# Chapter 29
# Climate Change Policy and Legislation in Brazil

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**Abstract** The starting point of this chapter is an overview of the common obligations for all the Parties established under the United Nations Framework Convention on Climate Change, Article 4.1. These obligations encompass a set of measures to be taken by a responsible State, under normal circumstances, through the adoption of legislations and administrative control, as well as other available means, with a view to respecting the obligations formulated under international law, which is close to the idea of "due diligence". Moving from the abstract to the concrete, the chapter also focuses on recent policies and legislation on climate change adopted in Brazil, which are fundamental for the implementation of commitments under the UNFCCC. These new developments, including the voluntary quantified goal for reducing emissions announced by Brazil in 2009, encapsulated in its National Policy on Climate Change, demonstrates that the country has moved from "due diligence" measures, with a view to respecting the obligations formulated under international law, towards the goal for real contribution to the combat to climate change.

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## 29.1 From Common Commitments Under the UNFCCC to National Policy and Legislation

Based on the principles set out in Article 3 of the United Nations Framework Convention on Climate Change (UNFCCC),[1] the Convention establishes common obligations for all the Parties.[2] The principle of common but differentiated responsibilities (CBDR) was especially taken into consideration when the general commitments were drafted. The "chapeau" of UNFCCC Article 4.1 makes it clear that all Parties shall implement such commitments "taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and specific circumstances". This provision was extremely important in ensuring wider participation of countries in the UNFCCC, since it left room for each Party "to determine its own level of implementation."[3]

The common commitments have a qualitative nature and do not directly establish timetables or deadlines, an indication that they should be implemented progressively, as a long-term strategy. An extensive list of these commitments was established, addressing both mitigation and adaptation issues, as well as reporting, public awareness and the scientific aspects of climate change.

The Parties' first common commitment under the UNFCCC is to develop and periodically update national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol.[4]

Despite not establishing quantitative targets, another important common commitment is the formulation, implementation and regular updating of national and, where appropriate, regional programmes with a view to mitigating and adapting to climate change.[5] The mention of CBDR in the "chapeau" of Article 4, as well as specific national and regional circumstances and development priorities, was important to reduce the fear of certain Parties that this formulation could interfere with their sovereign function of establishing national programmes. Parties will necessarily take these elements into account when establishing programmes and activities containing measures that contribute to addressing climate change and its adverse effects. Moreover, the Parties shall take into consideration, to the extent feasible, climate change issues in social, economic and environmental policies. In undertaking

[1] United Nations Framework Convention on Climate Change, United Nations Framework Convention on Climate Change, New York, 9 May 1992, in force 21 March 1994, 31 *International Legal Materials* (1992), 849.

[2] Article 4.1 of the UNFCCC.

[3] Farhana Yamin and Joanna Depledge, *The International Climate Change Regime: A Guide to Rules, Institutions and Procedures*, 1st edition (Cambridge: Cambridge University Press, 2004), at 93.

[4] Article 4.1 (a) of the UNFCCC. The expression "Montreal Protocol" refers to the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, as adjusted and amended on 29 June 1990.

[5] Article 4.1 (b) of the UNFCCC.

projects and measures to promote mitigation or adaptation to climate change, Parties must also employ adequate methods to minimise adverse effects on the economy, on public health and on the quality of the environment.[6]

The fundamental role of the development and application of technologies to mitigate greenhouse gas emissions in all the relevant sectors of economy is also recognised under the general commitments. All Parties shall, therefore, promote and cooperate in the development, application and diffusion, including transfer, of technologies, as well as of practices and process that promote mitigation of GHG emissions.[7] Since most Parties do not have access to such technologies, a specific commitment was established under the Convention to enable this access.

Although the most frequent concern relates to the processes and activities that release greenhouse gases into the atmosphere, those processes, activities and components that store or remove these gases from the atmosphere are equally important in stabilising concentrations. In this regard, the Parties have also committed themselves to conserving and enhancing sinks and reservoirs of greenhouse gases, including biomass, forests and oceans, as well as other ecosystems.[8]

The adaptation aspects related to climate change are also addressed in the general commitments, by means of the cooperation in the preparatory process for adaptation to the impacts of climate change. Such cooperation must be extended to the development and elaboration of integrated plans of coastal management, water resources and agriculture, as well for the protection and rehabilitation of vulnerable areas, particularly those affected by flooding, drought and desertification.[9] A special reference (another example of contextual norms) is made to Africa in this regard, which is the only region mentioned by name in the Convention.

Considering the remaining scientific uncertainties related to climate change, and the still limited understanding of many social and economically related issues, the gathering and dissemination of information will play a crucial role in achieving the Convention's ultimate objective. Parties shall therefore promote and cooperate in research, systematic observation and data collection related to the climate change system,[10] as well as in the exchange of scientific, technological, technical, socio-economic and legal information related to climate change and response strategies.[11]

The promotion of and cooperation in education and training, as well as in raising public awareness and participation related to climate change, is another vital feature

[6] Article 4.1 (f) of the UNFCCC.

[7] Article 4.1 (c) of the UNFCCC.

[8] Article 4.1 (d) of the UNFCCC.

[9] Article 4.1 (e) of the UNFCCC.

[10] Article 4.1 (g) of the UNFCCC. See also Article 5 that fleshes out this commitment. It is worth mentioning that international and intergovernmental programmes and organisations play a fundamental role in promoting and co-operating in research and systematic observation under the UNFCCC.

[11] Article 4.1 (h) of the UNFCCC.

in the implementation of the UNFCCC.[12] Climate change is a highly complex and technical issue, difficult for non-experts to understand, and one of the main problems in this regard is that there is very little written material available in non-UN languages. The Convention makes a special reference to the participation of non-governmental organisations in this process.[13]

As can be noticed – by means of the reference to CBDR and to "specific national and regional development priorities" in the "chapeau" of Article 4 – the text on common commitments in the UNFCCC reflects general formulations, which do not impose to the Parties specific standards of conduct. This is precisely the trend of modern environmental international law: to set forth particular standards of conduct so that they take the adequate preventive measures to protect the environment, as well as reduce and control activities that can damage it, without necessarily prohibiting these activities. In recent decades one has seen, especially through the adoption of multilateral environmental agreements (MEAs), the efforts of the international community in regulating such a conduct of States mainly through the establishment of co-operative measures, such as regulation and supervision by international institutions.

Thus, States should take the necessary measures applicable both to public and private conduct in order to fulfil their international responsibilities,[14] which also implies that States have to act with "due diligence". In this regard, "due diligence" encompasses a set of actions to be taken by a responsible State, under normal circumstances, through the adoption of legislations and administrative control, as well as other available means, with a view to respecting the obligations formulated under international law. In the context of international environmental law, these actions shall be taken under the jurisdiction of this State aiming to protect the environment, as well as to reduce and control activities (and substances resulting from such activities) that can damage other States or areas beyond the limits of its national jurisdiction. Most MEAs – as well as several instruments adopted by international conferences, international organisations and scientific institutions – are aimed mainly at establishing obligations limited by due diligence, which is considered to be a primary environmental obligation of States.[15]

Flexibility is an essential characteristic of "due diligence", taking into consideration characteristics that might vary from country to country, and from time to time. Thus,

[12] Article 4.1 (i) of the UNFCCC. See also Article 6 that fleshes out this commitment.

[13] This is one of the two references to non-governmental organisations in the UNFCCC. The other reference is contained in its Article 7.2 (l) and is related to cooperation and the provision of information to the Conference of the Parties.

[14] Xue Hanqin, *Transboundary Damage in International Law* (Cambridge: Cambridge University Press, 2003), at 163.

[15] For instance, Article 194 of the 1982 UNCLOS; Article 2 of the 1979 LRTAP Convention; Article 2 of the 1985 Vienna Convention on the Protection of the Ozone Layer; Article 1 of the 1996 Protocol to the 1972 London Dumping Convention; Principle 21 of the World Charter for Nature. Cf. Patricia Birnie and Alan Boyle, *International Law and the Environment*, 2nd edition (Oxford: Oxford University Press, 2002), at 113.

in this context, since it accommodates differentiated standards of conduct for different States, there is no absolute guarantee that all States will effectively prevent harm. After all, even if a State takes a diligent conduct, it may fail to fulfil the standard of conduct expected as good governance, given that the result could also depend on objective factors that might be outside its control.[16]

The complex discussion on obligation of States certainly goes beyond the scope of this chapter. Nevertheless, these elements are important to understand, from a more theoretical perspective, how the adoption of legislation, policies and other administrative measures taken by a State can be seen as significant steps towards the compliance with obligations under international law.

Moving from the abstract to the concrete, the following section will focus on recent policies and legislation on climate change adopted in Brazil, which are fundamental for the implementation of commitments under the UNFCCC, especially those contained in its Article 4, as analysed above.

## 29.2 Recent Policies and Legislation on Climate Change Adopted in Brazil

### *29.2.1 National Plan on Climate Change*

Although Brazil does not have any quantified commitments on greenhouse gas emission limitation or reduction under the multilateral climate change regime, the country has not been idle and is playing a critical role in fighting against climate change. As reported in this National Communication, various government programs and initiatives in Brazil are bringing about major reductions in greenhouse gas emissions, some of which are responsible for the fact that Brazil has a clean energy mix compared to other countries, with low greenhouse gas emissions per unit of energy produced or consumed.[17]

Most of the programmes and actions implemented do not have the direct objective of reducing greenhouse gas emissions, although they do have significant impacts on emission reductions from different sources. A good example of this is the programme related to the use of ethanol (produced from sugar cane) as vehicle fuel. The National Alcohol Program – Proálcool – in Brazil was originally developed to avoid increasing dependence on foreign oil and foreign currency evasion during the oil price shocks.

Nevertheless, more recently, given the increasing awareness related to climate change, Brazil is deliberately moving towards undertaking voluntary commitments

[16] Ibid.

[17] Brazil, Second National Communication of Brazil to the UNFCCC (Brasília: MCT, 2010), volume 1, at 17.

that represent a significant reduction in the emission of greenhouse gases and protection to sinks.

Hence, in 2007, the President of the Republic included in the agenda of government activities the development of a plan, initially called "National Action Plan to Combat Climate Change," aimed at structuring and coordinating government actions concerning the effects of global warming arising from anthropogenic activities.

In 2007, the federal government created the Interministerial Committee on Climate Change (CIM),[18] coordinated by the Executive Office of the Presidency of the Republic ("Casa Civil da Presidência da República") and encompassing 17 ministries, with a mandate to develop the National Plan on Climate Change and the National Policy on Climate Change.

The Executive Group on Climate Change (GEx),[19] which is coordinated by the Ministry of Environment and reports to the CIM, is responsible for elaborating, implementing, monitoring and evaluating the National Plan on Climate Change. As a result of GEx's work, a bill for the National Policy on Climate Change was submitted to the Legislative Branch.[20]

Another practical result of GEx's work was the draft National Plan on Climate Change. In its initial phase of drafting, consultation questionnaires were forwarded to the ministries that comprise the CIM in order to bring together the actions already in place for each of them and their related bodies, such as programs and projects that contribute to preventing climate change.

This process included public consultations of the utmost importance: the III National Conference on the Environment[21] and the meetings held by the Brazilian Forum on Climate Change,[22] the so-called "Sector Dialogues."[23]

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[18] Presidential Decree no. 6,263, of 21 November 2007.

[19] The GEx is a smaller group, composed of representatives from eight Ministries plus a representative from the Brazilian Forum on Climate Change.

[20] Bill no. 3,535, of 10 June 2008. This bill became the basis for negotiations in the National Congress that resulted in Law no. 12,187, which was sanctioned by the President of the Republic on 29 December 2009, as discussed in the next section.

[21] The National Conferences on the Environment are part of the Federal Government's policy for social mobilization in decision-making processes. They have been held since 2003, with the 1st National Conference on the Environment becoming a source of social legitimization and democratic stability.

[22] The Brazilian Climate Change Forum (FBMC), chaired by the President of the Republic, was created (Decree no. 3,515 of 20 June 2000) with the objective of including the organized civil society in discussions related to global climate change, as well as educating and mobilizing society to debate, and providing inputs for decision-making on problems resulting from global climate change and regarding the CDM. The FBMC should also assist the government to incorporate global climate change issues in the various levels of public policies. The Forum has the participation of the Ministers as well as civil society personalities and representatives, appointed by the President of the Republic due to their renowned expertise or relevant knowledge on climate change.

[23] In the sector dialogues held in this first phase of the Plan, several sectors of society were heard, such as industry, forestry, finance, agriculture, forest and changes in land use, municipal movements, civil society and NGOs.

The overall objective of the National Plan on Climate Change is to identify, plan and coordinate actions and measures that can be undertaken to mitigate greenhouse gas emissions generated in Brazil, as well as those necessary for the adaptation of society to the impacts of climate change.

The National Plan, which was launched on 1 December 2008, was a significant step towards a more structured and organized set of mitigation actions with the aim of collaborating in the international efforts to combat climate change. The National Plan must be guided by the National Policy on Climate Change, which came up afterwards. With the adoption of the National Policy, the National Plan has been reviewed and updated in the light of this more comprehensive legal instrument.

### *29.2.2 National Policy on Climate Change (PNMC)*

The year of 2009 was characterised by intense debates on climate change related issues all around the globe, given that a comprehensive deal under the multilateral regime on climate change was expected at the 15th Conference of the Parties to the Convention (COP-15) and the 5th session of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (COP/MOP 5), held in Copenhagen. In Brazil, the situation was not different, and in October 2009, shortly before COP 15, there was an intensification of debates within the federal government for more ambitious actions to reduce emissions, considering that some segments within the government resisted the adoption of this proposal. On 13 November 2009, important mitigation actions by the government were announced.

The mitigation goals announced by Brazil have the following features:

1. They are voluntary, but involve political will of undertaking actions in an eventual international agreement;
2. Refer to the deviation of the growth curve of emissions relative to expectations of the future emissions based on a "business as usual" scenario and do not relate to a base year as do the commitments of the European Union, Japan, Korea South, Switzerland, and Norway presented at COP-15. It was a compromise between the progressive sectors and conservative members of the government, who argued that Brazil is not obliged to commit to legally binding and quantified mitigation targets.
3. Brazil has committed to reduce emissions between 36 and 39 % compared to expectations for 2020 projected emissions based on a "business as usual" scenario.

The announcement of the Brazilian mitigation actions was the outcome of a combination of business, civil society and political-election pressure, taking into consideration that the core of government (the Presidency, "Casa Civil" and Foreign Affairs) was not favourable to the adoption of quantified goal for reducing emissions. However, the establishment of such actions took place by means of a non-transparent decision-making process by the government. Thus, no systematic study

to produce a consistent, appropriate and precise plan to reduce emissions has been produced and if it has been produced, it has not been presented to the general public.

Having made these caveats, the announcement of these measures by the President of the Republic during the High Level Segment of the COP-15 and COP/MOP-5 implied a fundamental change in the history of Brazilian climate foreign policy, given that it states that the country is willing to make mitigation action in a clear, quantifiable and verifiable manner, as a contribution to the international combat against climate change.

As a proof that it would not be only a political announcement, the measures were incorporated into the National Policy on Climate Change, enacted by law[24] of 29 December 2009.

The National Policy on Climate Change (PNMC, Portuguese for "Política Nacional de Mudança do Clima"), which established its own principles, objectives, guidelines, and instruments, aims, among other things, at the harmonisation of social and economic development while protecting the climate system; reduction of anthropogenic greenhouse gas emissions in relation to their various sources; strengthening of anthropogenic removals by sinks of greenhouse gases in the country; and implementation of measures to promote adaptation to climate change by the three levels of government (at federal, state and local level), with the participation and collaboration of the economic and social stakeholders, particularly those especially vulnerable to its adverse effects.

The objectives of the National Policy on Climate Change should be in line with sustainable development in order to pursue economic growth, poverty eradication and reduction of social inequalities.

The following are considered to be instruments of the National Policy on Climate Change: the National Plan on Climate Change, the National Fund for Climate Change[25]; Action Plans for the prevention and control of deforestation in the biomes; Brazil's National Communication to the United Nations Framework Convention on Climate Change, according to the criteria established by the Convention and by the Conference of the Parties; the resolutions of the Interministerial Commission on Global Climate Change[26]; fiscal and tax measures to encourage emission reductions and removal of greenhouse gases, including differentiated tax rates, exemptions, compensations and incentives, to be established by specific legislation; lines of credit and financing of specific public and private financial agents; the development

[24] Federal Law no. 12,187, 29 December 2009.

[25] Economic instruments are fundamental to implement the strategies contained in the Policy. Approved by the Brazilian Senate in November 2009, and signed by the President on 10 December 2009, Federal Law 1,204 created the National Fund on Climate Change, with the goal of securing resources (part of the revenues from the petroleum and natural gas industry) for supporting projects and studies that are directed toward mitigating climate change and adapting to its impacts.

[26] The Interministerial Commission on Global Climate Change is composed by 11 ministries and functions as the Designated National Authority (DNA) for the Clean Development Mechanism (CDM).

of research programs by funding agencies; specific allocations for actions on climate change in the federal budget; financial and economic mechanisms related to climate change mitigation and adaptation to the effects of climate change that exist under the United Nations Framework Convention on Climate Change and the Kyoto Protocol; and financial and economic mechanisms, at national level, pertaining to mitigation and adaptation to climate change.

Furthermore, instruments of the PNMC also include existing or future measures that encourage the development of processes and technologies that contribute to the reduction of greenhouse gas emissions and removals, as well as to adaptation, among which the establishment of eligibility criteria in tenders and bids, including public-private partnerships, and the authorizations, permits, grants and concessions of public services and natural resources; to proposals that provide greater savings of energy, water and other natural resources; and to reduction of greenhouse gas emissions and waste.

The official financial institutions will provide specific lines of credit and financing for the development of actions and activities that meet the objectives of the Law on Climate Change that are aimed at encouraging private players to act in compliance with and enforce the PNMC as part of their social responsibilities and actions.

The principles, objectives, guidelines and instruments of public policies and governmental programmes should be made compatible with the principles, objectives, guidelines and instruments of the National Policy on Climate Change.

As announced at COP 15 and COP/MOP-5, the text of the law provides that, in order to achieve the goals of the PNMC, the country will adopt, as a voluntary commitment at national level, actions to mitigate greenhouse gas emissions with a view to reducing its projected emissions by 36.1–38.9 % by 2020.

Accordingly, in January 2010 the Government of Brazil informed the Secretariat of the Framework Convention of the nationally appropriate mitigation actions that it intends to undertake,[27] for the information of the Parties to this international instrument. These actions are as follows:

- Reduction in Amazon deforestation (range of estimated reduction: 564 million tons of $CO_2$ eq. in 2020);
- Reduction in Cerrado deforestation (range of estimated reduction: 104 million tons of $CO_2$ eq. in 2020);
- Restoration of grazing land (range of estimated reduction: 83–104 million tons of $CO_2$ eq. in 2020);
- Integrated crop-livestock system (range of estimated reduction: 18–22 million tons of $CO_2$ eq. in 2020);
- No-till farming (range of estimated reduction: 16–20 million tons of $CO_2$ eq. in 2020);
- Biological $N_2$ fixation (range of estimated reduction: 16–20 million tons of $CO_2$ eq. in 2020);

[27] Available http://unfccc.int/files/meetings/application/pdf/brazilcphaccord_app2.pdf (last accessed on 2 February 2012).

- Energy efficiency (range of estimated reduction: 12–15 million tons of $CO_2$ eq. in 2020);
- Increase the use of bio-fuels (range of estimated reduction: 48–60 million tons of $CO_2$ eq. in 2020);
- Increase in energy supply by hydroelectric power plants (range of estimated reduction: 79–99 million tons of $CO_2$ eq. in 2020);
- Alternative energy sources (range of estimated reduction: 26–33 million tons of $CO_2$ eq. in 2020);
- Iron and steel (replace coal from deforestation with coal from planted forests) (range of estimated reduction: 8–10 million tons of $CO_2$ eq. in 2020).

It should be emphasized that these are voluntary actions, and that they will be implemented in accordance with the principles and provisions of the Framework Convention, particularly Article 4, paragraph 1; Article 4, paragraph 7; Article 12, paragraph 1(b); Article 12, paragraph 4; and Article 10, paragraph 2(a). In fact, the elements of the PNMC are completely in line with these provisions of the UNFCCC, especially with the commitments contained in Article 4.1, as described in the first section of this chapter.

The PNMC provides that the projected emissions for 2020, as well as the detailed actions to achieve the reduction goal above will be established by Decree, based on the Second Brazilian Inventory of Anthropogenic Emissions by Sources and Removals by Sinks of Greenhouse Gases not Controlled by the Montreal Protocol.

Moreover, the law of the PNMC anticipated that an Executive Decree shall, in accordance with the National Policy on Climate Change Plans, establish sectoral plans on mitigation and adaptation to climate change, with a view to consolidate a low-carbon economy related to the generation and distribution of electricity; public urban transport systems and modal inter-state transportation systems of cargo and passengers; in manufacturing and durable consumer goods; fine chemical industries based on pulp and paper industry; mining; construction industry; health services; and agriculture, in order to meet gradual goals related to the reduction of anthropogenic emissions in a measurable and verifiable manner, considering the specificities of each sector, including by means of the Clean Development Mechanism (CDM) and Nationally Appropriate Mitigation Actions (NAMAs).

In 2010, work on the measures to implement the PNMC started, with a view to establishing the following priority sectoral plans to achieve the goal expressed in the PNMC regarding mitigation actions:

- Action Plan to Prevent and Control Deforestation in the Legal Amazon (PPCDAM);
- Action Plan to Prevent and Control Deforestation in the Cerrado (Brazilian savannah) (PPCerrado);
- Plan to reduce emissions related to the production and consumption of Energy in Brazil by 2020;
- Mitigation and Adaptation Plan for a Low Carbon Agriculture and Livestock Sectors;

- Replace coal from deforestation with coal from planted forests in the iron and steel industry.

According to the Decree no. 7,390, of 9 December 2010, the other plans mentioned in Law 12,187/2009 should be completed by 15 December 2011. However, the elaboration of such plans was delayed, considering the difficulties to come up with measurable and verifiable indicators and the resistance of some stakeholders, especially from the private sector, in establishing mitigation actions. Thus, a new Decree (no. 7,643) postponed to 16 April 2012, the deadline for the conclusion of such plans, which shall contain the following minimum elements:

I – emissions reduction target by 2020, including incremental goals with a maximum interval of 3 years;
II – actions to be implemented;
III – definition of indicators for the monitoring and evaluation of their effectiveness;
IV – proposal for regulatory tools and incentives for implementation of their plan, and
V – sectoral competitiveness studies with estimated costs and impacts.

Also according to the Decree no. 7,390, the projection of national emissions of greenhouse gases for the year 2020 referred to in the Law no. 12,187/2009, is 3,236 million ton$CO_2$eq, following the methodology described in detail in the Annex to this Decree. In order to achieve the national voluntary goal announced by the PNMC, actions shall be implemented that aim to reduce between 1,168 million and 1,259 million ton$CO_2$eq of the total emissions estimated for the year 2020.

Although the practical results of most of these plans remain to be seen and verified, it is worth pointing out the remarkable results have already been achieved related to the combat against deforestation, particularly in the Amazon. Administrative, economic and legal measures have been adopted, according to a political action strategy, among which there is the Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (PPCDAM). In fact, the PPCDAM is not a direct outcome of the PNMC, given that it was first released in 2004, but it has been integrated to the National Policy of Climate Change.

It is worth pointing out that Brazil's emissions profile is different from that of developed countries, where emissions from fossil fuel combustion are the most significant. According to the Brazilian Second National Communication to the UNFCCC, in 2005, $CO_2$ emissions were estimated at 1,638 Tg, with the Land-Use Change and Forestry sector as the main contributor, accounting for 77% of emissions, followed by the Energy sector, which was responsible for 19% of total emissions. Net emissions for this sector totaled 1,259 Tg $CO_2$, driven by the Amazon biome (67%) and Cerrado biome (22%).[28]

[28] Brazil, supra, note 17, volume 1, at 15.

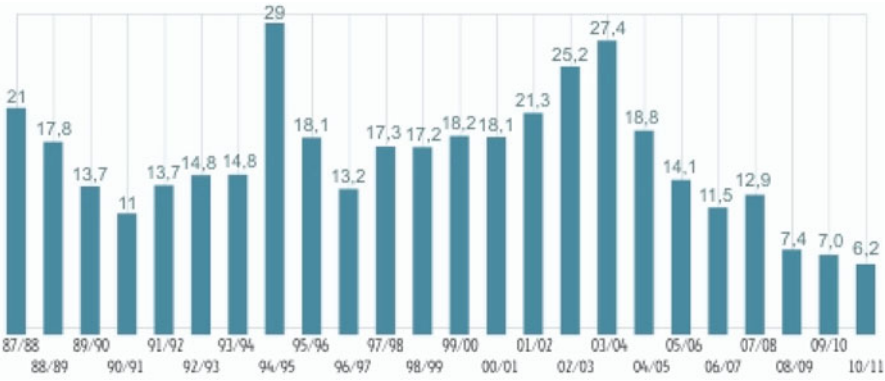


**Fig. 29.1** Brazil: Deforestation in the Amazon Region between 1988 and 2011 (Source: INPE-PRODES, 2011)

From 1995 to 1997, deforestation in the Amazon region increased and then decreased. In 1995, deforestation reached its peak, with 29,059 km$^2$, compared to the lowest record for the decade, in 1991, of 11,130 km$^2$. In 1997, deforestation was reported at 13,227 km$^2$, confirming the tendency towards decreasing that began in 1996, when it fell nearly 40 %. However, the deforestation rate began to grow again in the period related to 1998, remaining more or less stable between 1998 and 2001. The deforestation rate saw considerable growth between 2002 and 2004, when it reached 27,772 km$^2$, near the peak of 1995. Since then, with a series of measures that have been adopted, the deforestation rate has been falling significantly, as proven by the figures for 2011 (estimate), of 6,200 km$^2$ (Fig. 29.1).

In fact, the reduction of emissions of $CO_2$ (in millions of tons per year) in the Amazon region verified in 2010 equals to the reduction equivalent to 67% of the emissions projected to 2020.

Nevertheless, Brazil still needs to face many challenges until 2020 to check if this reduction in deforestation rates is sustainable. For instance, the proposal that is to be adopted by the National Congress to change the Forest Code, which includes a provision for amnesty for those who have committed illegal deforestation, may undermine the legislation rather than improve it.[29] Another aspect that may influence on deforestation in the Amazon is the recently observed trend regarding the reduction of interest rates in Brazil, which can benefit loans for agricultural activities.

Moreover, the effectiveness of the implementation of the other sectoral mitigation plans is yet to be verified. The sustainable growth of the country's economy in the

[29] Center for Strategic Studies and Management (CGEE), Amazon Environmental Research Institute (IPAM), Secretariat for Strategic Affairs of the Presidency of Brazil (SAE/PR), *REDD in Brazil: A Focus on the Amazon. Principles, Criteria, and Institutional Structures for a National Program for Reducing Emissions from Deforestation and Forest Degradation – REDD* (Brasília: Center for Strategic Studies and Management, 2011), at 35.

last years, although positive from a economic and financial point of view, can also put some pressure on the demand side and result in more GHG emissions beyond what has been projected.

It is also worth noting that some policies have been adopted at state level, recalling that Brazil is a Federative government. One of the most advanced ones is the legislation related to climate change adopted in the state of São Paulo, which was the first state law containing quantified goals approved in the country. The state law on climate changes (state law 13.798) was approved on 13 October 2009 and requires that, by 2020, emissions GHG emissions are reduced by 20% over the base year 2005. However, the assessment of state level legislation goes beyond the scope of this chapter.

Despite the uncertainties of the successful implementations of the plans and policies adopted at state and national level, it should be recognised that in recent years there has been an increasing number of initiatives in various stages of implementation that contribute and/or will contribute to the inflection in the growth rate of the greenhouse gas emissions curve in the country, which reflects the commitment by many stakeholders to combating climate change.

Most importantly, the voluntary quantified goal for reducing emissions announced by Brazil in 2009, encapsulated in its National Policy on Climate Change, demonstrates that the country has moved from "due diligence" measures, with a view to respecting the obligations formulated under international law, towards the goal for real contribution to the combat to climate change.