
- Biodiversity conservation
- Global leadership on sustainable development

Planaveg: 8 new strategies

1. Awareness



2. Seedlings
3. Markets
4. Institutions

5. Finance
6. Extension
7. Monitoring
8. Research

8 strategies

1. Awareness	Launch a multi-year ***communications movement*** targeting farmers, agribusiness, urban citizens, and opinion leaders to build awareness of what native vegetation restoration is, what its benefits are, and how to get involved
2. Seeds & seedlings	Create a ***value chain*** for native vegetation restoration by doubling nursery capacity and stream-lining policies to improve the quantity, quality, and affordability of native seeds and seedlings
3. Markets	Build robust markets from which landowners can ***earn revenue*** and improve livelihoods by means of the goods (e.g., wood, non-timber forest products) and services (e.g., watershed protection, carbon sequestration) generated by recovered native vegetation
4. Institutions	Clarify the roles and responsibilities among government agencies, companies, and civil society and ***align*** existing public policies to ensure they mutually support restoration of native vegetation

8 strategies

5. Finance	**Introduce *innovative financial mechanisms* designed to encourage the restoration of native vegetation (e.g., preferential loans, restoration funds, targeted tax exemptions, forest bonds)**
6. Rural extension	Expand rural extension services and capacity building (public and private) to equip landowners with the most advanced knowledge and ***low-cost methods*** for native vegetation restoration
7. Spatial planning & monitoring	Implement a ***pioneering national spatial planning and monitoring*** decision-support system to support the restoration of native vegetation
8. Research & development	Increase the ***scale and focus*** of investment in cutting-edge research and development to reduce the cost and ramp up the pace of native vegetation restoration

Each strategy has his own activities matrix

5 Finance: how to improve finance mechanisms to native vegetation recovery				
What	**Comments**	**Who ***	**Target***	**When**
1. Criação ou melhoria de linhas de crédito	• Linhas de crédito com melhores taxas, condições e prazos de pagamento do que os praticados no mercado Exemplos: requerimento simplificados, tornando-se mais atraentes e de fácil acesso para os proprietários de terras , etc.	• BNDES • Bancos Privados (e.x., Banco do Brasil, Caixa)	• 5 novas linhas de crédito	Até o 24º. mês
2. Criação de instrumentos de financiamento de longo prazo	• E. x.: Títulos Florestais	• BNDES • Capital Privado • Municípios	• 2 novos instrumentos	Até o 36º. mês
3. Criação de programas de concessão para ajudar a financiar os custos iniciais da recuperação	• E. x.: A "Iniciativa Brasileira de Recuperação de vegetação nativa" • Possíveis fontes de financiamento incluem doadores bilaterais e multilaterais internacionais, o BNDES, contribuições filantrópicas tradicionais e financiamento inovador na modalidade "crowd sourcing" (financiamento coletivo).	• Governo (MMA) • BNDES	• 1 Fundo Nacional • 5 Programas específicos por Bioma	Até o 24o. mês
4. Criação de incentivos fiscais para viabilizar a recuperação da vegetação nativa.	• E. x.: Deduções fiscais sobre "insumos" para a recuperação, "produtos, "serviços" e/ou "financiamento" (ex.: fundos que investem em recuperação)	• Governo (Ministério da Fazenda, MMA)	• Pelo menos 3 novos incentivos fiscais	Até o 24o. mês

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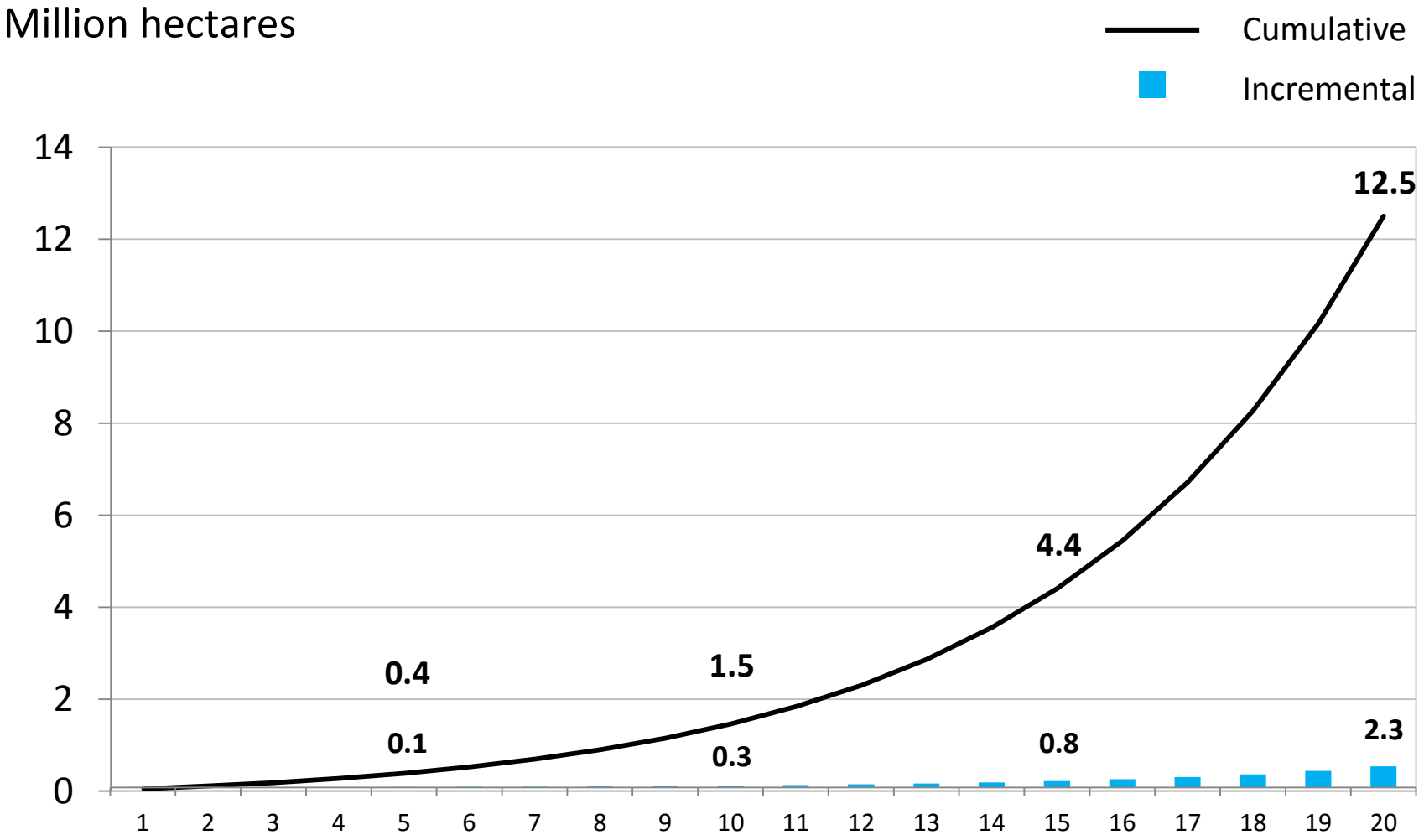
* Para serem refinadas no processo de discussão e consulta pública

The draft budget for implementing the 8 strategies is R$178 million during the Plan's first 5 years

Strategy	**Budget** (R$ million)
1. Awareness	50.2
2. Seeds & seedlings	23.0
3. Markets	2.0
4. Institutions	10.5
5. Finance	1.2
6. Rural extension	40.1
7. Spatial planning & monitoring	22.0
8. Research & development	28.5
Total	**177.5**

Progression toward target will likely ramp up over time as the Plan's strategies take effect



Source: MMA and Plan Working Group

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On-the-ground recovery approaches modeled

Approach	Description	Total cost (R$/ha)	Selected scenarios		
			A	B	C
1. Total planting	Plant wall-to-wall trees (1666 trees per hectare)	10,000	30%	20%	10%
2. High enrichment and densification	Do enrichment planting, filling in open areas in forests (800 trees per hectare)	5,000	15%	15%	15%
3. Low enrichment and densification	Do enrichment planting, filling in open areas (400 trees per hectare)	3,400	15%	15%	15%
4. Natural regeneration (fencing)	Fence area and control *Brachiaria spp.*	2,400	20%	25%	30%
5. Natural regeneration (abandoning)	Abandon marginal farmland	1,400	20%	25%	30%

Source: Cost estimates per hectare from USP-ESALQ, Pacto, Amata, and Symbiosis. Modeling conducted by Instituto Internacional para Sustentabilidade

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On-the-ground recovery scenario results (first 5 years)

Approach	Description	Selected scenarios over years 1-5 (million R$)		
		A	B	C
1. Total planting	Plant wall-to-wall trees (1666 trees per hectare)	1,170	780	390
2. High enrichment and densification	Do enrichment planting, filling in open areas in forests (800 trees per hectare)	293	293	293
3. Low enrichment and densification	Do enrichment planting, filling in open areas (400 trees per hectare)	199	199	199
4. Natural regeneration (fencing)	Fence area and control *Brachiaria spp.*	187	234	281
5. Natural regeneration (abandoning)	Abandon marginal farmland	109	137	164
Total (first 5 years)		**1,958**	**1,642**	**1,326**

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Source: Cost estimates per hectare from USP-ESALQ, Pacto, Amata, and Symbiosis. Modeling conducted by Instituto Internacional para Sustentabilidade

On-the-ground recovery costs (the money that flows through farmers hands to do restoration)

Approach	Description	Selected scenarios over years 1-5 (million R$)		
		A	B	C
1. Total planting	Plant wall-to-wall trees (1666 trees per hectare)	1,170	780	390
2. High enrichment and densification	Do enrichment planting, filling in open areas in forests (800 trees per hectare)	293	293	293
3. Low enrichment and densification	Do enrich… filling in open	199	199	199
4. Natu… (fe…			34	281
5. Nat… (aband…			137	164
Total (first 5 years)		**1,958**	**1,642**	**1,326**

- Farmers will implement least expensive options first
- Some natural regeneration is likely already occurring
- Cost/hectare will decline as Plan is rolled out over time
- Much of this consists of loans that will be repaid (thus not a net cost)
- If 50% of this is subsidized loans, net cost to government (for financing the subsidy) would be < R$ 100 million

Source: Cost estimates per hectare from USP-ESALQ, Pacto, Amata, and Symbiosis. Modeling conducted by Instituto Internacional para Sustentabilidade

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Work plan
PLANAVEG 2.0

- **Incorporating the suggestions from public consultation process**

- **Review and breaking down restoration target**

Restoration target by biogeographic region (ha)	
Amazônia	4.786.132
Caatinga	464.103
Cerrado	2.098.988
Mata Atlântica	4.726.946
Pampas	263.884
Pantanal	50.168
TOTAL	**12.390.220**

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Work plan
PLANAVEG 2.0

- Review the recover scenarios by biogeographic region based on costs and methods => which is the best recover model for this landscape ?

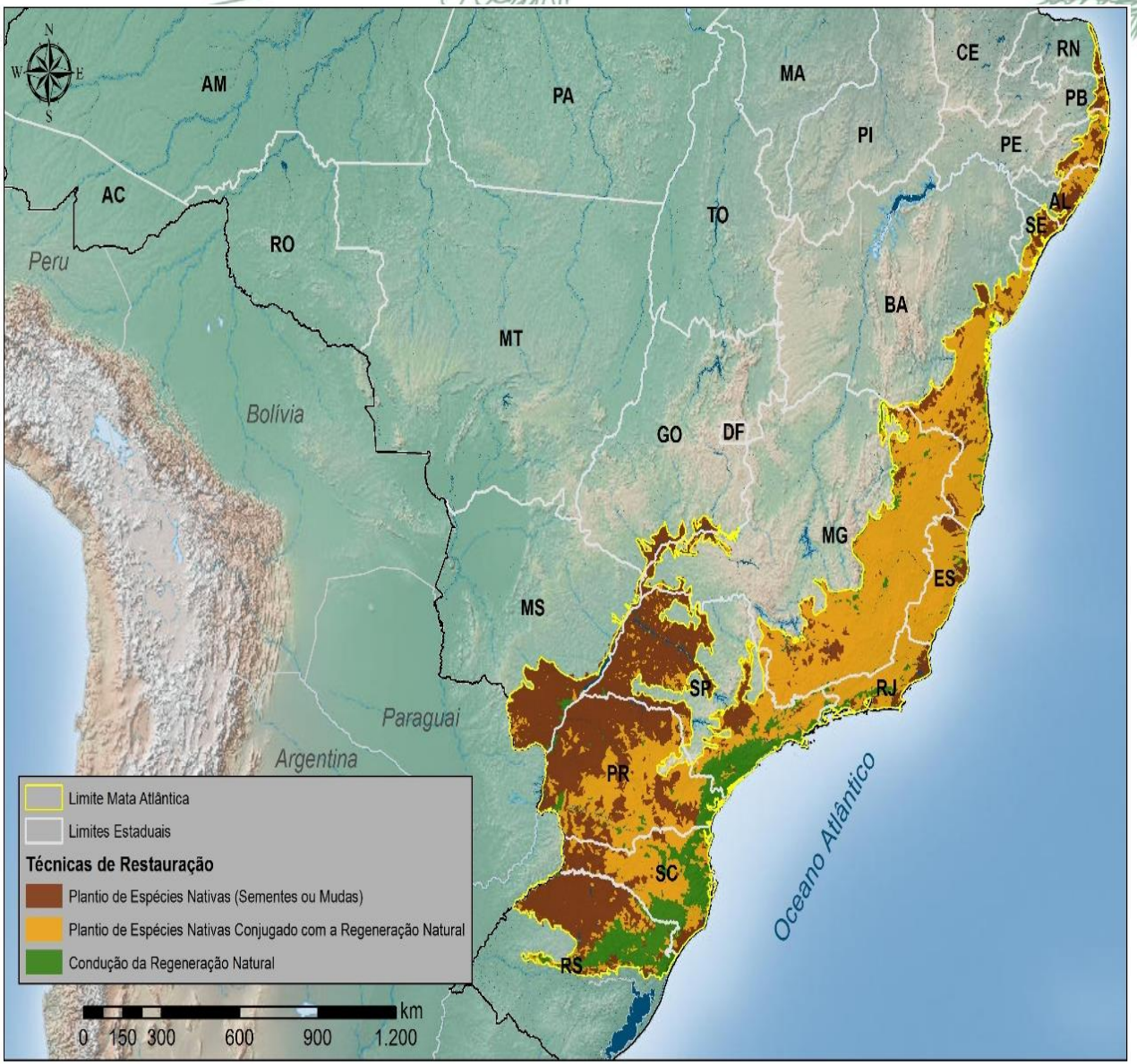
- Create an base line for areas under recovery/restoration in Brazil using remote sensing data and surveys

- Define priority areas for vegetation recovery based on available data for biodiversity, ecosystem services and social-economical data

- Improve cost-benefit analysis

- Support the Native Vegetation Protection Law implementation: guidelines for state regulations (PRA); CRA federal ruling

Atlantic Forest
Main Classes



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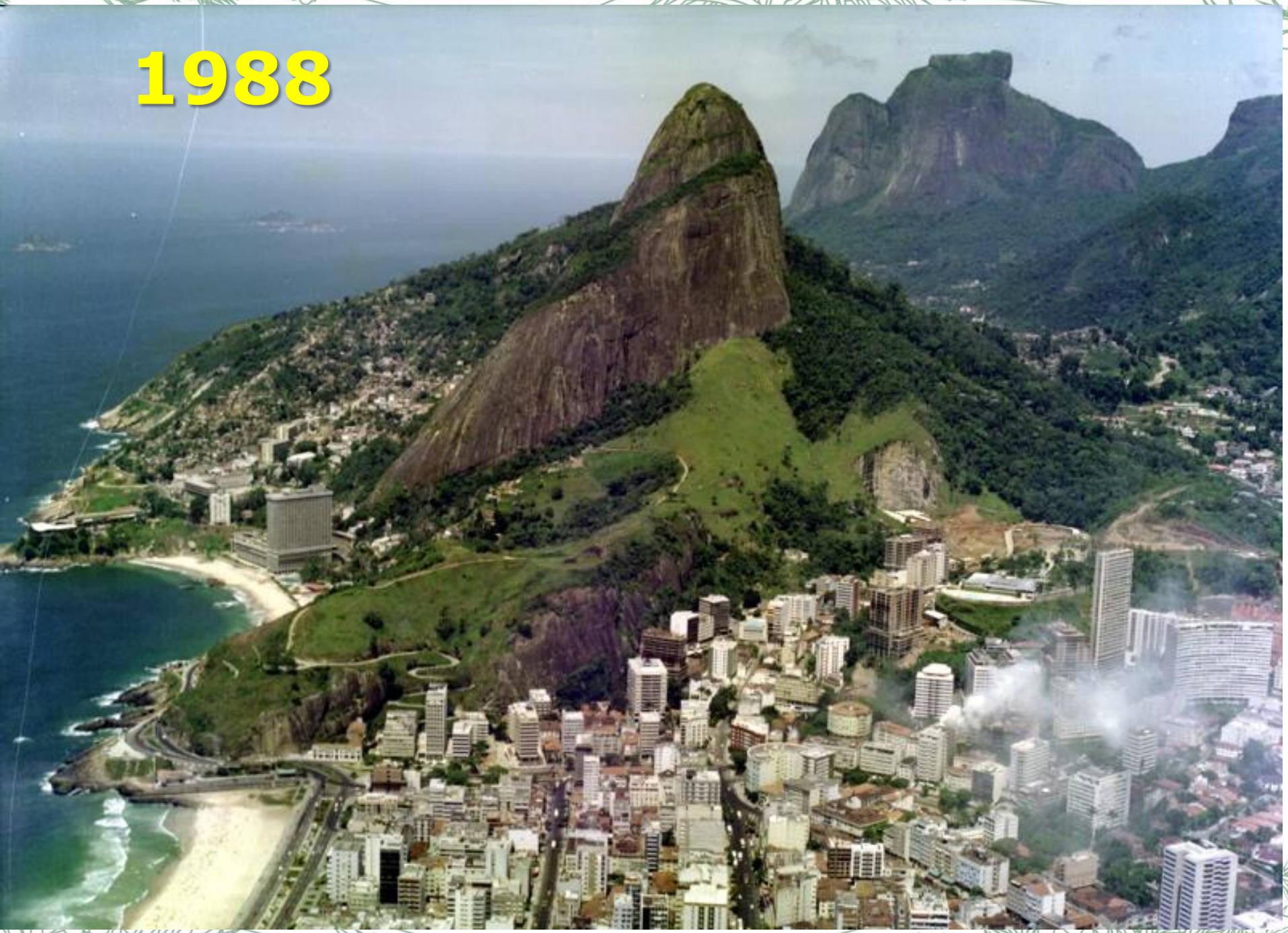
Potential for natural regeneration in Brazil (preliminary results)

Biome	natural or assisted regeneration (% area)	assisted regeneration associated with native species planting (% area)	native species planting (% area)
Mata Atlântica	10,9	50,7	38,4
Cerrado	36,9	47	16,1
Amazônia	96	3,1	0,9
Pantanal	70,1	19,3	10,6
Pampa	31,9	47,1	21
Caatinga	-	-	-


1988

2008

Brazilian INDC has a 12 million ha reforestation target including native forest recovery

Questões ? Obrigado !

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