Case Study 2 Brazil: Framework of Brazilian Space Policies supporting climate change combat actions

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Space for climate action:
space applications and technologies for sustainability on Earth
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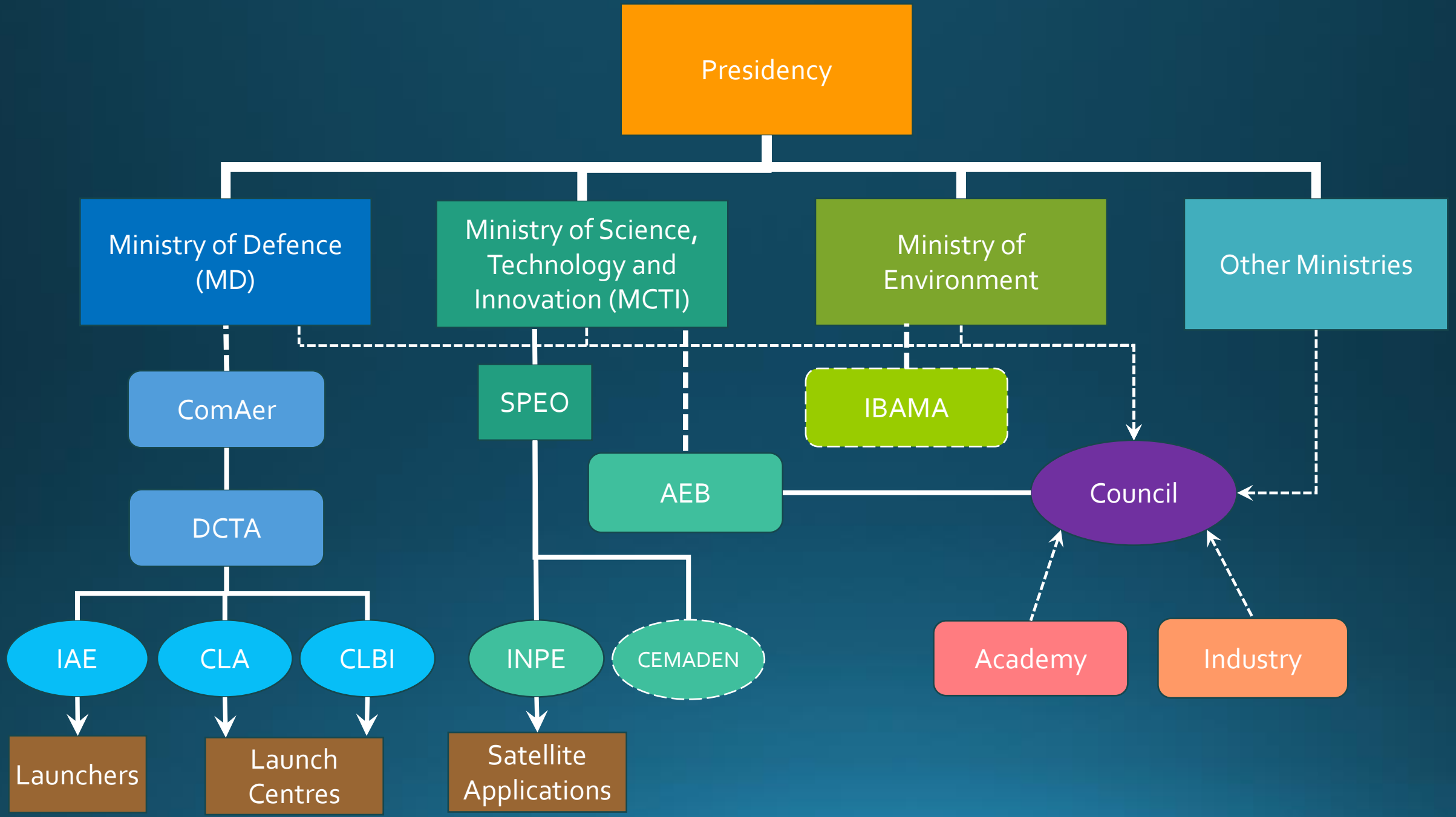
Source: https://www.business-standard.com/article/current-affairs/urban-heat-island-effect-intensifies-climate-change-costs-for-major-cities-117053001177_1.html

Space Policy - Brazilian Institutional Framework

- MCTI is the first-level body competent to take care of the Space Policy (item V of Art. 22 of Law 14.600 of June 19, 2023)
- Two main State institutions dedicated to the space sector: the Brazilian Space Agency (AEB) and the National Institute for Space Research (INPE), both from the MCTI's organization chart.

Source : Câmara do Deputados


Presidency
Ministry of Defence (MD)
Ministry of Science, Technology and Innovation (MCTI)
Ministry of Environment
Other Ministries
ComAer
DCTA
SPEO
IBAMA
AEB
Council
IAE
CLA
CLBI
INPE
CEMADEN
Academy
Industry
Launchers
Launch Centres
Satellite Applications

MCTI - Strategic Plan

- Strategic Objectives

Objective 6	Stimulate the development of space activities in the country
Objective 7	Expand R&D at the frontier of knowledge and make available technical-scientific products and services related to the environment

Objective 6 – Description

- Expand the degree of autonomy in space products and services of interest to Brazilian society.
- Promote the maintenance and improve the infrastructure of space applications.
- Adapt the legal environment to favor commercial economic activity in the space sector.
- Promote capacity building actions for national industry to develop and produce complete space systems.
- Establish conditions that allow the continuity of the Brazilian space policy in the medium and long terms.
- Stimulate scientific research and technological development in activities of interest to the space area.
- Promote the development of scientific research and technologies considered critical and also the capacity building of human resources for the country's space sector.

Objective 7 – Description

Generate and disseminate information, knowledge and technologies for mitigating and adapting to the effects of climate change;
Develop and improve models for simulating and predicting the effects of changes in the environment at different temporal and spatial scales;
Expand and improve the physical infrastructure needed to improve monitoring, alerting and natural disaster mitigation technologies;
Expand, consolidate and maintain observation networks of environmental variables aimed at subsidizing monitoring (including real-time), preparing and issuing disaster risk alerts and providing data for research;
Develop and expand technologies for remote sensing monitoring of deforestation, land use and the occurrence of burnings and forest fires and disseminate the information generated;
Develop systems and tools for observing, quantifying and monitoring the impacts of climate and environmental changes;
Develop systems and solutions for mitigation and adaptation strategies to observed and projected impacts of climate and environmental changes;
Disseminate the information generated to the various sectors of society; and
Provide information that can support decision-making and public policies related to the environment and sustainable development.

INPE – Master Plan

- Essential Competences

2	Infrastructure development and strategic applied technological research for the space and environmental areas.
4	Observation, research, modelling and applications in Earth System Sciences, including its operational character, integrated analyses and syntheses.
5	Formation of human capital in science, technology and innovation in the areas of space and the Earth system.

Strategic Objectives – INPE Master's Plan

OE-6	Increase the capacity to provide innovative products and services based on remote sensing and geoinformatics for monitoring and supporting territorial and environmental management.
OE-7	Monitor deforestation, plant regeneration and forest degradation, risks, occurrences and severity of forest fires in Brazilian biomes to meet the demands of public policies of the Brazilian State.
OE-8	Promote and improve research and development of numerical modelling of the atmosphere, ocean, land surface and aerosols/chemistry integrated system, to provide Brazil with state-of-the-art weather forecasting, seasonal climate, air quality, maritime agitation, circulation coastal and environmental satellite products.
OE-10	Development and improvement of Earth system models, monitoring networks and socio-political analysis, with a view to building and analysing scenarios of environmental changes and climate projections.

The National Policy for the Development of Space Activities (PNDAE)

- The Brazilian space sector is currently governed by the National Policy for the Development of Space Activities (PNDAE) - Decree No. 1.332, from December 8, 1994.
- PNDAE establishes objectives and guidelines for national programmes and projects related to space.
- The National Space Activities Programme (PNAE) is the main planning instrument of PNDAE.
- Brazilian Space Agency.

National Space Activities Programme (PNAE)

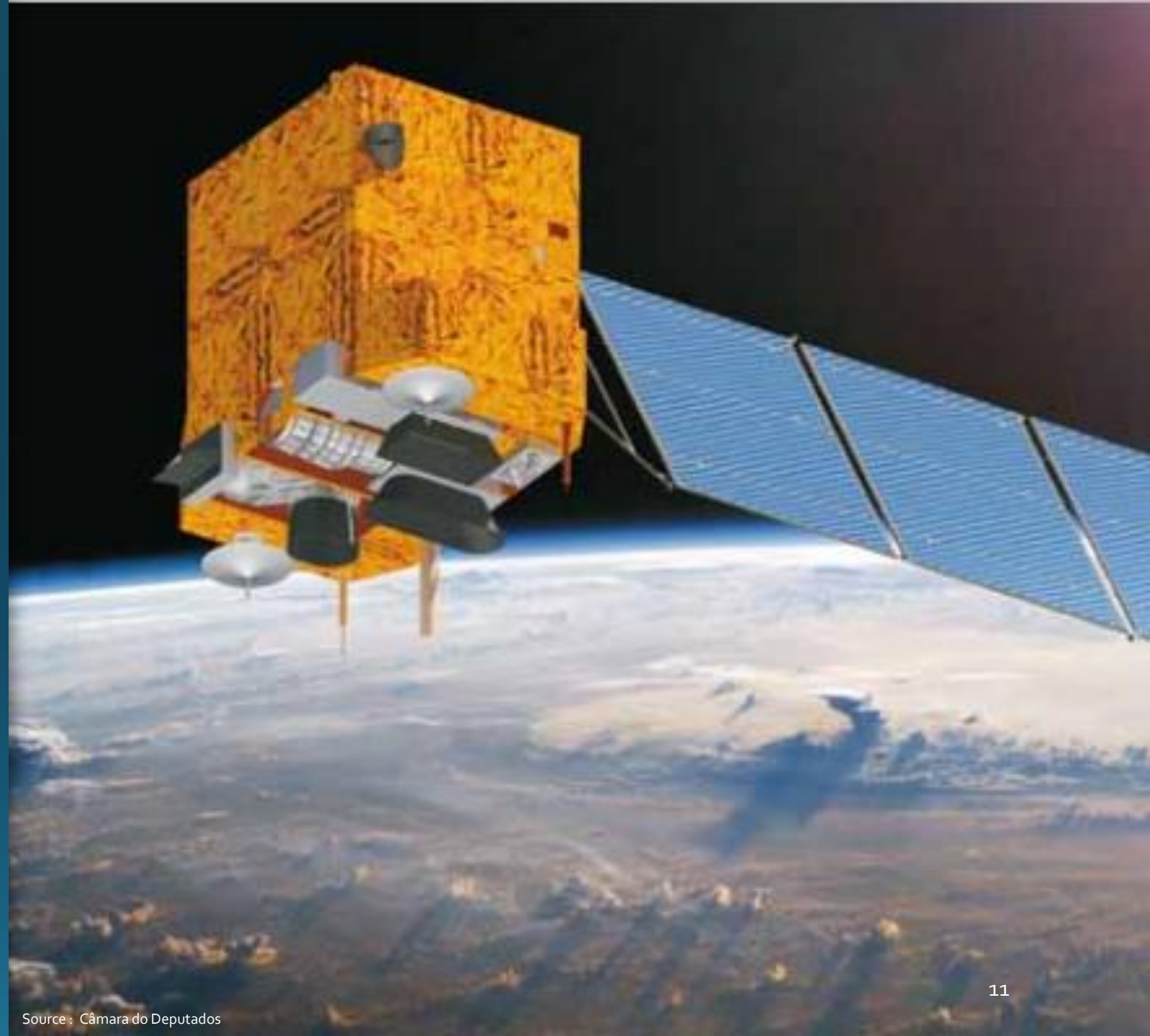
- Impacts other public policies and other sectors of the economy, contributing to goals in other areas.
- Key sectors: represent opportunities for the establishment of projects and space missions capable of composing a space infrastructure that broadly meets national priorities.

- *Infraestrutura*
- *Agropecuária*
- *Mineração*
- *Meio Ambiente*
- *Educação*
- *Defesa Civil*
- *Segurança Pública*
- *Defesa Nacional*

Environment

PNAE - Satellite Missions

- The evolution of societies increasingly demands more, accurate information about its relationships with the territory and the environment.
- CBERS-4, CBERS-4A, Amazonia-1 (Remote Sensing Satellites).
- BRICS Constellation.



Source : Câmara do Deputados

Conclusion

- Policies reflected along the government institutions.
- Chain of institutional policies.

Thanks for your attention!

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Source: NASA