Investment Plan - Brazil

Forest Investment Program

Washington, May 2012

Investment Plan - Brazil

- FIP National Focal Coordinator: Ministry of Finance
- Participants:
  - Ministry of Environment
  - Ministry of Science, Technology and Innovation;
  - Ministry of Agriculture

- MDBs involved:
  - International Bank for Reconstruction and Development (IBRD)
  - Inter-American Development Bank (IDB)
  - International Finance Corporation (IFC)

Outline

1. The National Climate Change Policy:

   Instruments and FIP Scope

2. The Cerrado biome: overview and challenges

3. Bridging the gap: FIP Brazil Investment Plan

National Climate Change Policy

- **2009 Climate Change National Law approved by Congress**

  - **target of 36.1% to 38.9%** of the country's projected emissions by 2020 = reduction of 1,2 G Ton CO_2 in 2020

- **Instruments**

  - **National Climate Change Plan**

  - **Set of sectorial programs and plans**

- Renewable energy and low carbon agriculture

- **Some specific targets**

  - 80 % reduction on deforestation in Amazon

  - 40 % reduction on deforestation in Cerrado

National Climate Change Policy

National Law

Policy Instruments

PPCDAm	PPCerrado	ABC Plan	Iron & Steel	Energy	Others
Prevent deforestation and conserve the Amazon	Prevent deforestation and conserve the Amazon	Low Carbon Agriculture	Sustainable Charcoal	Renewable Energy	

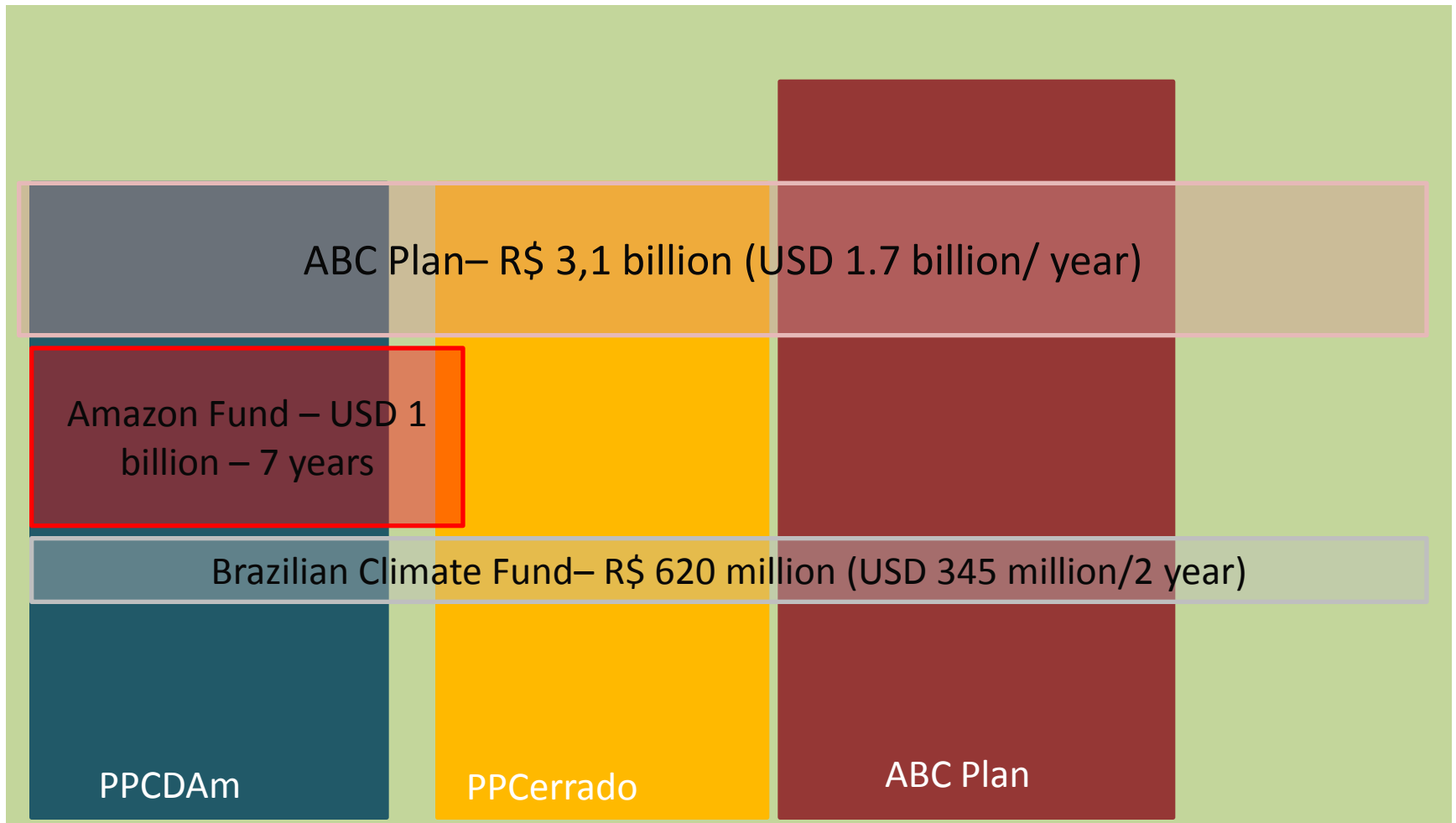# National Climate Change Policy

National Plans and finance

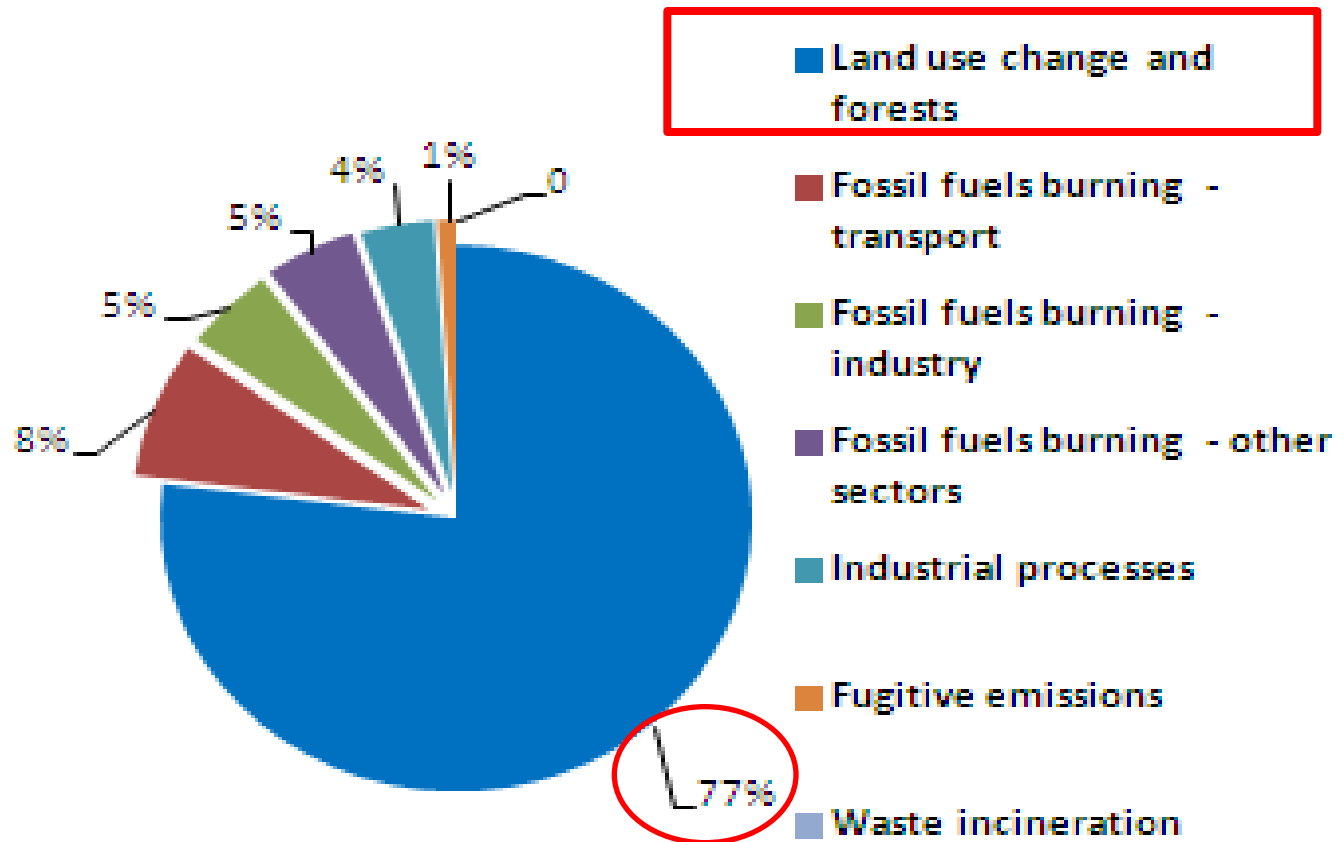ABC Plan– R$ 3,1 billion (USD 1.7 billion/ year)

Amazon Fund – USD 1 billion – 7 years

Brazilian Climate Fund– R$ 620 million (USD 345 million/2 year)

PPCDAm

PPCerrado

ABC Plan

National Climate Change Policy

National Plans and finance

Escope of FIP Investment Plan

ABC Plan– R$ 3,1 billion (USD 1.7 billion/year)

Amazon Fund – USD 1 billion – 7 years

Brazilian Climate Fund– R$ 620 million (USD 345 million/2 year)

FIP – US$ 50-70 million

PPCDAm

PPCerrado

ABC Plan
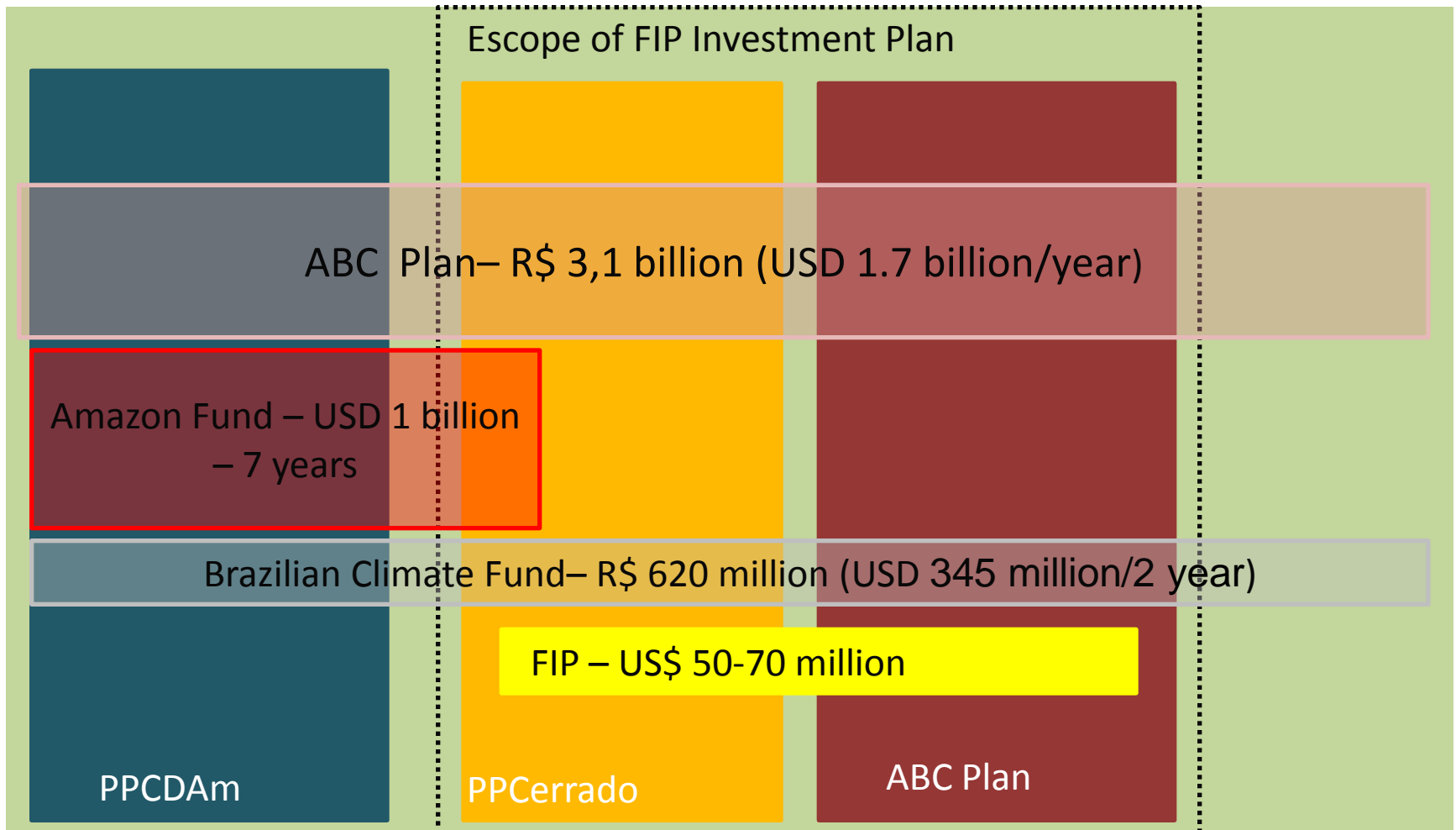
Brazil - CO$_2$ emissions by sector -2005

Legend:
- Land use change and forests
- Fossil fuels burning - transport
- Fossil fuels burning - industry
- Fossil fuels burning - other sectors
- Industrial processes
- Fugitive emissions
- Waste incineration

Percentages: 77%, 8%, 5%, 5%, 4%, 1%, 0

Source: Adapted from MCT, 2010a. Second Brazil National Communication to the UN Framework Convention on Climate Change. Brasília: MCT –General Coordination on Global Climate Change.

Brazil Biomes

AMAZÔNIA
4.2 million km^2
49%

CAATINGA

CERRADO
2.0 million km^2
24%

PANTANAL

MATA ATLÂNTICA

PAMPA

Deforestation rates in the Brazilian Amazon compared with GDP

Deforestation downward trend
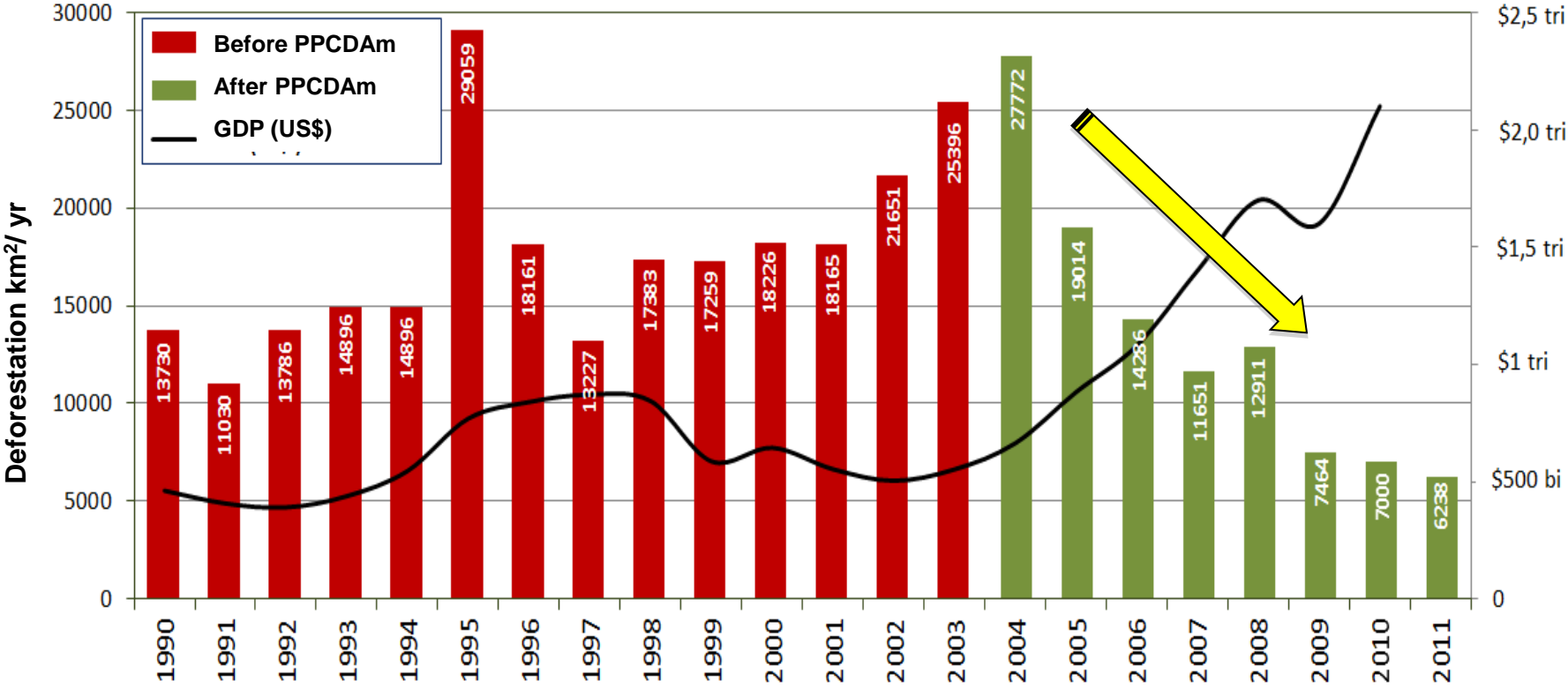
Deforestation rates in the Cerrado

- Deforestation in the Cerrado is more severe than in Amazonia.

- **Main driver= agricultural expansion**

- 2002-2008 deforestation (% of the area of the biome)
  - Amazon = 3.2%
  - Cerrado = 4.1%

- Remaining original forested

area:
  - Amazon = 82%
  - Cerrado = 52%

Remaining Cerrado

Total deforestation by 2008 = 48.2%
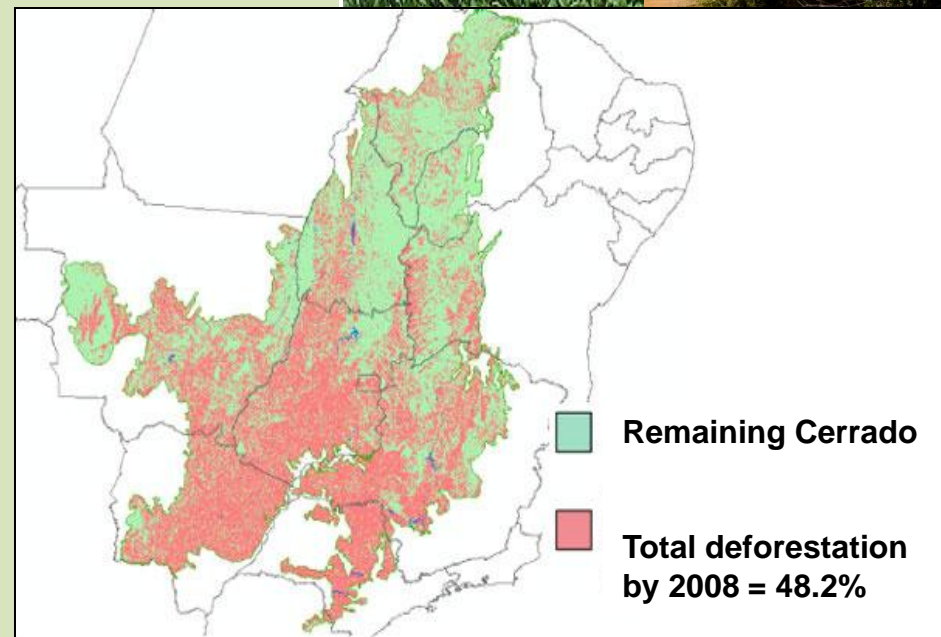
Ecological aspects and carbon allocation

Seasonal distribution
of rainfall
Wet season = 90% of
annual precipitation

Soils =
Low fertility
Very deep

Occurrence of
natural fires

Conservation of C and
nutrients = Slow decay of
organic matter

Plants – high allocation in
belowground biomass
Root/Shoot ratio = ~ 2.6 - 7.7

Total stock of C in a typical cerrado

Vegetation + soil (up to 1 m depth)= 265.0 Mg C ha^{-1}

28.5 MgC ha^{-1}
10.8%

42.5 MgC ha^{-1}
16%

- Woody biomass

- Herbaceous biomass

Soil carbon and root systems = significant Carbon stocks!

- Soil organic matter

185 MgC ha^{-1}
69,8%
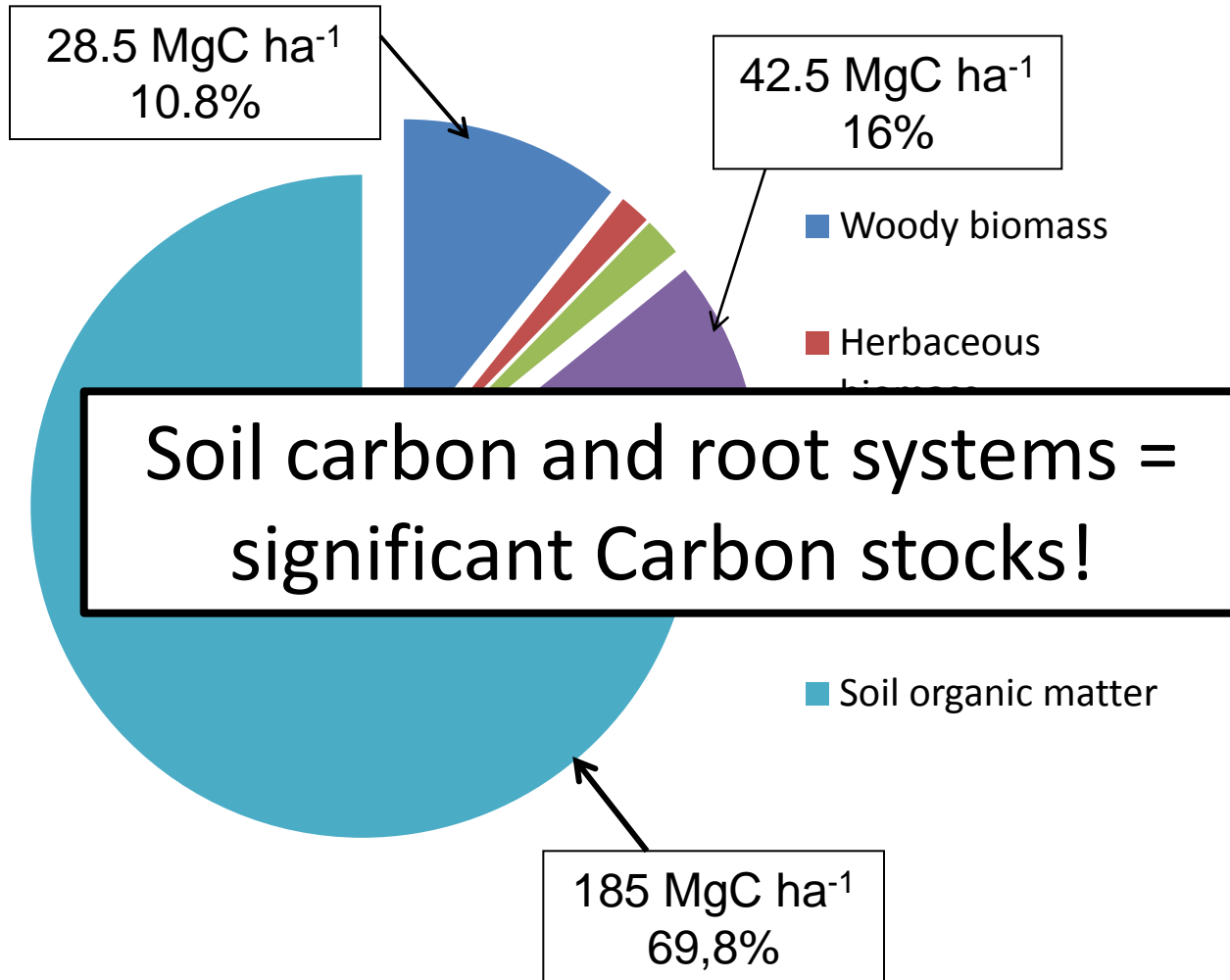
Cerrado land tenure:
The need to involve the private sector

50% already converted

~ 8% of the Cerrado in legally-protected conservation areas.
4.4% Indigenous land

Contains 1.3 million privately-run rural holdings or settlements

Land ownership in the Cerrado is predominantly private

Highest mean area of rural property in Brazil

Allocation of carbon stocks – <u>Post conversion management</u> plays a determining role in carbon emissions

Forest areas in rural holdings are essential to connect protected areas and for conservation of natural resources

Cerrado land tenure:
The need to involve the private sector

- A landscape strategy involving public protected and rural properties allows the insertion of new stakeholders (landholders) and is most effective for climate protection, conservation of natural resources and biodiversity.
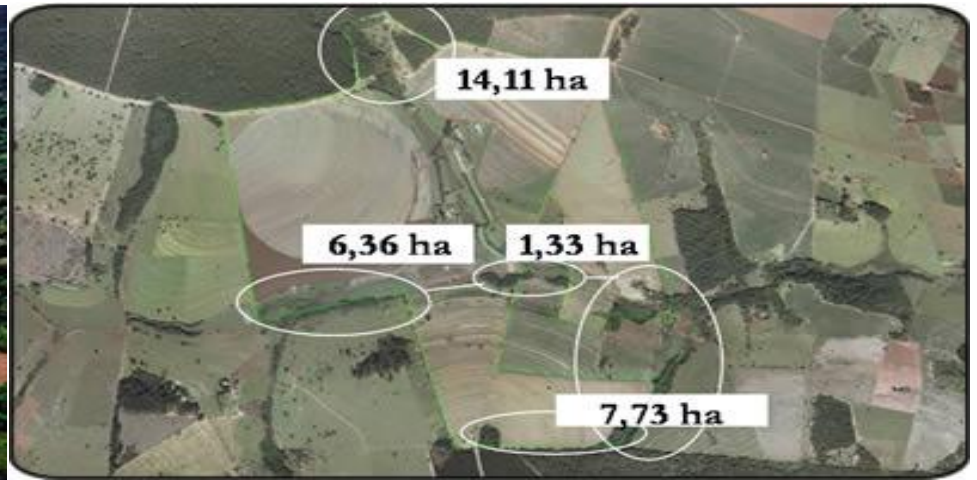
Forest cover in rural landholdings

Forestry legislation required for Cerrado:

Legal Reserve (RL).

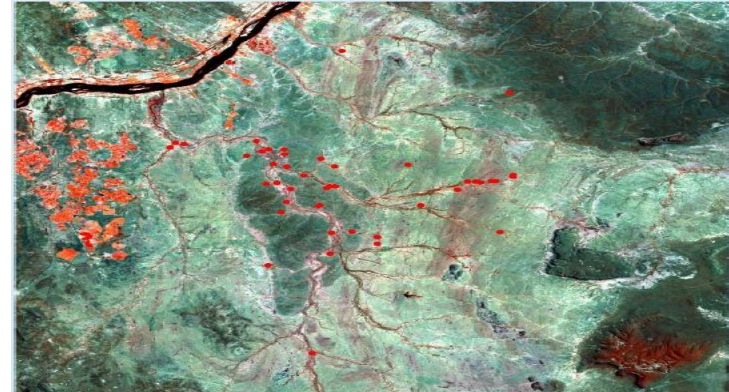- **20-35%** of the private landholding area with **native vegetation** cover

    AND

- **Areas of Permanent Preservation (APPs)**

  - Landholders **must protect the natural vegetation in areas =>**

    - Avoid risk of erosion

    - Protect headwaters and water bodies

- **Official authorization to convert forests outside RL and APPs**

  - Within % permitted by law and **mandatory**

Cerrado
much more than Carbon...

Biodiversity Hotspot

Richest savanna in the world
- high levels of endemism

Three regional centers of biodiversity:
1. Southeastern Cerrado,
2. Northeastern Cerrado
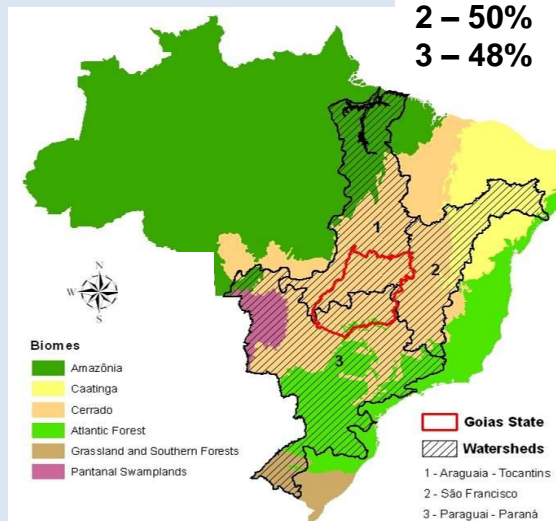3. Central Cerrado

Water resources

Headwaters of important hydrological basins = water supply for millions of people:
- 1. Araguaia- Tocantins
- 2. São Francisco
- 3. Paraná

1 – 78%
2 – 50%
3 – 48%

Biomes
- Amazônia
- Caatinga
- Cerrado
- Atlantic Forest
- Grassland and Southern Forests
- Pantanal Swamplands

Goias State
Watersheds
1 - Araguaia - Tocantins
2 - São Francisco
3 - Paraguai - Paraná

Social diversity

38 indigenous groups

Quilombolas – communities of descendants of former African slaves.

Traditional rural communities
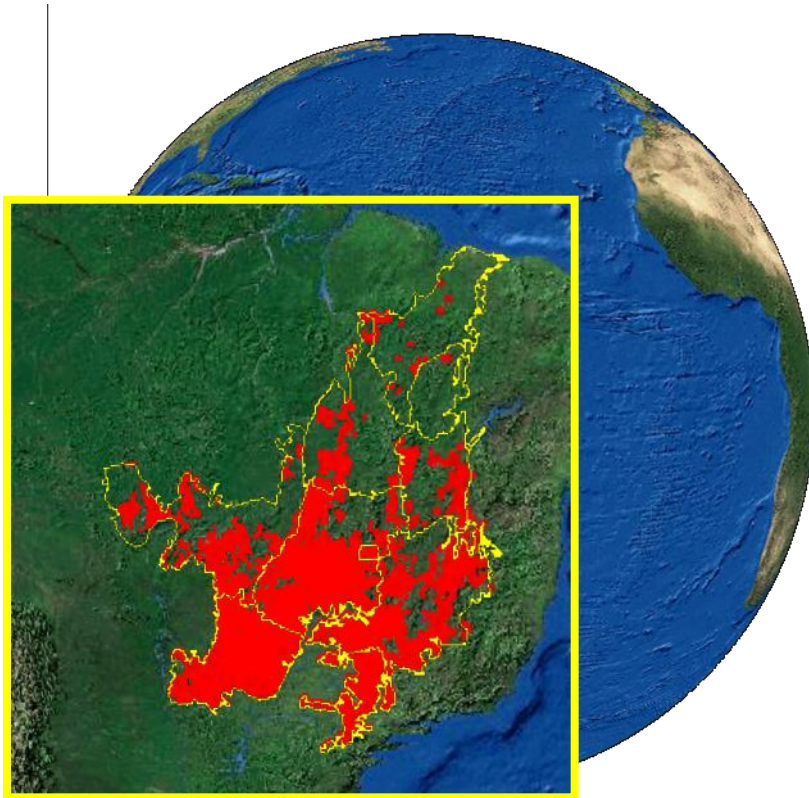
Fires in Brazil

- Between 5% and 9% of the global burned areas occurs in South America

- Brazil concentrates 63% of the total fires

- ~70% of burned areas in Brazil occurs in the Cerrado

- Rapid occupation of the Cerrado region = changes in natural fire regime (season and frequency of burning)
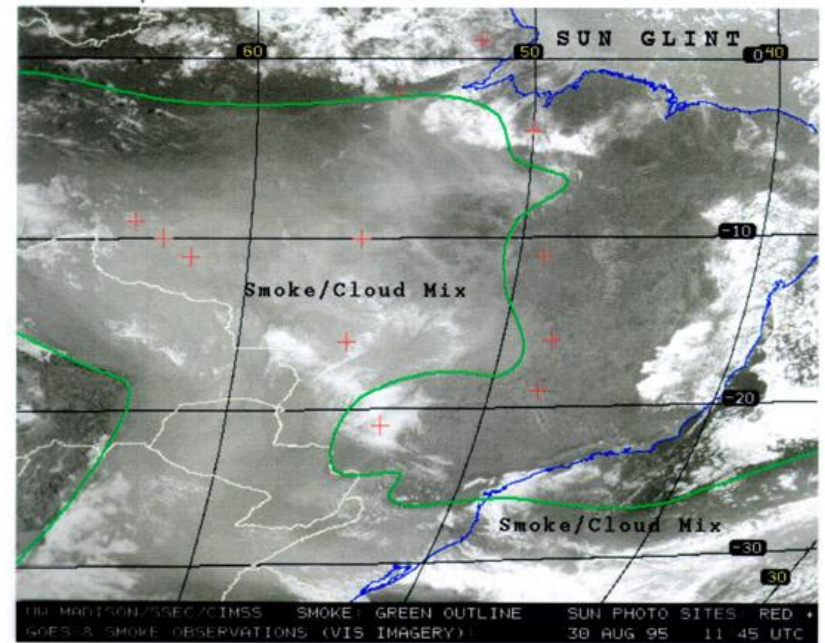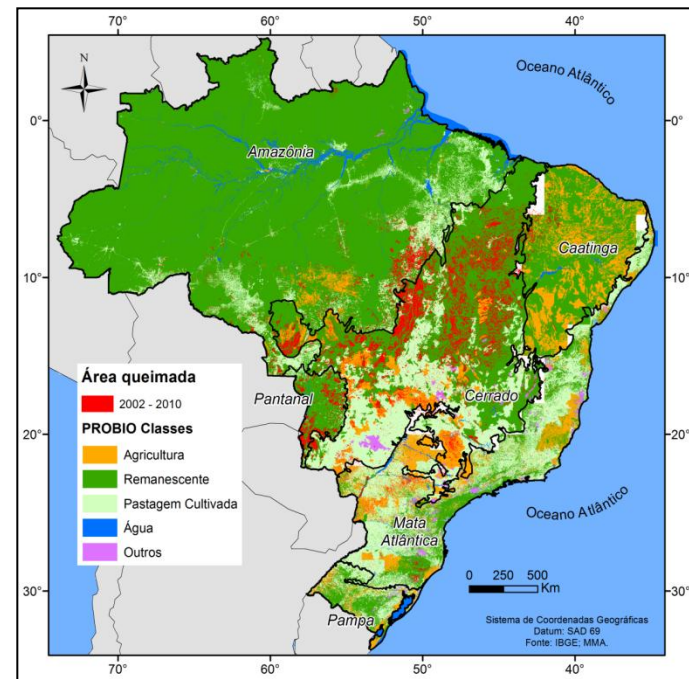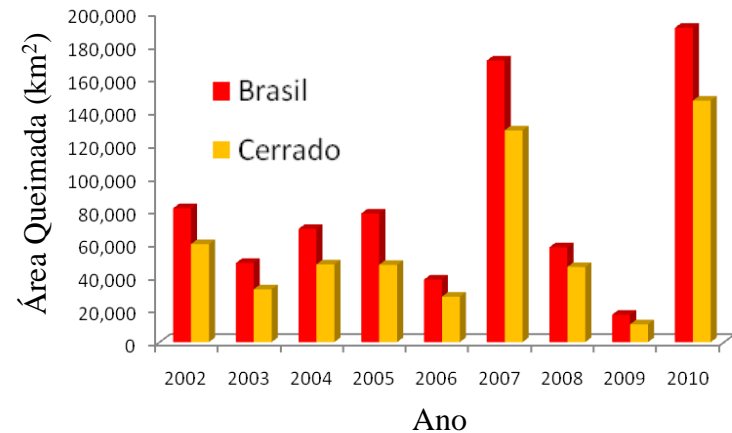

SCAR-B, 1995
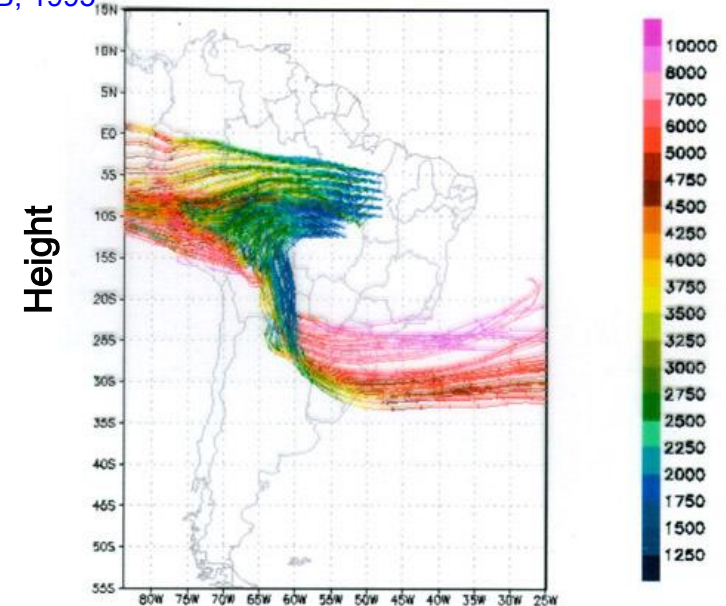
Freitas Longo and Silva Dias, 1996

Fires in Cerrado

Distribution of the total area burned (2002-2010) according to the classes of land use and natural vegetation cover

✓ Cerrado biome is adapted to fire, and in some ways dependent on its occurrence.

✓ But… the majority of natural vegetation areas that are burned (~ 82%) are related to the opening of new grazing and agriculture areas.

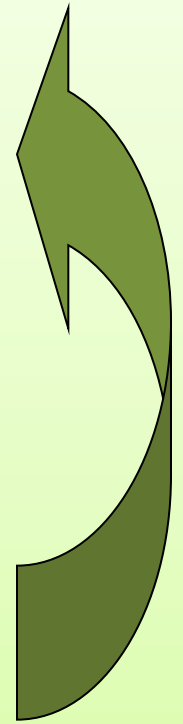# Changes in the Cerrado region: a two-way road…

Agriculture activities +

increase in fire frequency

Direct impact of greenhouse gas emissions

Climate change

Changes in temperature and water availability

Coordination of policies

1. COORDINATION OF POLICIES = AGRICULTURE +   ENVIRONMENT

2. DEMAND FOR INFORMATION AND APPROPRIATE TECHNOLOGIES

**Multifunctional systems and diversification
of the landscapes**

Reality facing the Cerrado over the coming decades…

- = <u>a set of competing land uses</u>.

- Pressures to provide more people with food, fuel, and fiber.

- Interactions between local and global environmental changes

Regional Needs

- Dynamics of land cover and use - monitoring
- Impacts and strategies of landscape planning and zoning
- Inventories of vegetation / biodiversity and economic evaluation
- Models of restoration of degraded ecosystems
- Dissemination of sustainable technologies
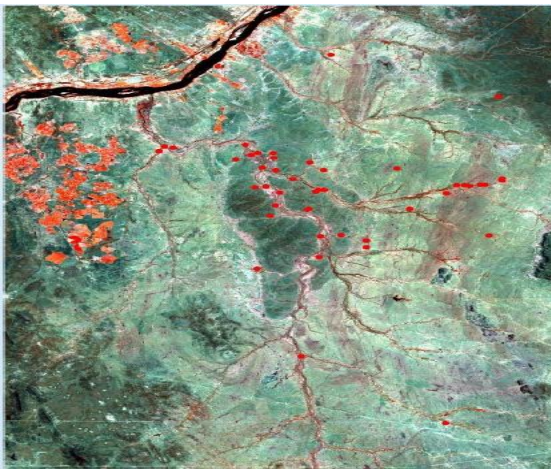
- The IP targets mainly the following FIP investment areas:

  1. *Investments outside the forest sector necessary to reduce the pressure on forests;*

  2. *Institutional capacity, forest management and information.*

  As a complementary measure, also targets:
 3. *Mitigation actions related to forests*
  Encouraging the restoration of Legal Reserves (LRs) and Permanent Preservation Areas (PPAs) in private landholdings.

> Coordination of initiatives between federal government, states and municipalities

INVOLVING AND CONSULTING STAKEHOLDERS

- May of 2011 - March of 2012
- Information Sharing Sections and Public Consultations
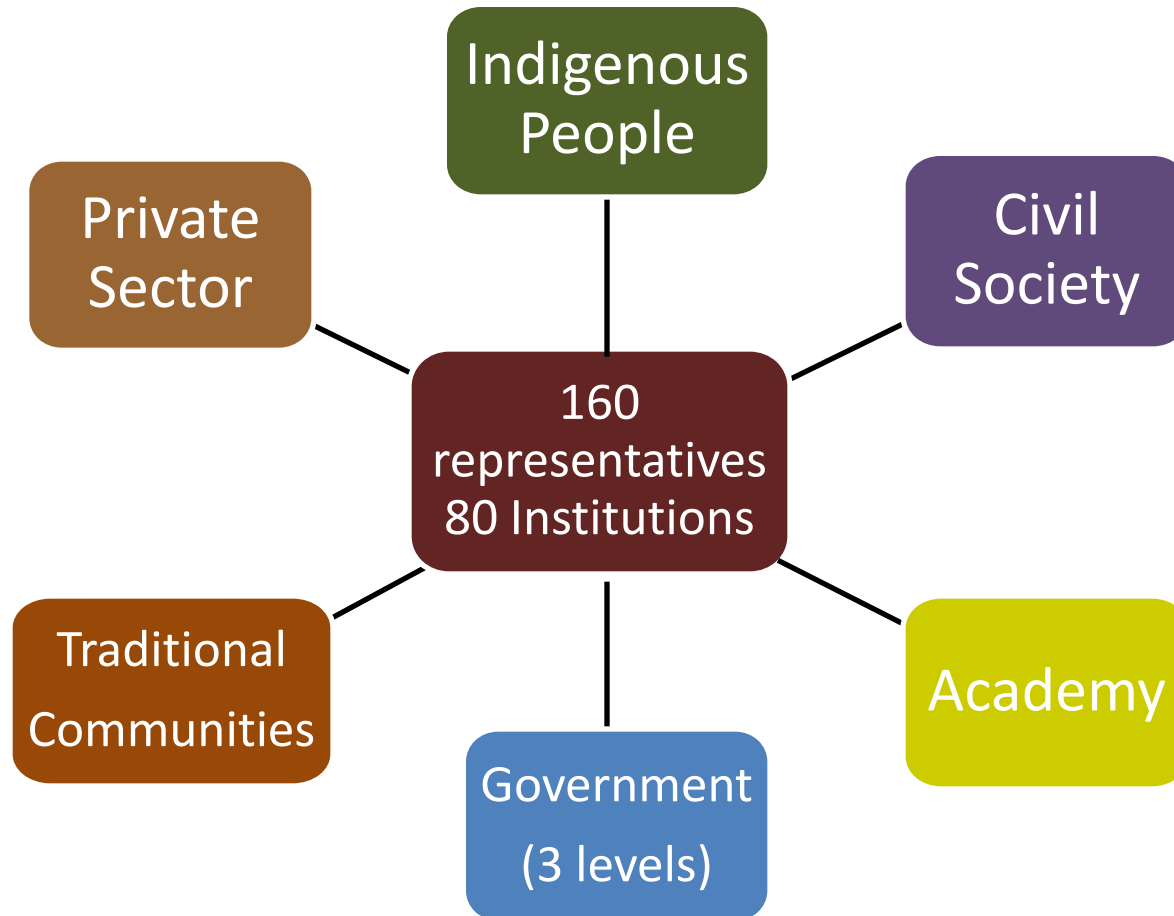
PUBLIC CONSULTATION

Internet:

- 40 days (25th January – 5th March)
- 79 records; 19 contributions

Participatory Public Consultation

- 100 representatives invited
- Proportion among sectors
- Strong/weak points, gaps of the Plan

2nd Version of the Plan and Letter to Society

Specific meetings with underrepresented sectors

Participatory Public Consultation with Gender approach

Results - public consultation

- Wide consensus about the focus on the Cerrado

- Synergies among the proposed activities

- Important contributions to improve IP and projects

INTERVENTION STRATEGY

Management and use of previously anthropized areas	Production and Management of Forest Information
Improvement on access by producers to technologies + resources available Implementation of the Rural Environmental Cadastre in the entire biome:	Generation and availability of spatially and temporally consistent environmental information = forest inventory, remote sensing monitoring and early-warning system for forest fires:

Project 1.1- Environmental regularization of rural lands (based upon the CAR)	**Project 1.2- Sustainable production in areas previously converted to agricultural use (based upon the ABC Plan)**	**Project 2.1- Forest information to support public and private sectors in managing initiatives focused on conservation and valorization of forest resources**	**Project 2.2- Implementation of:** **- early-warning system for preventing forest fires** **- a system for monitoring the vegetation cover**

Rural Environmental Cadastre (CAR)

- Electronic register of rural landholdings
  - maintained by an official environmental entity
  - monitoring, supervising, controlling, planning and ensuring the environmental compliance of landholdings.

- Geo-referenced details of the total area of individual farms
  - alternative land use
  - Areas of Permanent Preservation (APPs)
  - Legal Reserves (RLs)
  - specific areas under restoration

Project 1.1- Environmental regularization of rural lands – CAR implementation

Components

Implementation of the rural environmental regularization system =>Cerrado's 11 states

- Technical, legal and financial assistance
- Purchase equipment and materials
- Training of stakeholders:
- municipalities, producer's and their representative entities, NGOs, technical assistance providers, and others

Registration of rural landholdings in 52 priority municipalities

- Support the registration of rural properties:
  - high percentage of degraded or deforested APPs and RLs
  - micro-watershed basins undergoing rapid deforestation
  - surrounding of Indigenous Territories and Protected Areas

Project 1.1- Environmental regularization of rural lands CAR implementation

Transformational Effects

- Producers enabled to access financial and technical resources from ABC Plan and credit lines

- Improved compliance with environmental legislation

- Development of a national rural environmental regularization system

ABC Plan - Low Carbon Emission Agriculture

- Ensure continued improvement of sustainable management and use of natural resources by the agricultural sector

  Reduce GHG emissions and increase CO_2 sequestration on soil and vegetation cover => 173 million of tons CO_2 in 2020

- ABC Plan have a special credit line

  – rural producers => adoption good agronomic practices =>

  – changing models of production to more sustainable agriculture

ABC – mitigation/adaptation options

- ABC Plan - Brazil
  - 7 Sub-programmes:
    - 6 mitigation practices and 1 adaptation to climate change

ABC Plan technologies	Agriculture objective to 2020	
	Area (million ha)	Million CO_2 eq/year
1. Recovery of degraded pasture land	15.0	104.0
2. Crop-livestock-forest integration	4.0	22.0
3. No-tillage planting	8.0	20.0
4. Biological nitrogen uptake	5.5	10.0
5. Planting of commercial forests	3.0	10.0
6. Treatment of animal waste		7.0

Project 1.2- Sustainable production in areas previously converted to agricultural use – leverage ABC Plan implementation

Components

ABC Plan – dissemination and capacity building	campaigns, training courses, technical events, capacity biulding on ABC Plan modus operandi, requirements and procedures
Support to services providers and inputs	train professionals, technical staff and other practitioners involved in agricultural production
Increase access to credit	to upgrade and establish appropriate mechanisms, protocols, procedures and instruments to facilitate farmers' access to the ABC credit line

Project 1.2- Sustainable production in areas previously converted to agricultural use - leverage ABC Plan implementation
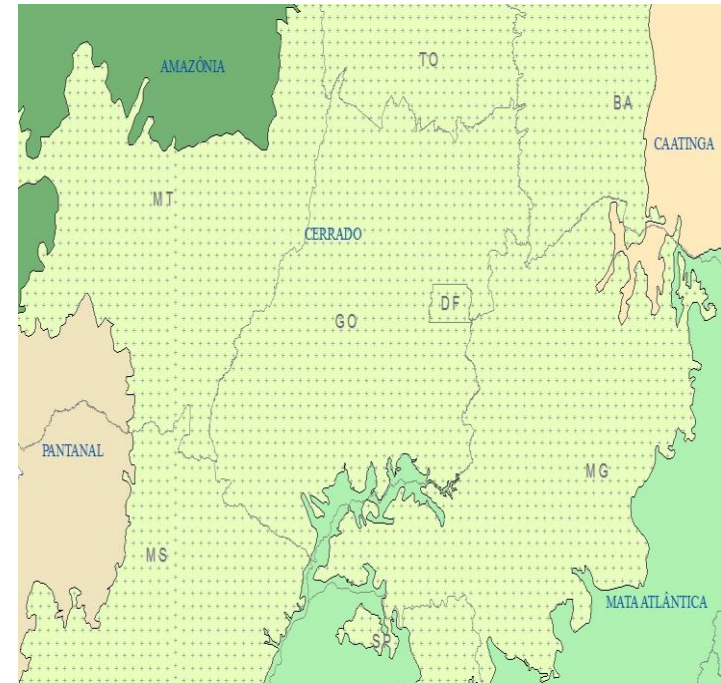
Transformational Effects

- Generate the conditions for landowners to access the technical and financial support provided under the ABC Plan and from other sources

- Land use in a more sustainable manner as well as protection of the environment

- Leverage the consolidation of a low carbon agriculture – deviation from BAU with emissions reductions

- Encourage producers and rural communities to play a positive role in deforestation reduction

National Forest Inventory
National Forest Information System

- Collection and assembling of biophysical and socio-environmental data

- ~ 5,000 sample points in the territory

- Analyses of landscape samples for the study of forest fragmentation and land use

- Combination of this dataset with vegetation mapping to produce regional-wide results.

National Forest System

www.florestal.gov.br/snif

To strength NFIS in national themes and issues & To establish modules for promoting trade and opportunities for the private sector and communities in Cerrado

Project 2.1- Forest information to support public and private sectors in managing initiatives focused on conservation and valorization of forest resources

Components

Implementation of the National Forest Inventory in the Cerrado Biome	• Forest information => enable understanding of forest fragmentation and land use • Improve quality of analysis => • NFI dataset + vegetation mapping
Consolidation of the National Forest Information System	• Integrate the Cerrado states and link their information systems to the NFIS Portal • Set up specific modules for evaluating ecosystem services

Project 2.1- Forest information to support public and private sectors in managing initiatives focused on conservation and valorization of forest resources

Transformational Effects

- Improvement of estimates of biomass and carbon density above and below ground derived from primary data on vegetation;

- Availability of spatial information about forest resources to meet local needs;

- Increased investment by the private sector resulting from valorization of the forest resources;

- Updated and relevant information for decision making by public and private sectors;

- Replication potential of methodology in other similar biomes;

Production and Management of Forest Information

- Combination of major satellite and surface-based systems for environmental observations
- Long-term Observing Programs
- An Effective Process to Transition R & D into Operational Systems
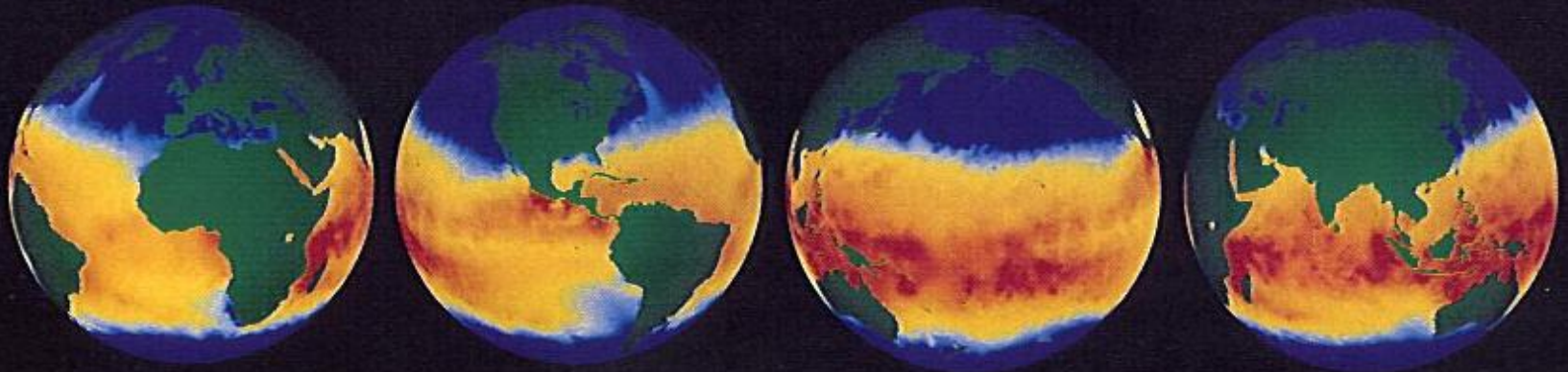
Remote sensing monitoring of vegetation cover

- MRV of GHG emissions require monitoring strategies at different spatial and temporal scales.

- Data integration at the biomes scale is possible only with the use of remote sensing tools.

- Since 1988, Amazon - Brazil:
  - annual deforestation data with the PRODES system
  - near real-time alerts for rapid control intervention actions (DETER system)

Preventing forest fires…

The increased frequency of fires:

- **Degradation**
- **Reduction of resilience to natural disturbances**

In addition, forest fires are very serious natural disasters with social and economic impacts.

Global biomass burning between the years 2008 and 2009. Source: NASA (based on Aqua and Terra sensors).

Project 2.2- Implementation of an early-warning system for preventing forest fires and a system for monitoring the vegetation cover

Components

Implementation of an early-warning system for the prevention of forest fires	• Production and dissemination of information to guide fire prevention and fighting activities • Dissemination and training in the use of information related to fire alert systems
Implementation of a system for monitoring the Cerrado vegetation cover	• Protocols to monitor vegetation cover and land use in the Cerrado, Caatinga and Pantanal biomes. • Periodical measurements of changes in vegetation coverage and land use • Dissemination of the results for the information of stakeholders

Project 2.2- Implementation of an early-warning system for preventing forest fires and a system for monitoring the vegetation cover

Transformational Effects

Availability of timely and good quality information linked to the forest inventory - measures of deforestation, forest degradation, improved GHG emissions data

Reduction of human, environmental and material losses resulting from uncontrolled fires
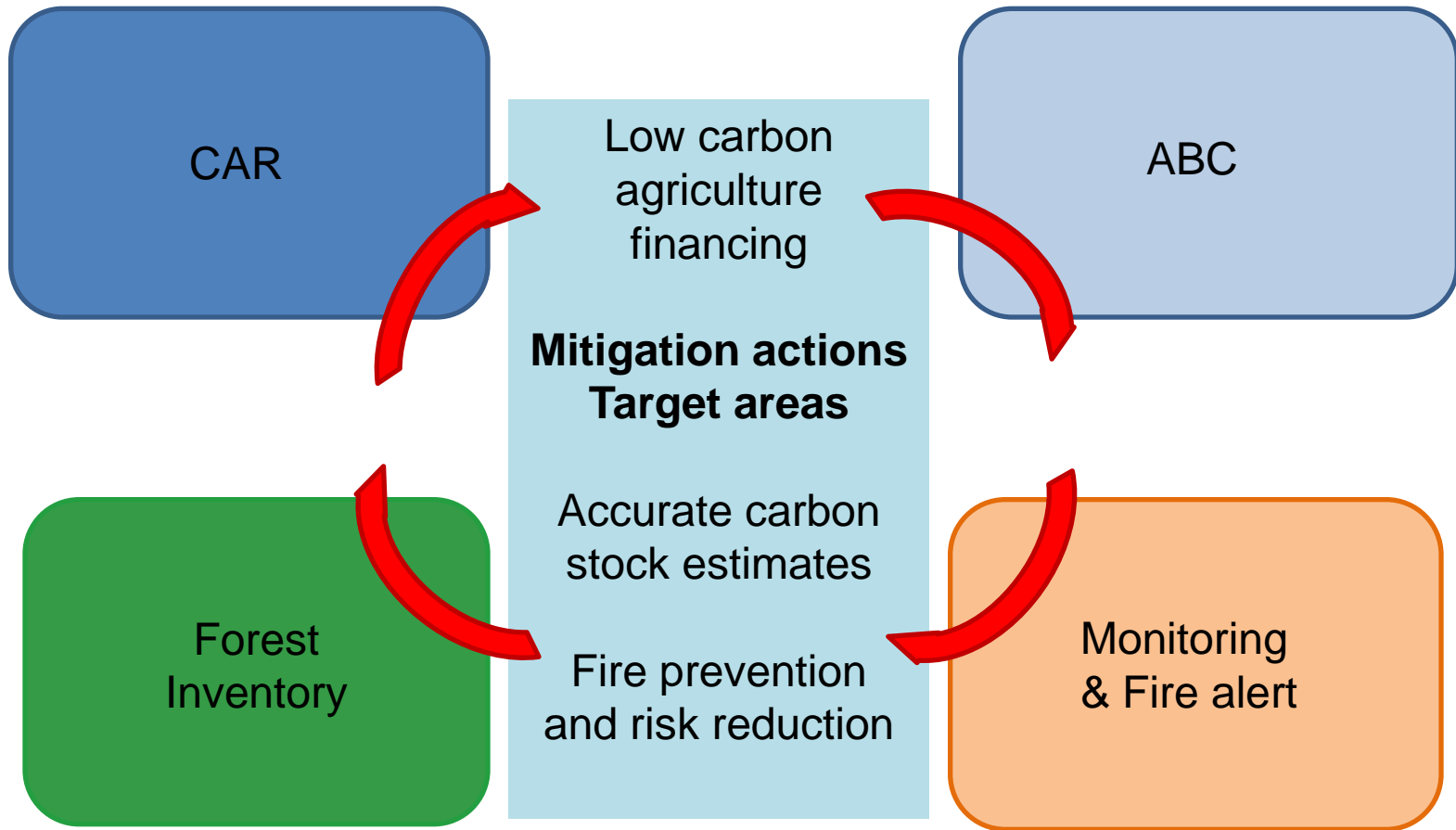
Establishment of the conditions for a monitoring system with national cover - consortium of different institutions

Financing of the FIP Investment Plan

Project	FIP Grant	FIP Loan.	Others	TOTAL
1.1	1.00	32.48	17.50	50.98
1.2	10.72		25.00	35.72
2.1	16.55		8.00	24.55
2.2	9.25		6.50	15.75
Total	37.52	32.48	57.00	127.00

PPCDAm

FIP – US$ 50-70 million

PPCerrado

ABC Plan

Synergies among projects

CAR

ABC

Forest Inventory

Monitoring & Fire alert

Low carbon agriculture financing

Mitigation actions Target areas

Accurate carbon stock estimates

Fire prevention and risk reduction

Private sector - key player

- Brazil IP will:
  - enable the environment for leveraging private investments in sustainable land use practices
  - Provide quality information on location of forest resources in order to plan activities

Landholders

Incentives to:
- ✓ maintain/restore forest cover on their farms
- ✓ adopt more sustainable land use technologies.

Service providers

- ✓ technical assistance for forest restoration, low carbon agriculture, sustainable forest management
- ✓ development of financial products for the adoption of new technologies

Gender

The GoB promotes policies to improve social inclusion and economic participation of women in society.

- Cerrado: 10% of the total rural properties managed by women – FIP will plan accordingly

- Technical assistance planned and accessible to women

# Institutional Arrangement and Synergies
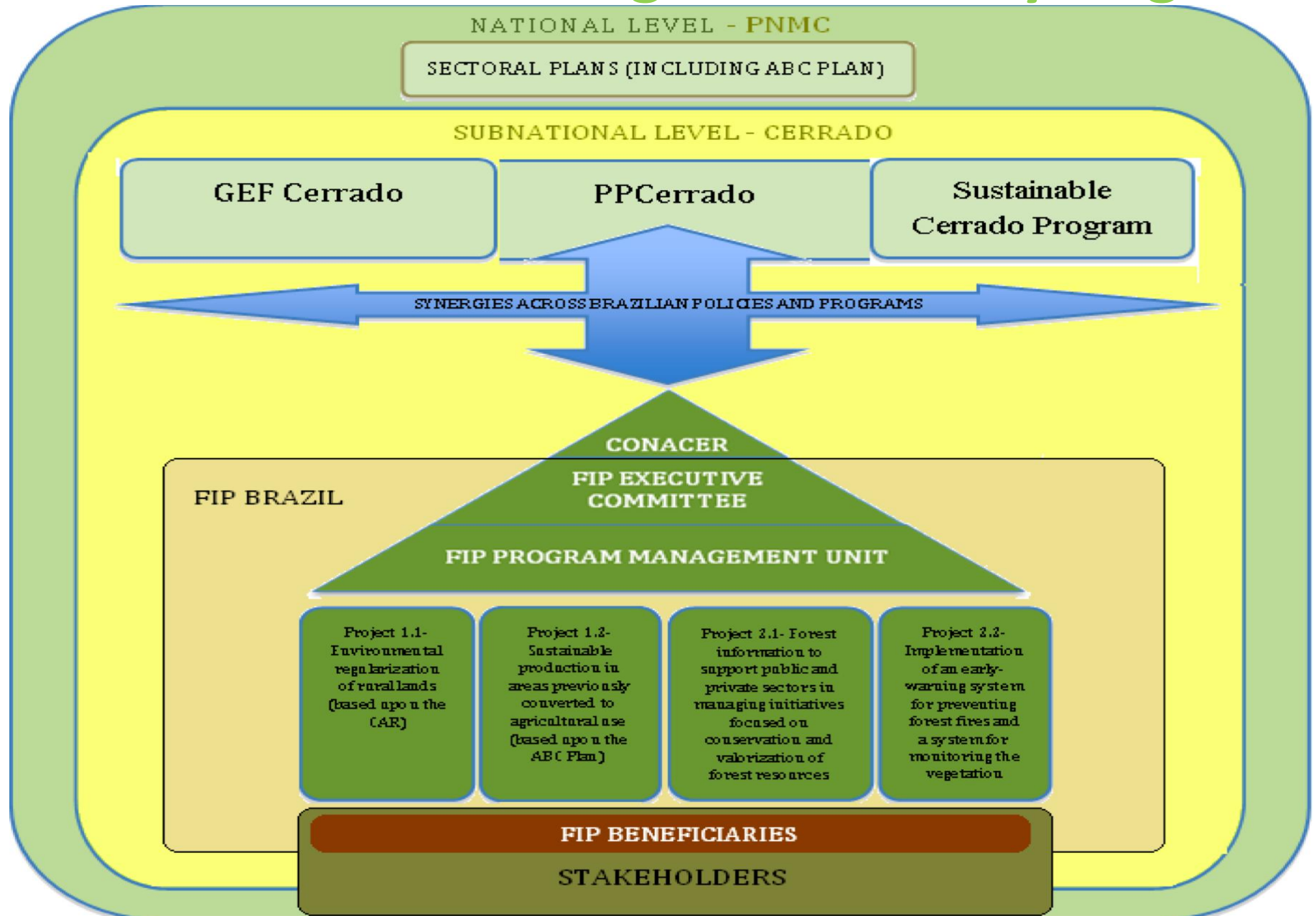
Synergies of the Investment Plan with National plans and policies

- The strategy of FIP Brazil promotes synergies with (among others)
    - National Policy on Climate Change
    - PPCerrado
    - GEF Cerrado
    - ABC Plan

- National Commission for Cerrado (CONACER) – civil society, traditional and indigenous communities, private sector, state governments, agencies

- Advisory body for FIP Brazil, promoting the integration of programs, projects and sectorial policies related to Cerrado.

Monitoring & Evaluation
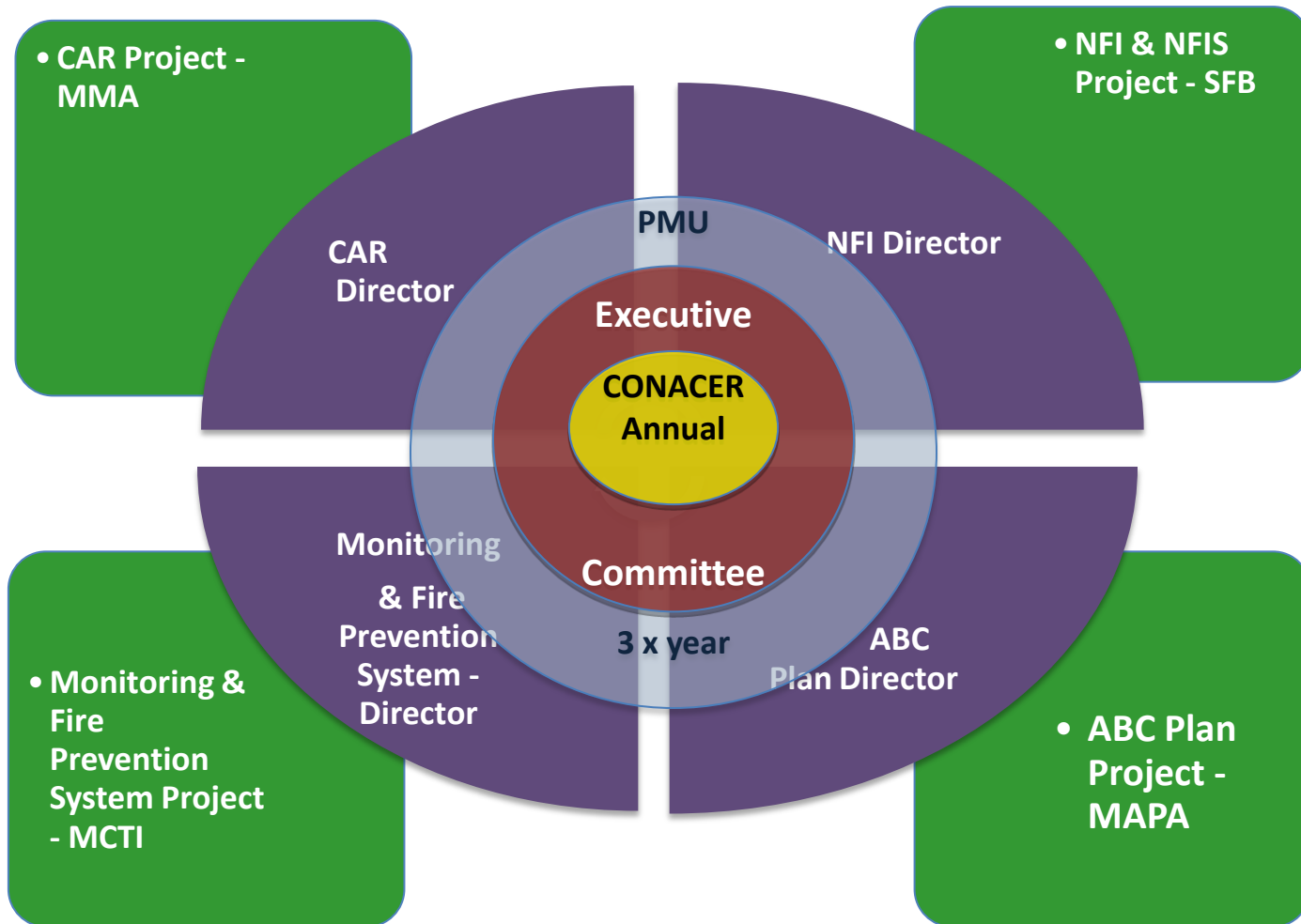
Management and Use of already anthropized areas

1. Environmental regularization of rural lands
2. Sustainable production in areas previously converted to agricultural use

Generation and Management of Forest Information

1. Forest inventory and Forest information system
2. Early-warning system for preventing forest fires and of monitoring the vegetation cover.

Co-benefits

Environmental

- Protection of headwaters and riparian zones
- Biodiversity conservation in private productive farms
- Improved management of natural resources

Social and economic

Enable landholders, small farmers/settlers & traditional communities to:
- Environmental law compliance
- Access targeted financial resources
- Poverty alleviation

Institutional

- Synergies between projects
- Capacity building
- Enable policy implementation
- Estabilish transformational requirements

Brazil Investment Plan: Transformational Impact
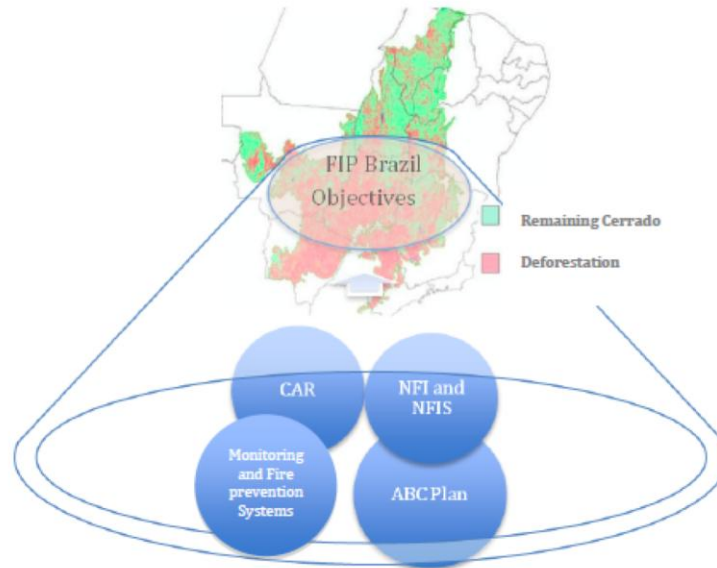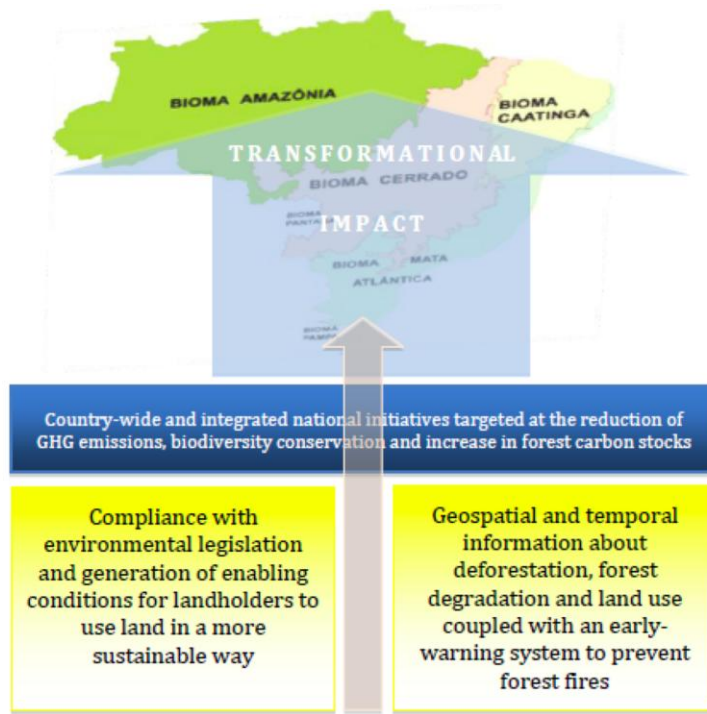
Concluding remarks

1. The Cerrado:
   - ✓ highest biological diversity of all savannas
   - ✓ significant C stocks.

2. intense process of land cover conversion => mainly due to agricultural activities

3. complex social dynamics =>
   - ✓ with traditional communities that depend on the conservation of native savanna areas
   - ✓ modern agribusiness sector
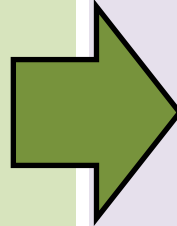
- Improvement of information systems and applications in decision making

+

- Coordination of policies for leverage sustainable and low carbon production systems
  - Increase productivity
  - Decrease deforestation
  - Decrease overall emissions pattern

- Brazil Investment Plan FIP

Thank you!