https://dx.doi.org/10.22161/ijaers.72.27 *ISSN: 2349-6495(P) | 2456-1908(O*

Law Sources and CCS (Carbon Capture and Storage) Regulation in Brazil

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Abstract**—** *The present paper proposes a reflection on sources of law and regulation of Carbon Capture and Storage (CCS) activities in Brazil, considering the current framework in the country and to point out the need for interpretation processes based on the general principles law, comparative law and analogy for the application of law and its transformation into an efficient reality.*

Keywords**— Sources of law, Regulation, Carbon Capture and Storage (CCS).**

I. INTRODUCTION

The world of being often brought up the need for norms for the creation of the world of being (REALE, 2018). Legal awareness for the conversion of technical and scientific data and social utilities/needs in the context of climate change mitigation requires the delimitation of norms and rules that include the specificities of human activities.

Among these, we highlight in this article the novel Carbon Capture and Storage (CCS) activity, which in Brazil still lives its threshold, without conditioning norms. Therefore, thinking about the world of duty to be for CCS activities requires compliance with the law, with the stipulation of rules containing at least definitions of CO2 ownership, with their respective rights and obligations, the role of competent regulatory authorities, the main requirements for environmental licensing, and its long-term liability allocation.

This paper proposes a reflection on sources of law and regulation of CCS activities, assuming that every source of law implies a normative structure of power and considering that there are four forms of power to be considered here, the Legislative power, the Judiciary power, Social power and bargaining power. Thus, the sources considered will be the legislative process, jurisdiction, legal uses and customs (here expressing the anonymous decision-making social power of the people) and the negotiating source or autonomy of the will.

Reflecting on the sources of law and the legal situation of CCS activities in Brazil makes it possible to analyze the existing framework in the country and to point out the need for hermeneutic processes based on the general principles of law, comparative law, and analogy for the application of law and its application. Transformation into efficient reality. It also enables the detection of overlaps and gaps and the development of advances aimed at carrying out CCS activities in the country.

II. GENERAL LAW OF BRAZILIAN STANDARDS AND INTERPRETATION METHODS

An important point for the systematic understanding of the scope of the laws is repeal. It is the suppression of the obligatory force of the law, removing its effectiveness. The repeal of the law (gender), in its extension, can be of two species, total (abrogation) or partial (derogation). A law is repealed by another law, so revocation must emanate from the same source that approved the repealed act.

If the norm is constitutional in nature, only by the process of amendment to the Constitution can it be modified or revoked (CF, art. 60). A decree is repealed by another decree but can be repealed by the law, which is of higher hierarchy and the new law that repeals the previous one also repeals the decree that regulated it. This is the principle of hierarchy, it does not tolerate that an ordinary law survives a constitutional provision that contradicts it or that a regulatory norm subsists in offense to the legislative provision.

What characterizes the unexpressed revocation is the incompatibility of the new provisions with the existing ones, in which case the chronological criterion of the prevalence of the most recent applies. In addition, the specialty criterion is applied when a special rule overrides the general when it disciplines the same subject differently.

This is of particular importance to our study when the real antinomy occurs, that is, when the conflict between norms cannot be resolved by the use of the above criteria, and the predominant norm through mechanisms to fill the gaps must be determined. of the law (LINDB, arts. 4 and 5).

https://dx.doi.org/10.22161/ijaers.72.27 ISSN: 2349-6495(P) | 2456-1908(O

III. THE INTEGRATION OF LEGAL RULES

The legislator cannot predict all situations for the present and the future, because the law is dynamic and in constant motion, following the evolution of social life, which brings new facts and conflicts. This causes situations that are not specifically foreseen by the legislature and which demand resolution by the judge. Since the latter cannot refrain from making a decision under the pretext that the law is silent, it must make use of the mechanisms intended to fill the gaps in the law, leaving no case unresolved, given the logical fullness of the law, which are : the analogy, the customs and the general principles of the law.

Thus, according to Article 140 of the Code of Civil Procedure: "The judge does not exempt himself from ruling on grounds of lacuna or obscurity of the legal system." And yet, when the law is silent, according to article 4 of the LINDB "the judge shall decide the case according to the analogy, customs and general principles of law." The judge will only decide for equity in the cases provided for by law (CPC, art. 140, sole paragraph).

The distinction between analogy and extensive interpretation is necessary. The latter consists in extending the scope of the same rule to situations not expressly provided for, but understood by its spirit by a less literal interpretation. Gonçalves (2018) cites the example of article 25 of the Civil Code in which one can extend to the spouse the legitimacy conferred on the absent spouse to be their healer.

The analogy, in turn, implies recourse to another rule of the legal system because of the lack of an appropriate rule to solve the specific case. Gonçalves (2018) points out that the refusal to analogy is not unlimited, it cannot be applied in criminal law, except to benefit the defendant, nor in exceptional or exception laws or tax laws that impose taxes (CTN, art. 108, §1).

The use of analogy requires the presence of three requirements: a) the inexistence of a legal provision foreseeing and disciplining the hypothesis of the concrete case; b) similarity between the relationship not contemplated and another regulated by law; c) Identity of logical and legal foundations in the common point between the two situations.

It is customary to distinguish the legis (legal) analogy from the juris (legal) analogy. The first is the application of an existing standard intended to govern a case similar to the one foreseen. Its source is the isolated legal rule, which is applied to identical cases.

In the case of CCS, the possibility of applying the Solid Waste Act. The second form of analogy, namely the analogy juris (legal) is based on a set of rules, to obtain elements that allow their application to the case unforeseen but similar, being more complex process, which seeks the solution in a plurality of norms, in an institute or in the collection of legislative diplomas, transposing the thought to the controversial case, under the inspiration of the same assumption.

Another distinction that deserves to be pointed out is that between analogy and equity. Equity is not a supplementary means of law's gap, it is not confused with equity in its broad sense, that which is confused with the idea of justice, in the strict sense is employed when the law itself expressly creates spaces or gaps for the judge (and here we mean the operators of the law in general) to formulate the most appropriate norm to the case. According to article 140 of the Code of Civil Procedure, "the judge shall only decide for equity in the cases provided for by law".

The costume rules are, secondarily to the law, also a supplementary source in our legal system, and the judge should resort to it after the possibilities to fill the gaps with the analogy are exhausted. It will not be necessary to make much comment on this because CCS activities in the Brazilian context do not contain the elements that make up the custom, namely: the repeated use or practice of behavior and the conviction of its obligation.

In case there is no solution in analogy or custom, the judge should seek the general principles of law for the supply of gaps. These are rules that are in the consciousness of peoples and are universally accepted, even unwritten, and their generic character guides the understanding of the legal system, its application, and integration, whether or not included in positive law (GONÇALVES, 2018).

For Maximiliano (2017), it is not enough to know the applicable rules to determine the meaning and the scope of the texts, they must be brought together in a harmonic whole, in a logical chain, offering them for study. “What is a clear law?” Answers Maximiliano (2017), which is the one whose meaning is expressed by the letter of the text. However, the lawyer points out that, to know if this happens, one must know the meaning, that is, interpret. Thus, for him, to conclude that there is no clear intention behind a clear text denatured by improper expressions, it is necessary to perform prior interpretative work.

The author goes on to say that sometimes when at first glance a device is translucent, it may be the pure personal, contingent impression with no solid foundation.

We must remember that the text of the general rule almost never fails to foresee the existence of exceptions. Thus, a law article should be evaluated by confronting it with others, applying the systematic process of

https://dx.doi.org/10.22161/ijaers.72.27 *ISSN: 2349-6495(P) | 2456-1908(O*

interpretation, studying the norms together, in the variety of their relations and the richness of their developments, adapting the old formulas to the contingencies of the present time. , using the juridical-social valleys (MAXIMILIANO, 2017).

According to Maximiliano, the rigidity of the norm is a necessary evil. It is up to Hermeneutics precisely to find the means of applying to wealth, to the infinite variety of real-life cases to the multiplicity of human relations, the objective and rigid abstract rule (MAXIMILIANO, 2017).

To this end, the author teaches (MAXIMILIANO, 2017) that to achieve the scope of all objective law, one must examine: a) the norm in its essence, content, and scope; b) the specific case and its circumstances; c) the adaptation of the precept to the hypothesis under consideration.

And yet, the adaptation of a precept to the specific case presupposes: a) Criticism, in order to ascertain the authenticity and then the constitutionality of the law, regulation or legal act; b) interpretation in order to discover the meaning and scope of the text; c) filling the gaps with the aid of analogy and the general principles of law; (d) consideration of possible questions on abrogation, or simple derogation of precepts, as well as on the authority of the express provisions, with respect to space and time.

According to Gonçalves, the requirement of greater certainty and security for legal relations has been provoking the supremacy of the law, the written rule emanating from the legislator, over other sources, even being considered the primary source of law. Thus, according to the author, legislation is the process of creating written legal norms of general observance, and therefore the legal source par excellence and the formal source is a different activity, the means by which the legal norm is legitimately positive. mandatory (GONÇALVES, 2018: 51).

Thus, the word "law" used in the broad sense is synonymous with a legal norm, comprehensive of every general rule of conduct, encompassing all acts of authority, such as the laws themselves, decrees, regulations, etc. (GONÇALVES, 2018). Strictly speaking, it only indicates the legal rule elaborated by the Legislative Power, by means of an adequate process, "an act of the legislative power that establishes norms of social behavior and, to be effective, must be promulgated and published in the Official Gazette, an ordered set of rules that presents itself as a written text "(AMARAL apud GONÇALVES, 2018).

For Venosa, the law is "a general rule of law, abstract and permanent, endowed with sanction, expressed by the will of the competent authority, of an obligatory nature and written form" (VENOSA 2001: 33).

Its main characteristics are: generality (addressed to all citizens, indistinctly); imperative (when it requires action, imposes, when it wants an abstention, prohibits); authorization (authorizes the injured party for the violation to demand compliance or reparation for the wrong caused, legitimizing the use of the ability to coerce); permanence (not exhausted in one application and endures until revoked by another law); emanation of competent authority (the legislator is in charge of dictating the laws but has to observe the limits of competence provided for in the Federal Constitution) (GONÇALVES, 2018).

For Diniz, (DINIZ apud GONÇALVES, 2018: 52) the formal legal source "is the legislative process, which comprises the elaboration of all normative categories referred to in article 59 of the new Charter. As the law regulates its own creation or elaboration, the legislative process is foreseen in the Federal Constitution".

Thus, the latter are edited by the Executive Power (CF, art. 84, XXVI), which exercises normative function, in the cases provided for in the Federal Constitution and will lose their effectiveness since the edition. If they are not converted into law within sixty days, extendable only once for the same period, and the National Congress shall discipline, by legislative decree, the legal relations arising therefrom (DINIZ apud GONÇALVES, 2018).

IV. INTERPRETATION METHODS: APPLICATION AND INTERPRETATION OF LEGAL RULES

Norms are generic and impersonal and contain an abstract command not specifically referring to concrete cases. When the fact is typical and fits perfectly into the abstract concept of the norm, the phenomenon of subsumption occurs. However, there are cases in which such framing does not occur, and the judge does not find any rule applicable to the sub judice hypothesis, and the normative integration must proceed.

In order to verify if the norm is applicable to the case under judgment (subsumption) or if it should proceed to normative integration, the judge tries to discover the meaning of the norm, interpreting it. To interpret is to discover the meaning and scope of the legal norm. For adherents of subjective interpretation, what is researched is the will of the legislator expressed in the law. Such a conception has not been accepted, because when the norm is old the will of the original legislator is usually surpassed (GONÇALVES, 2018).

For the same author, objective interpretations and free research of law are the most accepted. Objective

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interpretation holds that it is not the will of the legislator that is intended, but the meaning of the norm, for the law separates from the author and attains objective existence. The free research, on the other hand, maintains that the judge must interpret it according to the moral and social legal conceptions of each era (GONÇALVES, 2018).

Interpretation can be made by the methods: grammatical, logical, systematic, historical and sociological. As for the first, the Superior Court has already held that "the merely literal interpretation must give way when colliding with other methods of greater robustness and scientificity" (RSTJ, 56/152: 01). The rational or logical seeks to extract the various possible interpretations, to eliminate those that seem absurd and that lead to a contradictory result in relation to other precepts.

Systematics holds that a law does not exist in isolation and must be interpreted in conjunction with others, sometimes taking into account the book, title, chapter, section, and paragraph in which the norm is found. a to the context in which it is located. The historical interpretation is based on the investigation of the antecedents of the norm, the legislative process, in order to discover its exact meaning, as well as the investigation of the circumstances that guided its elaboration, of economic, political and social order, as well as the dominant thought when of their formation.

The sociological or teleological interpretation aims to adapt the meaning or purpose of the norm to the new social requirements (GONÇALVES, 2018) and is contained in article 5 of the LINDB, which states that "in law enforcement, the judge will meet the social purposes to which it is intended and the demands of the common good "(BRAZIL, LINDB). The various methods of interpretation do not operate in isolation, do not repel each other, but complement each other. Regarding CCS activities, sociological or teleological interpretation should be taken into account (GONÇALVES, 2018).

V. ROLE OF THE STATE IN SETTIN STANDARDS AND THE IMPORTANCE OF CCS REGULATION

The elementary notion of law is the realization of orderly coexistence, in which binding rules and limits to the action of the members of a society direct social coexistence. In this way, the law would help to consider what can, what should and should not be done in terms of human behavior. Ordained coexistence translates into the "common good", which, strictly speaking, is the ordination of what each man can accomplish without prejudice to the good of others, a harmonious composition of the good of each with the good of all. As Reale puts it, "No one can engage in an activity without a right of reason," meaning "limit" as the limit, measure, motive or cause. (REALE, 2018: 05). Thus, there is in every human behavior the presence, although indirect, of the legal phenomenon. When cultural laws involve taking a stand before reality implying the recognition of the obligatory behavior, we have what is called a rule or norm (REALE, 2018: 29).

In theory, it is on the basis of economic, sociological, historical, demographics, etc. appraisals or valuations that the legislator (or more generally, the politician) designs norms, sanctioning those he considers should be obeyed (REALE, 2018). And, taking into account the multiplicity of actors involved in the creation of mandatory rules or norms, one can observe the influences and influences that technique, sciences, and productive activities have on legal facts, and, more importantly for the purpose of this article, for legal facts of environmental relevance.

The reasoning is that in times of compromise of natural resources and quality of life on the planet and the consolidation of an ecologically balanced right to the environment, the normative moment of ethics is stored in physical-mathematical or natural and cultural data, sociological, historical, economic and, above all, ethics, in this path, an ethic for sustainability.

Taking as its starting point the "Manifesto for Life - For an Ethics for Sustainability" of the United Nations Environment Program (UNEP), this "ethics for sustainability" should inspire new legal and institutional frameworks that reflect, respond to and adapt to the global, regional, national and local character of ecological dynamics (UNEP, 2002).

The value of what is "useful-vital" implies a complex of human activities in commerce, industry, agriculture, and a range of activities engaged in the production, circulation, and distribution of wealth (REALE, 2018). Norms and rules previously existing to certain actions are, thus, conditions and tools of freedom of action, hence the danger of legal vagueness for actions that directly or indirectly interfere with the destinies of the environment.

The subject of climate change and global warming began to be part of the international agenda in the 1980s, based on scientific studies that indicated an increase in the concentration of carbon dioxide in the atmosphere, associated with an increase in terrestrial temperature. Climate change is the cyclical change that occurs in the general climate of the planet and is verified through scientific records (ABNT, 2018).

In 1985, the United Nations General Assembly assigned to the United Nations Environment Program (UNEP) the task of devising environmental strategies for

https://dx.doi.org/10.22161/ijaers.72.27 *ISSN: 2349-6495(P) | 2456-1908(O*

the year 2000 and beyond, with input from the World Commission on Environment and Development, with the role of preparing a report on the global environment.

The Commission made up of 21 participants "chosen in their personal capacity and not as government representatives", was chaired by the Norwegian Prime Minister, Gro Harlem Brundtland (CMMAD, 1988). The 1987 report, "Our Common Future," aims to include environmental considerations in development decision-making (CMMAD, 1988).

Thus, at the XV Session of UNEP's Board of Directors, the Board of Directors proposes the definition of "sustainable development", which among other components stands out: "Sustainable development also implies the maintenance, rational use and enhancement of the resource base. natural resources that underpin ecosystem recovery and economic growth." (CMMAD, 1988: XV)

The Intergovernmental Panel on Climate Change (IPCC), established in 1988 by the World Meteorological Organization (WMO), issued a report in 2015 highlighting risk aspects of climate change and the urgent need to take steps to increase the global average temperature in the world. The 21st century does not exceed 2 ° C, remaining within a "carbon budget" estimated at 200GtCO2e (IPCC, 2015; MACEDO, 2017).

In 1997, the Kyoto Protocol supported the international community in an attempt to curb greenhouse gas emissions by 5.2% compared to 1990 levels. It is worth stressing that internationally recognized greenhouse gas emissions are greenhouse gases, regulated by the Protocol are Carbon Dioxide (CO2), Methane (CH4), Nitrous Oxide (N2O), Sulfur Hexafluoride (SF6) and two gas families, Hydrofluorocarbon (HFC) and Perfluorocarbon (PFC).

Following the end of the Kyoto Protocol in 2016, the Paris Agreement was signed by 175 countries in New York City, coming into force in November of the same year, and establishes a carbon budget distributed among countries to ensure that the global average temperature does not exceed 2 ° C to 2,100. Brazil, the signatory, presented, through the Ministry of the Environment, a base document for the definition of the strategy to implement the country's commitments from 2020, according to the Nationally Determined Contribution (NDC) (MACEDO, 2017).

In September 2016, Brazil completed the Paris Agreement ratification process by delivering to the United Nations the official commitments to "reduce greenhouse gas emissions by 37% below 2005 levels by 2025, with a contribution indicative approach to reducing greenhouse gas emissions by 43% below 2005 levels by 2030 "(MMA, 2018: 03).

Along these lines, to achieve this goal, Brazil needs to think about and adopt technologies such as Carbon Capture and Storage (CCS), according to Almeida et al. (2017), which may represent a strategic alternative for CO2 reduction, especially for the energy sector. Nevertheless, knowledge about this technology is still poorly consolidated among the country, as well as the regulation of these activities.

As one of the main alternatives for reducing CO2 emissions, the CCS technique has gained prominence by the ability to permanently store high volumes of CO2 in appropriate geological formations (ALMEIDA et al., 2017, p. 2.). The authors point out that the technique consists of injecting compressed CO2 (in the supercritical state) into rocks such as sandstones, shawls, dolomites, basalts or coal. To become CO2 reservoirs, in addition to maintaining proper porosity and permeability, these rocks must have a satisfactory seal and stable geological environment to avoid compromising the integrity of the storage site (ALMEIDA et al., 2017, p. . 2.).

Therefore, storage can be viewed as a mining activity or activity similar to the injection of fluids into oil and gas reservoirs for advanced recovery. Classifying it in one way or another has different effects on the legal order.

The data of nature becomes culture and the historical process enables the human race to become aware of the non-renunciation of certain values considered universal, the "axiological or evaluative variants" such as those concerning the dignity of the human person, the safeguarding of individual and collective life. and its elevation to a planetary vision in ecological terms (REALE, 2018).

Thus, it is expected to be the task of the Brazilian State to create a normative environment appropriate to the rules of CCS activity, both by the legal apparatus and by subsequent regulations. However, before the realization of this state purpose, we must address in this article, as follows, which standards currently exist in Brazil that can be launched and used by CCS entrepreneurs.

In carrying out the first approach based on analogy, there are mentions close to the activity of CCS in Article 22 Federal Constitution of 1988 (CF / 88), regarding the Union's exclusive competence to legislate on "deposits, mines, other mineral resources and metallurgy"; as in Article 23, at the time of the common administrative competence of the Union, States, Federal District and Municipalities to "protect the environment and combat pollution", in addition to "registering, monitoring and

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supervising the concession of research and exploitation rights of water and mineral resources in their territories ".

In article 24 of the CF, which deals with competing for legislative competence, we can also see room for CCS activities, at the moment one sees "conservation of nature, protection of soil and natural resources, protection of the environment and control of pollution" and "liability for environmental damage".

Another reference by analogy is found in art. 177, when we have the Union monopoly over the activities of the oil and natural gas industry and other fluid hydrocarbons, regulated by the Petroleum Law (Law 9478/1997) and the Pre-Salt Law (Law 12351/2010).

CCS's activities are supported by Article 225 CF which states: "Everyone has the right to an ecologically balanced environment, a common good of the people and essential to a healthy quality of life. to defend it and preserve it for present and future generations."

In addition to the provisions of the Constitution, it is important to go through the legislative and normative framework. Starting with the Civil Code which prescribes full and exclusive ownership until proven otherwise (Art. 1,231). In addition, art. 1,229 thus says:

Ownership of the land covers that of the corresponding airspace and subsoil at height and depth useful for its exercise, and the owner may not object to activities carried out by third parties at such a height or depth as to be of no interest to him. legitimate in stopping them.

However, according to art. 1,230. "Land ownership does not cover deposits, mines and other mineral resources, hydropower potentials, archaeological monuments and other assets referred to in special laws." Thus, in considering CCS activities as integral to the concept of deposits, mines, resources or other property, it can be understood that this property is not presumed, needs to be proven and does not necessarily fit as full.

Law No. 12,305, of August 2, 2010, establishes the National Solid Waste Policy. Therefore, by classifying the CCS activity as residual, there is the application of the principles, objectives and instruments provided for in this Law, as well as the guidelines related to integrated management and management, the responsibilities of generators and public authorities and the instruments applicable economic

If CCS activity is designed as hazardous, installation and operation is required and may only be authorized or licensed by the competent authorities "if the person responsible has demonstrated at least the technical and economic ability and conditions to provide care. waste management. "(art. 37). Legal entities are required to prepare a hazardous waste management plan and submit it to the competent agency of the National Environment System (SISNAMA).

However, CCS activity is not regarded as dangerous, since carbon leakage, besides causing the damage reported in session 3, consistent with the intensification of the greenhouse effect.

Under the Mining Law, there is Decree-Law No. 227/67, which defines as the Union's competence "to manage mineral resources, the mineral production industry and the distribution, trade and consumption of mineral products". If carbon storage is considered mining, in this case, this activity is governed by this Code. by the Minister of State of Mines and Energy (art. 7). Therefore, in accepting CCS activities as within the mining profile, the subject matter within that specific legislation is governed.

On the other hand, if it is seen as a complementary activity to the oil and gas sector, the Petroleum Law will apply, with CCS being viewed as a form of advanced well recovery.

Anyway, all these choices and profiles followed the environmental legislation, drafted from the National Environmental Policy, as well as the Resolutions of the National Environment Council (CONAMA), which are: Resolution No. 237/97, which deals with environmental licensing and Resolution No. 001/86, on environmental impact.

VI. CONCLUSION

According to Reale (2018), one of the purposes of the law is to preserve and guarantee such values and those that diffuse them, to this end, the norms of law, while delimiting actions, guarantee actions in delimited social spaces. For the author, when the State issues a rule of law setting limits on the behavior of men, it does not aim at the negative value of the limitation itself, but at the positive value of the possibility of wanting something in the previously circumscribed sphere, acquiring the right the power. to limit to release.

Edgar Morin warns that the need for a planetary policy and a planetary decision-making body has given rise to conferences such as those in Rio de Janeiro, Kyoto, Johannesburg and Copenhagen, which confirmed alarmist diagnoses without yet being able to impose reform measures in the face of total collapse. in natural resources (MORIN, 2013: 103). It is up to each State to implement actions that shelter trans individual interests and guarantees, and Law, in view of its crucial role in responding to such demands, needs to immerse itself in its mechanisms of application and integration of norms. Legal sources in this sense play a fundamental role.

https://dx.doi.org/10.22161/ijaers.72.27 *ISSN: 2349-6495(P) | 2456-1908(O*

Sustaining ecosystem recovery and economic growth are assumptions that should guide the production, circulation, and distribution of goods and services, and the existence of norms confers positive value on economic growth by sustaining ecosystem recovery. And among the actions that aim to meet the criteria of sustainable development of ecosystem recovery, maintaining economic growth and mitigating undesirable effects of anthropogenic origin on the environment, such as climate change and ocean acidification, are carbon capture, storage, and transport activities.

ACKNOWLEDGEMENTS

We thank the support of RCGI - Research Center for Gas Innovation, located at the University of São Paulo (USP) and funded by FAPESP - São Paulo State Research Support Foundation (2014 / 50279-4) and Shell Brasil, and the strategic importance of the support given by ANP (National Agency of Petroleum, Natural Gas and Biofuels) through the regulatory incentive of R&D.

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