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Sanctioning Corporations for Environmental Crimes in Cameroon

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Abstract

This article examines the legal regime in Cameroon with respect to the sanctioning of corporations for environmental crimes in the conduct of their activities. The paper specifically outlines the legal framework for corporate criminal responsibility with emphasis on the revised Penal Code. The article further examines the types of corporations that can be held criminally liable, the types of environmental crimes they may commit as well as the sanctions meted out on them. In as much as this paper applauds the introduction of corporate criminal liability in the Penal Code, it brings out the challenges to the effective implementation of the law and calls for the amendment of the Criminal Procedure Code to readapt the changes brought in by the Penal Code in 2016.

Keywords: corporations, environmental crimes, sanctions, Cameroon

1. Introduction

In their quest for profits maximization, corporations tend to violate environmental norms and standards put in place by the government. The Cameroonian legislator in response to this conundrum, instituted a corporate criminal responsibility (CCR) regime to enable corporations to be prosecuted for crimes committed by persons acting for the corporations.

In general, corporations are known for crimes such as environmental pollution, corruption, tax evasion, mismanagement of funds, embezzlement, production of defective goods and goods that endanger the environment, money laundering, market manipulation, labour exploitation just to name a few.[1] In a globalized world where corporations are much larger, operate worldwide and make use of different laws to evade taxes, elude public regulation and commit corporate wrongdoings which are detrimental to the public, the need to impose liability on corporate behaviour becomes pressing.[2]

In 2016, the Cameroonian legislator decided to introduce into the Cameroonian legal system, the liability of corporate bodies. As a result of this amendment, corporations and other legal entities are directly liable for crimes committed on their behalf. Prior to the 2016 amendment, the Cameroonian penal code which was enacted in 1965 and came into force on 12 June 1967, did not take into consideration, corporate criminal responsibility but was limited only to the criminal liability of physical persons. This is evident from the provisions of Section 74 (2) of the Code which stipulates that, "criminal responsibility shall lie on him who intentionally commits each of the ingredient acts or omissions of an offence with the intention of causing the results which completes it". This was in consonance with the old common law and civil law positions inherited by Cameroon under which, it

[1] F.A Comfort, (2018). Corporate Criminal Liability in Cameroon: The Dawn of a New Era. *Commonwealth Law Review Journal (CLRJ), 4,* p. 270.

[2] D. Brodowski et al., (2014). *Regulating Corporate Criminal Liability*, Springer International Publishing, Switzerland, p. 2, in F.A Comfort, Corporate Criminal Liability in Cameroon: The Dawn of a New Era, *Commonwealth Law Review Journal (CLRJ), 4,* June 2018, p. 270.

was inconceivable that a corporation could be held criminally liable. The argument advanced was that a corporation as an artificial person had no physical existence and could therefore not be subject to prescribed penalties attached to the offences.[1]

Hence it was difficult if not impossible for courts to hold corporation liable. Consequently, only administrative sanctions were applicable to them. But these administrative sanctions could not deter corporation from committing crimes as they were limited to fines and considering the fact that administrative trials are not public.[2] This situation has changed with the integration of corporate criminal responsibility into the Cameroonian Penal Code.[3]

In Cameroon corporate criminal responsibility is still at an infant stage given its incorporation in the revised edition of the penal code in 2016.[4] When Cameroon gained its independence in the 1960s[5], the concept of CCR was not popular. The reasons for such lukewarmness are that: first, the notion of a distinct corporate personality[6] posed a big problem largely because the 1967 Penal Code did not make mention of the criminal liability of corporations, and as such, it was difficult to determine the exact extent of such liability. Moreover, there was no provision in the penal code defining sanctions that could be applied when a legal person was convicted. It had to be deduced from the nature of the criminal sanction, whether such a sanction could be given in effect to a moral person.[7] Secondly, given that at independence, there was the need for industrial and economic development, the fear was that the introduction of corporate criminal responsibility could mean discouraging investment, and industrial and economic development.[8]

It is worth noting that, the 1965 and 1967 Penal Code did not expressly mention the word "company" or "corporation". As such, corporations could only be punished based on the broad interpretation of the said code. A glaring example was the interpretation given to Section 258 (1) and (2) to punish corporations.[9] The word "whoever" as used in that section could not exclude corporations involved in the adulteration of foodstuff, beverage or medical substance whether for human or animal consumption. However, they could not be imprisoned.

Prior to the introduction of CCR in the 2016 revised Penal Code, a handful of national laws have recognized the criminal liability of the moral person such as Law No. 89/27 of 29 December 1989 on Toxic and Dangerous waste,[10] Law No. 94/01 of 10th January 1994 on Forest, Fauna and Fishing,[11] Law No. 96/12 of 05 august 1996 relating to environmental management,[12] Law No. 05/015 of 29 December 2005 on the fight against child

[1] C.M.W. Clarkson, (1996). Kicking Corporate bodies and Damming their Souls. *M.L.R. 59*, p. 1.

[2] F.A Comfort, op. cit. p. 271.

[3] See Section 18 (b), 18 (1) (b), 19 (b) and 20 (b) of Law No.2016/007 of 12 July 2016, amending the Penal Code.

[4] Law No. 2016/007 of 12 July 2016 on the Penal Code.

[5] After the defeat of the Germans in the First World War, Cameroon became a mandated and subsequently a mandatory territory to the French and British and only gained independence in 1960 for French Cameroon and 1961 for British Cameroon.

[6] By the principle of corporate personality, a company upon incorporation acquires a legal personality distinct from its members. This principle was developed by the House of Lords in *Salomon v. Salomon Co. Ltd* (1897) AC 22.

[7] For instance, Section 258 (1) & (2) on adulteration and falsification of food products where companies could be punished through fines, forfeitures, confiscation or destruction of property.

[8] F.A, Comfort op. cit. p. 275.

[9] Section 258 (1) stipulated that "whoever either adulterate any foodstuff, whether for human or animal consumption or beverage or medicinal substance intended to be sold, or keeps any substance designated or fit only for the purpose of effecting such adulteration, shall be punished with imprisonment for from three months to three years and fine of from five thousand to five hundred thousand francs".

[10] Article 4(3) stipulates that, "where the offense is committed by a legal entity, the criminal responsibility shall lie with the natural person, whether or not the latter manages, supervises or controls the activity of that legal entity. The legal entity in question shall be jointly and severally liable with the person or persons sentenced to pay fines, civil compensation, as well as costs and expenses".

[11] Article 150(1) provides that, "Any natural person or corporate body found guilty condition, the provisions of this law and its implementation instruments shall be liable and punishable in accordance with the penalties provided therein".

[12] Article 78 provides that "when the constituent elements of the offence originate from an industrial, commercial, cottage industrial, or agricultural establishment, the owner, operator, director or manager as the case might be, may be liable to fines or legal fees owed by the authors of the offence, and to the rehabilitation of the sites".

trafficking,[1] Law No. 2010/012 of 21 December 2010 relating to cyber security and cyber criminality,[2] Law No. 2011/012 of 06 May 2011 Framework on Consumer Protection[3] and Law No. 2014/028 of 23 December 2014 on the Repression of Acts of terrorism[4]. The areas protected by specific laws are varied in nature. They range from the protection of the environment, protection of economic activities, protection of persons as well as the security and life of individuals.

The multiplication of specific texts in the area of corporate criminal responsibility however, was not enough to bring out a general principle on corporate criminal responsibility. There was the need to insert corporate criminal responsibility in a general text which is the penal code for it to achieve the needed impact. With this the legislator had to introduce corporate criminal responsibility into the penal code in 2016.[5]

2. The Historical Overview of Corporate Criminal Responsibility

Responsible social policy requires that people who victimize society via anti-social or dangerous conducts be deterred. This is because historically, criminal law has been a vehicle for such deterrence.[6] In the same vein, corporations should be deterred for the dangerous acts they commit irrespective of the significant role they play in society. Thus, in the UK and USA, criminal prosecution of corporations and other fictional entities have occurred routinely since the 19thand 20th Centuries respectively. In the late 20th Century, France, Canada and Netherlands enacted standards for holding fictional entities criminally responsible.[7] In other parts of the world, legislative and judicial bodies are being urged to recognize CCR by advocates who point to the major role played by corporations in modern day life and argue that active prosecution of corporations is vital to effective crime control efforts.[8] Be that as it may, because of practical and theoretical problems in prosecuting fictional entities, CCR is controversial. An examination of the historical evolution of the concept will permit us to establish on the one hand the orthodox view that corporations cannot be prosecuted and on the other hand the current position which considers corporations as entities capable of being prosecuted.

2.1 The Orthodox View of Corporate Criminal Responsibility

Originally, the prevalent view was that corporations were a mere collection of individuals, having no independent metaphysical existence, and therefore incapable of incurring culpability in terms of criminal law. This is because crimes were fundamental in nature such as murder, battery, theft, robbery, treason and were clearly the crimes capable of commission by individuals.[9] Given this strand of reasoning, Blackstone submitted that:[10]

A company can neither maintain nor be defendant to an action in battery or such like personal injuries, for a corporate can neither beat nor be beaten, in its body politic. A corporation cannot commit treason, or a felony. It is not liable to corporate penalties nor attainder, forfeiture or corruption of blood, neither can it be committed to prison for its existence being ideal, no man can apprehend or arrest it.

Similarly, Smith and Horgan argued that:

... Since a corporation is a creature of law, it can only carry out such acts as it is legally empowered to, so that any crime is necessarily *ultra vires* and the corporation having neither body nor mind cannot perform the acts of

[1] Article provides that "Notwithstanding the criminal liability of their managers, moral persons can be held liable and asked to pay fines provided for if offences were committed by the managers in the exercise of their duties."

[2] Article 64 stipulates that "Moral persons are criminally liable for offences committed on their account by their managing organs."

[3] According to section 33 "corporate bodies may, without prejudice to the criminal liability of the executives or employees of sales, supply or service, technology or commodity companies, be sentenced to double the fines provided for in section 32 above, if their executives or employees committed offences during or in the exercise of their functions within the structure".

[4] Article 6(1) states that, "for the purpose of this law, a corporate body may be held criminally liable".

[5] Comfort, F.A, op. Cit. p. 276.

[6] B.H Pamela, (1991). Corporate Ethos: A Standard for Imposing Corporate Criminal Liability. *Minnesota Law Review 2048*, pp. 1095-1184, at p. 1096. https//scholarship,law.umn.edu/mlr/2048

[7] E.N Ngwafor, (1985). Corporate Criminal Liability: A Comparative Study. *Institute of Third World Art and Literature*, p. 18. See also B.H. Pamela, (2002). Corporate Criminal Responsibility. *Encyclopedia of Crime and Justice*.

[8] B.H Pamela, (2018). op. Cit, in M.A. Egute, *Principles of Product Liability Law in Cameroon*. Lead Publishers.

[9] E.N. Ngwafor, (1989). *Corporate Criminal Responsibility*, Star Printers and Publishers Ltd. U.K., p. 1.

[10] W. Blackstone, (1965). *Blackstone's Commentaries on the Laws of England*. University of Chicago Press, Vol. 1, p. 464.

form or intent which are the prerequisites of criminal liability.[1]

The justification for the above arguments rests on the fact that the question of *Mens rea* is a very controversial one in imputing criminal responsibility on a corporate body because of their artificial and fictitious nature. Consequently, it was believed that corporations did not have the moral blameworthiness to commit crimes of intent. Most critics argued that criminal liability should not extend to corporations based on the maxim *societas delinquere non potest*, which means 'a legal entity cannot be blameworthy'.[2]

In most cases, corporations were held responsible in civil law under the vicarious liability doctrine which determines the liability of the corporation by attributing liability of the natural person to the corporation. For any criminal responsibility to lie, there must be two separate elements namely the *actus reus* and *mens rea*[3] which gives it a perfectly good sense when applied to individuals but do not easily translate to fictional or inanimate entities such as a corporation.[4]

Another obvious reason why it was difficult to bring corporations to answer for their crimes is that, there was procedural difficulties. According to criminal procedure, once a crime is committed, the courts usually require the accused to make an appearance in court. This could only be possible by natural persons and not corporate entities as the latter could not be either arrested or compelled to remain present during criminal proceedings.[5]

2.2 Corporations as Real Entities

The evolution of CCR is a remarkable instance of judicial and legislative activism in law as it puts to rest the traditional view that corporations could not be criminally responsible. This position has evolved and corporations are now believed to be identifiable entities and morally responsible agents. This is because upon incorporation, a company acquires a legal personality distinct from those of its members.[6]

Similar to most other developments within the law, the church also played a major role in the development of CCR. In the 12th century England, as the power of the landowner was reduced, the question of who actually owned the church was raised. As it was not deemed fit for the church to be owned either by the clergy or its patron saint, church property was to be owned by "the church" — that is the whole congregation treated as one single person for legal purposes. The church used this system to inherit land to such a degree that in 1279, King Edward I issued a Statute that limited the amount of land that could be passed on to what was then termed a corporate person.[7] Today, the notion of juristic or legal persons is well established in most legal systems. Without this abstract conception, the idea of CCR would be inconceivable.

Hence corporations can now be made liable for non-feasance, that is, for omitting to act. It is worth noting that in the quest for profits, corporations should not go against the state prohibitions particularly when it concerns public safety and welfare. This explains why many developed countries worldwide and Cameroon have introduced CCR in their laws. England for instance introduced CCR in 1842 following the decision in *R v. Birmingham and Gloucester Railway Company*[8], the Netherlands 1952[9], the Nordic countries 1990, France

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[1] J.Coplan, R. Weisberg, G. Binder, (2012). *Criminal Law Cases and Materials*, 7th ed. (Butterworth, 2012), p. 149, quoting Smith and Hogan in *Texts, Cases and materials*; See also Chioma EZE Emem and Amadi Prince Uche, (2012). A New Dawn of Corporate Criminal Liability Law in the United Kingdom: Lessons for Nigeria. *African Journal of Law and Criminology*, *2*(1), pp. 86-98, 87.

[2] E B Diskant, (2008). Comparative Corporate Criminal Liability: Exploring the Uniquely American Doctrine through Comparative Criminal Procedure. *Yale Law Journal*, *118*, 126, 129.

[3] It is trite principle in criminal responsibility that, there must be a wrongful act, *actus reus* combined with a wrongful intention, *mens rea*. This principle is incorporated in the Latin Maxim, *actus non facitreum, nisi mens sitrea*, meaning, an act does not make one guilty unless the mind is also blameworthy. A mere criminal intention not followed by a prohibited act does not constitute an offence. In the same vein, mere *actus reus* ceases to be a crime as it lacks *mens rea*.

[4] F.A Comfort, (2003). op. cit. p. 273, Citing J. Gobert, M. Punch, *Rethinking Corporate Crime* (Butterworths, U.K.), p. 10.

[5] Faiz Kazi, (n.d.). Project on the Constituent Elements of Crime in the Indian Penal Code. Available at https//www.academia.edu/437424/Constituent_Elements_of_Crime. Accessed on October 2, 2021

[6] This was the position of the House of Lords in *Salomon v. Salomon Co. Ltd* (1897) AC 22. In Cameroon, a corporation is incorporated as soon as it is registered in the Trade and Personal Property Credit Register (TPPCR) known in French as Registre du Commerce et du Credit Mobilier (RCCM). This is in line with Article 97 and 98 of the OHADA UACCEIG.

[7] R.H, Weijman Jansson, (2018). Corporate Criminal Liability: Time for Sweden to look beyond individual Criminal Responsibility? Unpublished Master's Thesis in International Law, p. 29.

[8] [1842] 3 QB 223.

[9] Article 51 of the Netherlands Penal Code of 1976 has adopted corporate crime.

1994[1], Belgium 1999, Switzerland 2003, Austria 2006, Portugal 2007, Spain 2010 and Cameroon 2016[2]. However, other countries do not consider corporations as legal entities criminally responsible. Examples of such countries include: Sweden, Russia and Germany.

The gravity of the consequences of negligence, management, systemic failures, and recklessness of corporations has brought to the fore, the important issue of CCR. Henceforth, if a statutory duty is cast upon a corporation, failure to observe or comply with such duty can lead to the corporation being convicted of the statutory offence.[3] It is in this regard that the Bombay High Court in the Indian Case of *State of Maharashtra v. Syndicate Transport Co. Ltd*[4] did not see any justification to exclude a corporation from liability for crimes committed by its directors, agents or servants while acting for or on behalf of the corporation.[5] The U.S Supreme Court adopted a similar approach in the case of *New York Central & Hudson River Railroad v. United States*[6] and held that criminal responsibility could be imputed to the corporation based on the benefit it received as a result of the criminal acts of its agents. Nevertheless, a corporation cannot be guilty of offences such as bigamy or perjury which by their very nature can only be committed by natural persons nor can a corporation be found guilty of a crime where the only punishment is death or imprisonment. Apart from these exceptions, corporations may be criminally responsible both for statutory and common law offences even though the latter involve *mens rea*: and in construction of any laws dealing with an offence punishable on indictment or on summary conviction, the expression "person" includes a body corporate unless the contrary intention appears.

A corporation can only commit an offence via its agents. It is a question of fact in the given circumstance whether the criminal act of the agent is the act of the corporation and whether the state of mind, intention, knowledge or belief of the agent can be attributed to the corporation. This will depend on the position of the agent vis-à-vis the corporation, the nature of the offence and other relevant facts and circumstances of the case.[7]

English courts by mid-nineteenth Century were willing to hold corporations criminally responsible for wrongful acts and omissions. By so doing, English courts introduced the ''identification" theory by which corporations were prosecuted for crimes of intent. This theory merges the personality of the corporation and its controlling individuals, and holds it criminally responsible for crimes committed by persons who represent the directing mind and will of the corporation.[8]

3. Types of Corporate Bodies that Could Be Held Liable in Cameroon

For the purpose of CCR, the Cameroon Penal Code has mentioned moral persons without any distinction as to the civil or commercial character, as to public or private character or as to foreign or national character.[9] The only exception is the state, decentralized territorial collectivities and its agencies. Another question begging for an answer is to know if the term "moral person" is limited only to those corporations that have acquired legal personality. In response to this question, Ntono Tsimi affirms that the legislator has given an operative meaning that permits an efficient application.[10] The writer opines that, it would not be normal that only those who have actually acquired the legal personality by matriculation in the Trade and Personal Property Credit Register (TPPCR) be liable; this is because certain moral persons should not hide behind the idea of non-registration to escape from criminal liability. Failure to register the company is already an offence on its own. The fact that the legislator has not defined moral persons can be interpreted to mean that moral persons include all categories apart from those that have been expressly mentioned in the law.[11] Excluding moral persons that do not have the

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[1] Article 121-2 of the French penal code provides that "les personnes morales a l'exclusion de l'etat, sont responsables penalement..."

[2] The Cameroonian penal code in its article 18 (b) and 19 (b) have brought out both principal penalties and accessory penalties for moral persons.

[3] M.A. Egute, op. cit, p. 149.

[4] 12 AIR 1964 Bom 195. Available at https://indiankanoon.org/doc/677388. Accessed on 02/10/2021.

[5] This case deals with the question as to whether a corporate body is liable for punishment of offence involving *mens rea*. It also highlights the criminal liability for breach of trust and cheating under Section 406, 403 and 420 of the Indian Penal Code.

[6] 212 U.S. 481 (1909).

[7] Halsbury's Laws of England. (1964). Halsbury's Laws of England. 3rd ed., Volumes 1-43. UK, Lexis Nexis Butterworths. p. 181-182.

[8] M.A. Egute, (1996). op.cit, Citing Doelder and Tiedemann, "Criminal liability of Corporations. The Hague, The Netherlands", Kluwer Law International.

[9] Comfort, F.A, op. cit. p. 280.

[10] Comfort, F.A, op. cit. p. 280, citing Ntono Tsimi, "*Le Devenir de la Responsabilité Pénale des Personnes Morales en Droit Camerounais, des dispositions spéciales vers un énoncé General*" *Juridique périodique* no. 89, p. 87.

[11] Section 74-1 (b) of Law No.2016/007 of July 2016 relating to the Penal Code.

legal personality due to non- registration will be to distinguish where the law has not done so and by so doing weakening the efficacy of the law.

Section 74-1 (a) of the Penal Code assures us of the predictability of the Penal Code by individualizing the entities that cannot be assimilated to juristic persons or corporate bodies. The legislators have held that with the exception of the state and its agencies, corporate bodies shall be criminally responsible for offences committed on their behalf.[1] Corporate bodies within the meaning of the OHADA Uniform Act on Commercial Companies and Economic Interest Groups include all commercial companies which are incorporated or unincorporated in the region.

Due to the difficulty of circumscribing the boundaries between a company and a partnership, the French term "*société commerciale*", translated to mean commercial companies, is used. In terms of Article 4 of the Uniform Act on Commercial Companies, a commercial company involves a "contract between two or more persons who agree to assign assets in kind or in cash to an activity for the purpose of sharing profits or benefiting from savings that may accrue therefrom". This definition is misleading because the OHADA legislator has not sufficiently maintained the distinction between a company and a partnership.[2] However, the Uniform Act offers a wide range of business structures through which commercial activities can be conducted. We shall in turn discuss these corporate bodies alongside companies of the public sector so as to determine those that can be criminally responsible and those that cannot.

3.1 Companies of the Private Sector Governed Entirely by Private Law

The OHADA Uniform Act on Commercial Companies and Economic Interest Groups provides various types of commercial companies with either limited or unlimited liability[3] namely: private companies (*Société en Nom Colletif: SNC*)[4], sleeping partnership (*Société en commandite simple: SCS*)[5], private limited liability company (*Société A Responsabilité Limité: SARL*)[6], public limited liability company (*Société Anonyme: SA*)[7], joint venture (*Société en Participation*)[8], *de facto* partnership companies (*Société de fait*)[9], simplified public limited company (*Société par Actions Simplifiée: SAS*)[10] and economic interest groups[11]. With the exception of joint ventures and *de facto* companies, every company is required to apply for registration at the competent court within whose jurisdiction in which it carries out its principal activities.[12] The concept of incorporation does not extinguish the corporate criminal responsibility, meaning corporate bodies which include partnerships, incorporated joint ventures and *de facto* companies shall be criminally responsible for offences committed on their behalf except the state and its agencies.

3.2 Companies of the Public Sector Endowed with Special Legal Status

As concerns public sector companies, law No. 2017/010 of 12 July 2017 to lay down the general rules and regulations governing public establishments and law No. 2017/011 of 12 July 2017 to lay down the general rules and regulations governing public corporations regulate three types of corporate personalities namely: public establishments, corporations whose share capital is wholly held by the state (state owned enterprise) and corporations whose share capital is only partially held by the state (semi-public corporation). The organization and management of these companies is governed both by private law provisions and by specific rules and

[1] *Ibid*, section 74-1 (a).

[2] Ngaunde Leno and Nguindip Nana, "Imputation of Criminal Liability on Corporate Bodies in Cameroon", p. 585

[3] In limited liability companies, the liability of each shareholder for the debts of the company is limited to the amount of his shareholdings while in unlimited liability companies, the shareholders or some of them have unlimited liability as their liability for the company's debts extends to the private assets. Unlimited liability companies are called *société de personnes* and are based on the *intuitu personae* since the relationship is personal and what matters most is the person himself or herself rather than the amount of financial contribution.

[4] Article 270 Uniform Act on Commercial Companies and Economic Interest Groups.

[5] *Ibid*, Article 293.

[6] *Ibid*, Article 309.

[7] *Ibid*, Article 385.

[8] *Ibid*, Article 854.

[9] *Ibid*, Article 864.

[10] *Ibid*, Article 853-1.

[11] *Ibid*, Article 869.

[12] Articles 20-68 of the Uniform Act on General Commercial Law. In Cameroon, the President of the CFI is empowered to register companies and security rights in the country. This is by virtue of Decree 2002/302 of 3 December 2002.

regulations pertaining to the public sector and certain sectors of activity like banking/finance and insurance.

A public establishment is a corporate body governed by public law endowed with legal personality and financial autonomy, responsible for managing a public utility or carrying out a special general interest mission on behalf of the state or a regional or local authority.[1] A public establishment as such is an institution that is made of at least nine hybrids including: administrative public establishment, cultural public establishment, hospital public establishment, social public establishment, scientific public establishment, technical public establishment, professional public establishment, economic and financial public establishment and special public establishment.[2]

A state owned enterprise is any legal person under private law, having financial autonomy whose share capital is held exclusively by the state, one or more public enterprises or one or more regional or local authorities, set up to undertake, in the general interest, industrial, commercial or financial activities.[3] It is clear from this definition that a state owned corporation is a legal form that does not admit of private capital and falls under public authority. Under the legal regime of "public corporation", the latter exercises its activities following laws, regulations, customs and practices of public limited liability companies governed by Article 385 of the OHADA UACCEIG subject to the provisions of law No. 2017/011 of 12 July 2017 to lay down the general rules and regulations governing public corporations.[4]

As concerns corporation whose share capital is partially held by the state, it is a legal person under private law, having financial autonomy and with share capital that is majority owned by the state, one or many state corporations or several local authorities.[5] A semipublic corporation is generally a public limited company governed in terms of activities and organization by the UACCEIG subject to special waivers in favour of the state over the appointment of state representatives in the general meeting of shareholders. The legal framework regulating semi-public corporations is from different from that of public limited companies under the UACCEIG. In this light, section 76 law No. 2017/011 of 12 July 2017 to lay down the general rules and regulations governing public corporations is to the effect that, the incorporation, administration, management, supervision, dissolution and liquidation and a semi-public enterprise shall be in accordance with the provisions of the OHADA UACCEIG. By contrast, the state control is less evident in corporations where it holds less than 25% of the share capital and voting rights.

From the foregoing we can see that the category of moral person which can be held criminal responsible is not limited to companies. It generally includes all moral entities with a distinct legal personality which confers on them certain rights and obligations. Thus, trade unions as well as associations can also be held criminally responsible. Section 74-1 (b) however specifically excludes the state and its agencies from any possible criminal responsibility. Thus, the central government, the ministries, deconcentrated entities, decentralised collectivities, public establishments and all moral persons of public law cannot be held criminally responsible.

3.3 Types of Crimes for Which a Corporation Can Be Held Liable

Corporations are liable for all kinds of harm caused to the social values protected by the Penal Code. Like England, Netherlands, Belgium and Canada, Cameroon adopted the general liability system under which a corporation is liable for any type of crime except those that cannot be committed by corporations such as treason, bigamy, witchcraft, incest, murder and rape, that is, those that it cannot be imprisoned or punished like an individual.[6] Essentially, a corporate body can be prosecuted for environmental pollution, depletion of natural resources, non-compliance with environmental legislations and standards, invasion of privacy, accounting and financial fraud, tax evasion, embezzlement, bribery and corruption and manslaughter with the most recent and prominent case in Cameroon being the Eseka train crash of October 2016, in which the negligence of the managing organs of the company in charge of railway transport resulted in great loses of money, jobs, and even lives (manslaughter).[7] The above are generally referred to as corporate crime. The Black's Law Dictionary defines corporate crimes as "illegal acts, omissions or commissions by corporate organizations themselves as

[1] Section 4 para 4 of Law No. 2010/10 of 12 July 2010 to lay down the general rules and regulations governing public establishment.

[2] *Ibid*, Section 2(1).

[3] Section 3 para 10 of Law No. 2017/011 of 12 July 2017 to lay down the general rules and regulations governing public corporations.

[4] *Ibid*, Section 10.

[5] *Ibid*, Section 3 para 11.

[6] Ngaunde Leno and Nguindip Nana, op. cit, p. 585, citing Anca IP, Corporate *liability of Corporations — A Comparative Jurisprudence*, submitted in partial fulfillment of the requirements of the King Scholar Program, Michigan State University College of Law, Spring 2006, p. 21.

[7] Elvis Teke, Eseka train accident: Names of 744 victims published, available at: www.crtv.cm, 6 august 2019.

social or legal entities or by officials or employees of the corporations, acting in accordance with operative goals or standard operating procedures and cultural norms of the organization, intended to benefit the corporations themselves".[1] However, our focus will be on crimes relating to the environment, otherwise known as environmental crimes.

An environmental crime is an unauthorized act or omission that violates the law and is therefore subject to criminal prosecution and sanctions. It is worth noting that, not all flagrant disregard of the environment is punishable; however, it must be specified as a crime by law at the time the act or omission occurred. This is in line with the principle of legality[2] expressed in the Latin Maxim *nullum crimen nulla peona sine lege* meaning, there can be no crime and no punishment except as prescribed by law. Environmental Criminal law defines environmental crimes and prescribes punishment.

Although all environmental crimes share a common target, they exhibit important differences. They differ mainly in the perpetrators who commit them, the criminal action they entail, the victims they harm, and the law enforcement agencies that govern them. The most glaring basis for comparison is who commits environmental crimes? On this basis, four types of environmental crimes can be distinguished namely: corporate, organized, state and personal. Each entails different levels of risk to public health and the environment.[3] Our focus in this paper is on corporate environmental crimes.

We and our environment are at risk. Water, air and soil pollution; hazardous waste disposal; global warming; acid rain and reduction of the ozone layer threaten the natural environment and endanger people's health. Corporations are known for non-compliance and disregard of environmental legislations. Their desires for huge profit maximization make them potential violators of national and international environmental, health and safety standards. The most recurrent corporate environmental crimes in Cameroon include pollution, depletion of natural resources and the disregard of legislations geared towards environmental protection.

4. Sanctions

A sanction is akin to punishment which is the infliction of consequences normally considered unpleasant on a person or a corporation convicted for a crime. The fact remains that when a corporation is held liable, it is punished and punishment includes a variety of sanctions. The issue of sanctions is today the subject of heated doctrinal debates, and often times, the argument for rejecting corporate criminal responsibility. The most consistent argument is that corporate criminal responsibility is inconsistent with basic tenets of criminal law. A corollary argument is that using criminal justice system inappropriately, by imposing criminal sanctions on corporate bodies, distorts, cheapens and ultimately weakens the criminal justice system. Proponents of this view argue that CCR is inconsistent with the criminal law in two respects. First, the current models of attributing CCR, which are based upon the identification, the vicarious liability or aggregation models as the case may be, are incompatible with the cardinal principle in criminal law that an actor can only be held responsible for its own action and intent. Since a corporation is a fictional entity in law, it has no intent and consequently not suitable for criminal prosecution, and the subterfuge of imputing another actor's act and intent to the corporation cannot substitute for this deficiency in proof. This argument also points to imprisonment as a defining characteristic of the criminal law and argues that since fictional entities cannot be imprisoned, CCR is inappropriate.[4]

For some critics, CCR should be rejected because criminal responsibility is individual in character and not corporate. This is in fact saying that in sanctioning a corporation, all its members are sanctioned regardless of whether they participated in the criminal offence.[5] It has equally been argued that CCR would result in double sentencing of both the corporation and its members for the same offence.

The last argument advanced against CCR is that imposing it is detrimental to innocent actors namely: shareholders, who especially in the context of a large publicly held corporations are powerless to effect the

[1] B.A. Garner, (1999). *Black's Law Dictionary*, 7th ed. West Group, st. Paul Minn, p. 377.

[2] Section 17 of the Cameroon Penal Code provides that "No penalty or measure may be imposed unless provided by law, and except in respect of an offence lawfully defined".

[3] Yingyi Situ & David Emmons, (n.d.). Environmental Crimes: The Criminal Justice System's Role in Protecting the Environment. Available at https://sk.sagepub.com/books/environmental-crime/n3.xml#:~:text=corporate%20environmental%20crimes%are%20. Accessed on 14/19/2021.

[4] Corporate Criminal Responsibility: Critique of Corporate Criminal Liability. Available at https://www.law.jrank.org/pages/745/corporate-criminal-responsibility-critique-corporate-criminal-liability.html#. Accessed on 9 June 2023.

[5] Anca IP, (2006). Corporate *liability of Corporations — A Comparative Jurisprudence*, submitted in partial fulfillment of the requirements of the King Scholar Program, Michigan State University College of Law, Spring, p. 21.

conduct of corporate executives; bondholders holders and other creditors; employees; the community in which the corporation is situated and that may be adversely affected by serious consequences imposed on the corporation; and consumers, who likely will pay higher prices because of the criminal sanction imposed.

On the other hand, are those who uphold the doctrine of CCR. To them, CCR does not conflict with the individual character of criminal responsibility because the only person suffering the direct effects of a criminal sanction is the company whose property is separated from its members who assumed to risk their contributions to the corporation when they are reckless or act in their personal capacity.[1] Put differently, members cannot avoid legal penalties that would result from their actions as members. Another major argument offered for CCR is utilitarian: corporations are major actors in today's world and crimes cannot be fought effectively without appropriate mechanisms to pursue all actors. A corollary argument is that allowing corporations to engage in criminal activities gives illegal corporations a competitive edge over law-abiding corporations. This, in turn, distorts and undermines market forces in a capitalist economy. This argument is premised on the belief that CCR can change corporate behavior in two ways. First, general deterrence of similar behavior by many corporations is achieved through publicity about corporate prosecutions. Second, options for sentencing convicted corporations, such as community service and probation, which require implementation of an effective corporate compliance plan, force changes within a corporation.[2]

In spite of the divergent views discussed above, Cameroon has adopted a comprehensive sentencing system for individuals and corporate entities. It may include for natural persons the infliction of death, imprisonment or fine and for corporate bodies, dissolution, temporary or final closure or fine by reason of section 18(a) and (b) of the Penal Code. Added to the above are alternative penalties which include community service and reparatory sentence. But there are also accessory penalties which for natural persons include forfeitures, publication of judgment, closure of establishment and confiscation, while for corporate bodies they include ban for a specified period time, on the direct or indirect exercise of any activity or all its activities, placement under judicial supervision for a specified period of time, closure for a specified period of time, of establishments or branches having served in the commission of the offence, and publication or media broadcast of the judgment by reason of section 19(a) and (b) of the Penal Code. The penalties may also include preventive measures which according to Section 20(a) and (b) of the Penal Code include for natural persons ban on exercise of activity, preventive confinement, post penal supervision and assistance, confinement in a special health institution and confiscation. As concerns corporate bodies they include ban on the exercise of activity for a specified period of time, confiscation and placement under judicial supervision for a specified period of time. Besides the afore mentioned penal sanctions, we equally have administrative sanctions which can be imposed on the corporation notably administrative fines, warning/reprimand, forfeiture and withdrawal of license or authorization. The above sanctions could be subdivided into principal penalties, accessory penalties, preventive measures, alternative penalties and administrative sanctions.

Although the imposition of these sanctions on corporations by the legislator is plausible, it is important to remark that a major problem encountered with this imposition is the application of sanctions against the corporation. This problem is exacerbated by the theoretical difficulty in establishing the guilty mind (*mens rea*) of the corporation as well as the practical difficulty in applying appropriate sanctions on the corporation.

Another problem encountered with the introduction of CCR is the procedural challenges in prosecuting corporations. Given that substantive rules will be useless if there are no appropriate procedures in place to implement them, the Cameroonian legislator seems to have hastily introduced CCR in the Laws without taking into consideration the fictitious nature of a corporate body. By not also amending the Criminal Procedure Code (CPC) to suit the substantive rules, the legislator seems to have disregarded the procedural difficulties involved in charging corporate entities to court. As such, holding a corporation criminally responsible raises certain procedural questions such as who must be summoned? who must stand in the dock? who must act on behalf of the corporation during trial? how arraignment should be done, *etc.*? The Criminal Procedure Code has not addressed these issues.

As per the CPC, the personal appearance of the accused is required during trial. This is in line with section 348 of the Code which provides that an accused on whom personal service has been affected shall be bound to appear before the court. Such an accused shall also appear before the court if it is proved that he had knowledge of the summons. But it is evident that corporate bodies will not be able to comply with this requirement, or else their legal representatives will be required to appear. The personal appearance of the accused during trial is

[1] Ibid, p. 37.

[2] Corporate Criminal Responsibility: Critique of Corporate Criminal Liability. Available at https://www.law.jrank.org/pages/745/corporate-criminal-responsibility-critique-corporate-criminal-liability.html#. Accessed on 9 June 2023.

important because the presiding magistrate is called upon to consider the demeanour of the accused. Considering that a corporation has no physical body nor soul to be compelled to physically appear, enter the dock or witness box to testify, it will be practically impossible for the provisions of section 348 of the CPC to apply with respect to corporate bodies. As far as trial[1] is concerned, the CPC in section 359 (1) requires the presiding magistrate after having complied with the provisions of section 338[2] to cause the charge[3] to be read out to the accused and shall ask him if he pleads guilty or not. This is technically referred to as arraignment. This procedure is practicable as far as natural persons are concerned but does not easily translate to a corporate body which has no physical existence and is not capable of thinking for itself or of forming any intention of its own.[4]

Furthermore, in case the corporation is sentenced, what will happen when a fine is imposed on the latter who does not pay on the spot as required by section 557 CPC[5]? How will imprisonment in default of payment be executed against the corporate body? Other questions remain unanswered by the Law, such as the mode of summoning a corporate body to appear in court and how criminal records of corporate bodies shall be kept.

5. Conclusion

Considering the dangerous nature of the activities of some corporate bodies and the harm they present to the environment; the Cameroonian legislator has introduced the concept of Corporate Criminal Responsibility under the identification model practiced in the United Kingdom wherein corporations are criminally responsible for offences committed on their behalf by their organs or representatives. Corporations in their day-to-day operations commit environmental crimes ranging from pollution, depletion of natural resources to disregard of environmental legislation and standards. In response to these crimes, the Cameroonian legislator has enacted laws and established institutions to address CCR in relation to environmental protection. Despite the non-recognition of corporate criminal responsibility in some legal systems, Cameroon has adopted a comprehensive sentencing system for both natural persons and corporate bodies. But our point of focus was placed on corporate bodies which could be fined, dissolved, banned, closed or placed under judicial supervision, subjected to alternative penalties of community service or reparatory sentence as well as the imposition of administrative penalties such as administrative fines, suspension or revocation of licenses or authorization and forfeitures. In spite of the imposition of these sanctions, corporations still violate environmental legislations. This raises the question as to whether these sanctions are severe enough to produce the desired deterrent effects or whether the laws are not effectively implemented. In order to make the criminal law effective there is the need for the legislator to bring up solutions to the numerous procedural difficulties that have been posed as a result of introducing CCR notably the amendment of the CPC. In case an offence is committed by a corporation, the amended version of the criminal procedure code should clearly state the person to be summoned, the person to stand on the dock or act on behalf of the corporation during trial and how arraignment should be done.

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[1] Trial was defined by Wali JSC in *Kajubo v. The State* [1988] 3 SCNJ P.231 who made use of the definition contained in Blacks Law Dictionary where trial is defined as: "a judicial examination and determination of issues between the parties. A judicial examination in accordance with the Law of the land or of a cause, either civil or criminal, of issues between the parties, whether of Law or fact before a court that has proper jurisdiction".

[2] Pursuant to section 338 of the Criminal Procedure Code, the presiding magistrate shall declare the session open and ask the registrar in attendance to call the cases listed for hearing. He shall, for each case called, ascertain whether all the parties and other persons summoned are present or absent. He shall also verify the identity of every accused and shall mention all these formalities in his record book and judgment.

[3] Section 2 of the repealed Criminal Procedure Ordinance, Cap. 43 of the 1958 Laws of the Federation of Nigeria defined a charge as the statement of offence or statement of offences with which an accused is charged in a summary trial before a court.

[4] Its thinking and acting are done for it by directors or servants, and it is argued that it is these persons of flesh and blood who ought to be punished.

[5] Pursuant to section 557 CPC imprisonment in default of payment shall be a procedure which aims at compelling a convict to execute a pecuniary sentence pronounced against him or make restitution ordered by a court in a criminal case. It shall be applicable without prior notice at the instance of the Legal Department in the event of non-execution of a pecuniary sentence or non-restitution of property. It shall equally consist of a term of imprisonment during which the debtor shall be obliged to work.

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Analysis of Changes in the Investment Environment for the Electric Vehicle Industry Under the EU's 2035 Carbon Neutrality Goal

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Abstract

The European Union's ambitious 2035 carbon neutrality goal has significantly transformed the investment environment for the electric vehicle (EV) industry. This paper analyzes the changes in investment trends, technological innovation, infrastructure development, and strategic positioning within the EU's evolving landscape. By examining policy frameworks, market dynamics, and the influence of international competition, this study highlights the factors driving increased investment in the EV sector. Furthermore, environmental and social considerations are discussed as essential elements influencing investment strategies, with particular attention to sustainability and regional disparities. The findings indicate that technological advancements, particularly in battery technology and charging infrastructure, will continue to shape the EU's investment environment. Policy support and collaboration between public and private sectors are identified as critical factors for enhancing competitiveness and ensuring inclusive growth. The paper concludes with policy recommendations aimed at promoting a resilient and balanced investment environment for the European EV industry.

Keywords: electric vehicle industry, investment environment, European Union, 2035 carbon neutrality goal

1. Regulatory Framework and Policy Evolution

The European Union's 2035 carbon neutrality goal is a critical component of the European Green Deal and the Fit for 55 package, aiming to reduce greenhouse gas emissions by 55% by 2030 compared to 1990 levels and achieve full carbon neutrality by 2050. A significant aspect of this objective involves the complete phase-out of new internal combustion engine vehicles (ICEVs) by 2035. This policy framework has transformed the investment environment for the electric vehicle (EV) industry by establishing stringent regulations and providing clear long-term signals for investors.

The evolution of the regulatory framework can be divided into three main stages. The initial phase (2010-2020) focused on incentivizing the adoption of EVs through financial subsidies, tax reductions, and research and development grants aimed at lowering the costs associated with EV production and purchase. During this period, member states introduced various national policies to encourage EV adoption, but the lack of a unified regulatory approach limited overall effectiveness.

From 2021 to 2025, the EU introduced more robust regulations as part of the Fit for 55 package, including mandatory emission reduction targets and stricter CO_2 standards for new passenger cars and vans. These policies have been complemented by significant investment in charging infrastructure expansion and enhancements to energy storage technology. Furthermore, the introduction of the Alternative Fuels Infrastructure Regulation (AFIR) has aimed to ensure a cohesive and accessible charging network across the European Union.

The period from 2026 to 2035 is expected to witness the enforcement of total bans on new ICEV sales and the implementation of even stricter emission standards. This regulatory shift places considerable pressure on

automakers to accelerate their transition toward electric powertrains, enhancing the competitiveness of EV manufacturers and suppliers across the region. The EU's Carbon Border Adjustment Mechanism (CBAM) also plays a crucial role by penalizing carbon-intensive imports, promoting cleaner technologies and bolstering the EV industry's growth.

The impact of these evolving policies on the investment environment is profound. The clear and ambitious regulatory targets have created a predictable and attractive environment for investors by reducing policy uncertainty and signaling strong governmental support for the EV transition. Financial incentives, low-interest loans, and tax breaks are particularly effective in attracting both private and public investments. Additionally, EU grants and funding programs, such as the Innovation Fund and Horizon Europe, are actively promoting technological advancements in battery manufacturing, charging infrastructure, and energy management systems.

Furthermore, the regulatory framework has driven increased collaboration between automakers, technology companies, and energy providers. Joint ventures and partnerships aimed at developing advanced batteries, power management systems, and scalable charging networks have become common, illustrating the critical role of regulatory pressure in fostering innovation and investment.

The alignment between policy goals and industry development has also prompted the diversification of investments along the EV value chain. From raw material sourcing and battery manufacturing to grid infrastructure and recycling technologies, the investment landscape is expanding to cover all aspects of the EV ecosystem. This comprehensive approach not only supports the growth of established automakers but also creates opportunities for new market entrants and technology startups.

2. Market Dynamics and Growth Potential

2.1 Current Market Landscape of the EV Industry in the EU

The electric vehicle (EV) market in the European Union has experienced substantial growth over the past few years, driven by ambitious climate policies and evolving consumer preferences. The European Automobile Manufacturers' Association (ACEA) reports that battery electric vehicles (BEVs) now account for approximately 15% of all new car registrations in the EU as of 2025. This represents a significant increase from 6.9% in 2020, highlighting the accelerating transition towards electrification across the region.

Figure 1 shows the EV market share growth in the EU compared to other major markets such as China and the US from 2019 to 2030. According to the data provided by ACEA and S&P Global Mobility, the market share of BEVs in the EU+EFTA+UK is projected to reach approximately 30% by 2025, far exceeding previous conservative estimates of 20%. This strong growth trajectory is expected to continue, with the market share projected to reach 70.7% by 2030, making the region a global leader in EV adoption.

The rapid increase in BEV market share is primarily driven by stringent EU emission regulations, generous consumer incentives, and substantial investments in charging infrastructure. Key markets such as Germany, France, and the Netherlands are leading this transformation through aggressive policy frameworks and infrastructure development.

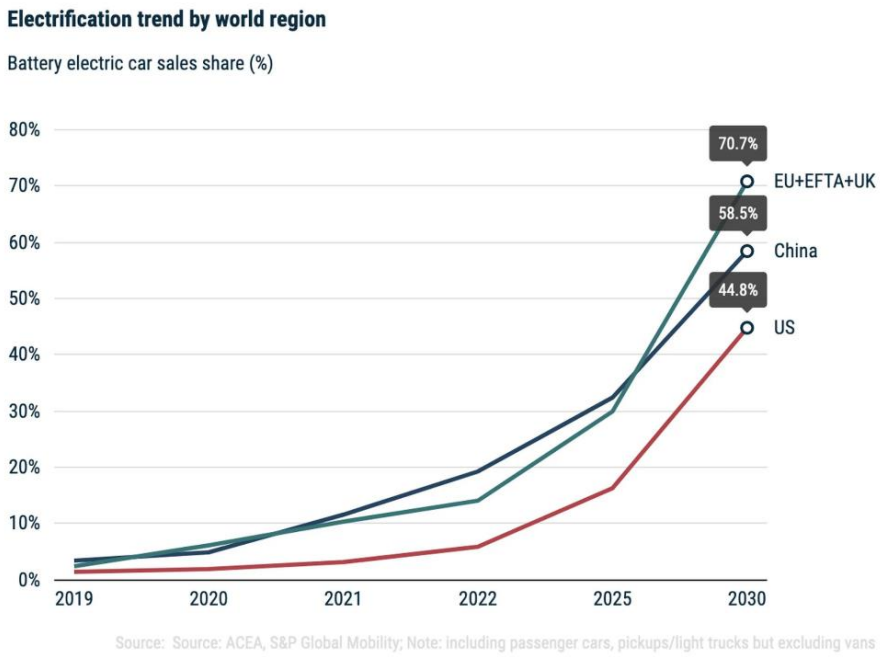

Figure 1. EV Market Share Growth in the EU, China, and the US (2019-2030)

Source: ACEA, S&P Global Mobility.

The data presented in Figure 1 highlights that the EU's electrification rate is significantly higher than that of China and the US. The European market's remarkable growth is largely attributed to ambitious policy initiatives under the European Green Deal and the Fit for 55 package, which aim to phase out internal combustion engine vehicles (ICEVs) by 2035. The increasing availability of affordable EV models, combined with advancements in battery technology and charging networks, has also played a crucial role in expanding market share.

The rapid increase in BEV market share as illustrated in Figure 1 has significantly enhanced the attractiveness of the EU's electric vehicle market to investors. This projected growth has already triggered substantial investments in battery manufacturing, charging infrastructure development, and the production of new electric vehicle models. The anticipated market expansion provides a strong incentive for investors to capitalize on the burgeoning demand for electric mobility within the EU, further shaping the investment environment toward sustainable and technologically advanced solutions.

2.2 Factors Driving Increased Investment in the EV Sector

The substantial growth of the EV market in the European Union is supported by multiple factors that enhance its attractiveness to investors. Key drivers include government policies, technological innovation, infrastructure development, and shifting consumer preferences.

Government incentives remain a crucial component of the investment landscape. Generous subsidies for EV purchases, tax reductions, and exemption from urban access restrictions have lowered the total cost of ownership, making EVs more accessible to consumers. Germany, for instance, continues to offer up to €6,000 per vehicle under its environmental bonus scheme, which has proven effective in boosting EV sales.

Technological advancements, particularly in battery technology, are also pivotal in attracting investment. The development of solid-state batteries, improved energy density, and faster charging capabilities have addressed some of the most pressing consumer concerns related to range and charging convenience. Investment in battery recycling and energy management systems is further enhancing the sector's growth potential.

Another critical factor driving investment is the rapid expansion of charging infrastructure. The EU's plan to deploy over 1 million public charging points by 2025 aims to alleviate range anxiety and improve consumer confidence in EV adoption. Countries with well-established charging networks, such as the Netherlands, have shown higher EV penetration rates, demonstrating the importance of accessible infrastructure.

Consumer demand for cleaner and more sustainable transportation options continues to grow, driven by increased environmental awareness and evolving societal preferences. As automakers expand their electric vehicle offerings, the market is expected to become even more competitive, further stimulating innovation and

investment.

3. Technological Innovation and Infrastructure Development

Technological innovation and infrastructure development are the driving forces behind the rapid growth of the electric vehicle (EV) industry in the European Union. The EU's ambitious 2035 carbon neutrality goal has accelerated technological advancements, infrastructure expansion, and investment inflows aimed at transforming the transportation landscape.

3.1 Emerging Technologies Influencing the EV market

The EV market is undergoing significant technological shifts aimed at improving efficiency, cost-effectiveness, and user experience. The most critical area of innovation is battery technology, which remains the cornerstone of EV performance and market acceptance.

Battery technology has seen notable improvements in energy density, cost reduction, thermal management, and charging efficiency over the past five years. According to the International Energy Agency (IEA), energy density has increased by approximately 20% between 2020 and 2025, while the cost per kilowatt-hour (kWh) has dropped by nearly 30% due to advancements in manufacturing processes and material optimization.

The development of solid-state batteries is considered a game-changing breakthrough in the industry. Unlike traditional lithium-ion batteries, solid-state batteries use a solid electrolyte instead of a liquid one, resulting in higher energy density, improved safety, and faster charging capabilities. Companies such as Volkswagen, Toyota, and QuantumScape are heavily investing in this technology, with commercialization expected to accelerate by 2030.

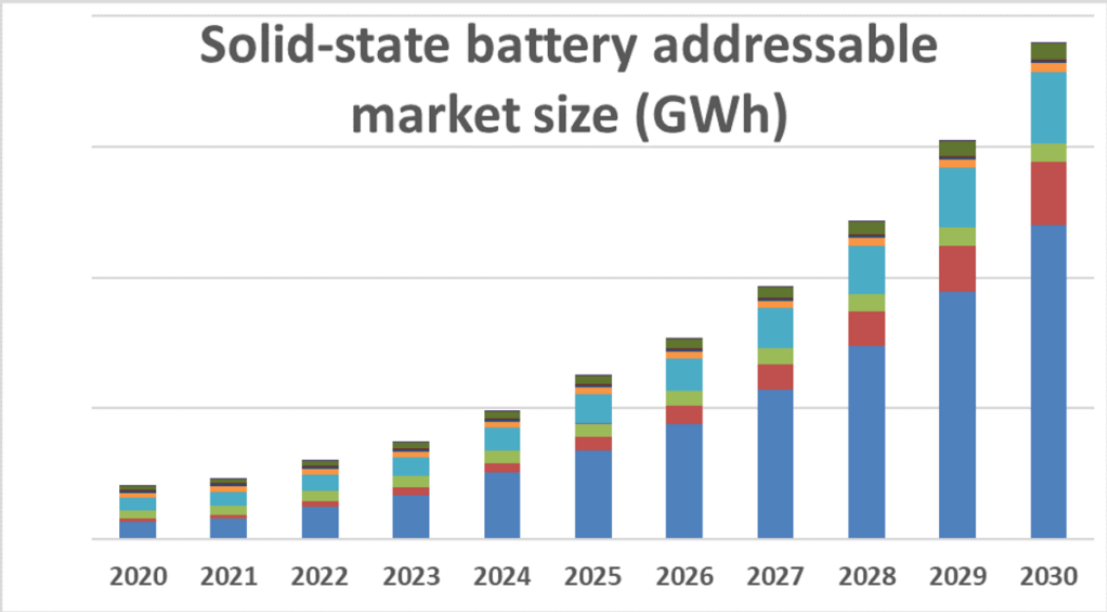

Figure 2. Solid-State Battery Structure and Innovation

Source: Sunon Battery.

The above figure demonstrates the fundamental structure of a solid-state battery, which differs from traditional lithium-ion batteries by using a solid electrolyte. This technological breakthrough is expected to significantly enhance energy density, reduce charging time, and improve overall safety.

Another key area of innovation is the enhancement of battery recycling technology. As EV adoption grows, so does the concern about battery waste management. European companies are increasingly investing in recycling facilities to recover valuable materials such as lithium, cobalt, and nickel. The EU's proposed Battery Regulation, which aims to promote a circular economy, is expected to drive further investment in this area.

Additionally, vehicle-to-grid (V2G) technology is emerging as a promising solution for energy management. V2G enables EVs to act as mobile energy storage units, capable of returning electricity to the grid during peak demand periods. This technology not only improves grid resilience but also creates potential revenue streams for EV owners. Several pilot projects across Europe are currently testing the feasibility and scalability of V2G systems.

The rapid development of battery technology has enhanced the competitiveness of EVs compared to internal combustion engine vehicles (ICEVs). The combination of improved energy density and lower costs has made EVs increasingly attractive to both consumers and investors. Moreover, technological advancements are expected to continue accelerating, driven by substantial R&D funding from both private investors and governmental bodies.

3.2 Charging Infrastructure Advancements and Distribution Networks

The establishment of a reliable and extensive charging infrastructure is essential for ensuring the widespread adoption of EVs across the European Union. As range anxiety remains a significant barrier for potential EV buyers, the availability of convenient and efficient charging stations is critical for boosting consumer confidence.

The European Alternative Fuels Observatory (EAFO) reports that the number of public EV charging points is expected to reach approximately 400,000 by 2024, up from 200,000 in 2020. This substantial expansion is being driven by both public and private investments aimed at improving accessibility and interoperability of charging networks.

Countries like the Netherlands, Germany, and France are leading the deployment of high-power charging (HPC) stations, which offer charging speeds of up to 350 kW, significantly reducing the time required to recharge EVs. The European Commission's proposed Alternative Fuels Infrastructure Regulation (AFIR) aims to establish charging points at regular intervals along the Trans-European Transport Network (TEN-T) corridors, ensuring accessibility for long-distance travel.

Furthermore, the integration of smart charging technologies is gaining momentum. Smart charging enables EVs to be charged during periods of low electricity demand or when renewable energy generation is high, thereby optimizing grid stability and minimizing energy costs. This technology is particularly relevant as the EU aims to increase the share of renewable energy in its overall energy mix.

Table 1. Number of Public EV Charging Points in the EU (2020-2024)

Year	Number of Charging Points
2020	200,000
2021	250,000
2022	300,000
2023	350,000
2024	400,000 (Estimated)

Source: European Alternative Fuels Observatory.

The increasing availability of charging infrastructure is directly linked to the growth of the EV market. Well-established networks in countries like the Netherlands have demonstrated the effectiveness of coordinated policies and investments in promoting EV adoption. The expansion of charging infrastructure is not only essential for consumer convenience but also provides lucrative investment opportunities for companies involved in the manufacturing, installation, and operation of charging stations.

3.3 Investment Opportunities in Battery Technology and Power Management

The rapid advancements in battery technology and power management systems have created substantial investment opportunities across the EU. Companies are actively expanding their production capabilities and investing in innovative technologies aimed at improving battery efficiency, sustainability, and cost-effectiveness.

Battery manufacturing facilities are being established in several European countries to reduce dependence on imported components and ensure a reliable supply chain. Notable projects include Northvolt's gigafactory in Sweden, Volkswagen's battery cell plants in Germany, and Renault's battery partnership in France. These investments are supported by EU funding mechanisms such as the European Battery Alliance (EBA), which aims to secure a competitive and sustainable battery value chain in Europe.

In addition to battery production, significant investment opportunities lie in the development of battery recycling technologies. Efficient recycling processes can reduce environmental impact, lower material costs, and support a circular economy. Companies such as Umicore and BASF are leading the way in establishing advanced recycling facilities to recover valuable materials from used batteries.

Power management systems, including smart charging, vehicle-to-grid (V2G) integration, and energy storage solutions, are also attracting considerable investment. As the adoption of renewable energy sources continues to

grow, the importance of efficient energy management systems will only increase.

The integration of V2G technology is particularly promising, as it allows EVs to act as distributed energy storage units, enhancing grid stability and providing additional revenue streams for EV owners. Investment in V2G systems is expected to increase as pilot projects across Europe demonstrate their feasibility and scalability.

Furthermore, partnerships between automakers, energy companies, and technology firms are becoming increasingly common to accelerate innovation and enhance the overall investment environment for EV-related technologies. The combination of technological advancements, policy support, and market demand has created a dynamic investment environment that is likely to continue evolving rapidly.

4. Investment Trends and Capital Allocation

The investment environment for the electric vehicle (EV) industry in the European Union is rapidly evolving as the region strives to achieve its 2035 carbon neutrality goal. Significant investments are being made across various sectors, including battery manufacturing, charging infrastructure development, and advanced power management systems. The following sections explore the key sources of funding, recent investment trends, and regional disparities in investment allocation.

4.1 Sources of Funding and Recent Investment Trends in the EV Industry

Investment in the European EV industry comes from diverse sources, including government funding, private equity, venture capital, and corporate investment. These funds are channeled towards building battery gigafactories, expanding charging infrastructure, and developing new energy management technologies.

Government Funding and Subsidies:

The European Union and member states provide substantial financial support to promote EV adoption through grants, tax incentives, and research funding. The European Investment Bank (EIB) has actively financed major projects aimed at enhancing battery production and charging infrastructure.

Private Equity and Venture Capital:

Private investors are increasingly focusing on technological innovation in battery manufacturing, smart charging solutions, and vehicle-to-grid (V2G) integration. Investment in startups working on solid-state batteries and battery recycling technologies has grown significantly over the past few years.

Corporate Investment and Joint Ventures:

Established automakers and energy companies are heavily investing in expanding their EV manufacturing capabilities and securing battery supply chains. Notable projects include Northvolt's battery production facility in Sweden and Volkswagen's battery cell plants in Germany.

Table 2: Major Investments in European EV Projects (2022-2025)

Year	Company	Investment (€ billion)	Source
2022	Volkswagen	2.0	Government Aid
2023	Northvolt	1.5	Private Equity
2024	Renault	1.2	Corporate Funds
2025	InoBat	0.8	Joint Venture

Source: Financial Times.

The above table highlights some of the most significant investments in the European EV market between 2022 and 2025. Volkswagen's government-supported initiatives and Northvolt's private equity funding demonstrate the diverse sources of capital flowing into the industry. Additionally, collaborations between companies, such as Renault's partnerships to enhance battery supply chains, indicate a trend toward strategic alliances to mitigate supply chain risks and enhance technological capabilities.

4.2 Regional Disparities in Investment Allocation Within the EU

Despite overall growth in investment, there are considerable regional disparities within the European Union. Countries in Western and Northern Europe continue to attract the largest share of funding, while Eastern and Southern European nations are lagging behind.

High-Investment Regions:

- Germany: A leading hub for battery manufacturing, supported by large-scale projects from Volkswagen,

BASF, and other major companies.

- France: Strong government support and collaborations aimed at enhancing battery recycling and manufacturing capabilities.
- Sweden: Northvolt's gigafactory in Sweden is one of the most significant battery manufacturing projects in Europe, enhancing the region's competitiveness.
- Netherlands: Renowned for its advanced charging infrastructure, with extensive networks facilitating EV adoption.

Under-Invested Regions:

- Eastern Europe: Limited manufacturing capacity and weaker infrastructure have resulted in lower investment levels.
- Southern Europe: Investment is gradually increasing but remains below the levels seen in Western European nations.

The uneven distribution of investment is partly due to differences in policy support, industrial capabilities, and infrastructure readiness. However, EU cohesion funds and regional development programs aim to address these disparities by promoting investment in underserved areas.

Figure 3. Investment Distribution Across EU Countries (2020-2025)

Source: Eurostat.

The above figure demonstrates the disparity in investment distribution across EU countries, highlighting that approximately 80% of EV-related investments are concentrated in six countries, including Germany, France, Sweden, the Netherlands, Italy, and Spain. This imbalance presents challenges for the EU's overall carbon neutrality objectives, particularly for regions that lack sufficient funding and infrastructure.

Efforts to address these disparities include EU-wide initiatives such as the European Battery Alliance and regional funding programs aimed at promoting equitable investment across all member states. As the EU continues to advance toward its 2035 carbon neutrality goal, narrowing the investment gap between countries will be essential to ensure a sustainable and inclusive transition to electric mobility.

5. Competitiveness and Strategic Positioning

The European Union's 2035 carbon neutrality goal has intensified competition within the electric vehicle (EV) sector, both regionally and internationally. As the EU strives to lead the global transition toward electric mobility, strategic positioning has become a critical aspect for member states seeking to attract investment and enhance their technological capabilities.

5.1 Strategic Positioning to Attract Investment in the Evolving Landscape

Countries within the European Union are increasingly adopting proactive strategies to enhance their

competitiveness in the EV industry. These strategies include offering financial incentives, establishing manufacturing hubs, and promoting collaborative research and development (R&D) initiatives.

Germany, France, Sweden, and the Netherlands have emerged as the most attractive destinations for EV-related investments, largely due to their well-established automotive industries, strong governmental support, and advanced infrastructure.

Germany maintains a dominant position within the EU's EV market, driven by extensive investment in battery cell manufacturing and vehicle production. Companies such as Volkswagen and BASF have established major manufacturing facilities to ensure supply chain resilience and technological leadership.

France continues to benefit from strategic collaborations between automakers and energy companies. The government's supportive policies and substantial funding for battery recycling and manufacturing have bolstered the country's investment appeal.

Sweden is rapidly gaining prominence in the battery manufacturing sector, thanks to Northvolt's gigafactory, which is positioned as a key supplier for European automakers. The country's focus on sustainable manufacturing practices also enhances its attractiveness to investors.

The Netherlands remains a leader in charging infrastructure deployment, boasting one of the most efficient and expansive networks in Europe. Its strong position in infrastructure investment continues to attract interest from technology firms and energy providers.

Table 3. Competitive Analysis of EU Countries in the EV Sector (2025)

Country	Competitive Advantage	Investment Attracted (€ billion)
Germany	Advanced Manufacturing Capabilities	5.0
France	Strong Government Support	3.5
Sweden	Leading Battery Technology Development	2.0
Netherlands	Extensive Charging Infrastructure	1.5

Source: Financial Times.

The table above highlights the leading countries in terms of investment attraction and their respective competitive advantages. Germany continues to dominate due to its established manufacturing base and technological expertise, while France and Sweden benefit from supportive policies and innovation in battery production. The Netherlands, on the other hand, focuses on infrastructure deployment, which remains a critical component of the EV ecosystem.

Efforts to attract investment are further supported by the European Commission's Horizon Europe program, which promotes research and innovation across member states. Collaborative projects focused on battery technology, vehicle-to-grid (V2G) systems, and sustainable manufacturing practices are expected to play a key role in enhancing the EU's global competitiveness.

5.2 Influence of International Competition on EU Investment Strategies

The global EV market is becoming increasingly competitive, with regions such as China and the United States rapidly advancing their own electric mobility industries. This heightened competition presents both challenges and opportunities for the EU as it seeks to maintain its leadership position.

China continues to dominate the global EV market, particularly in terms of battery manufacturing and cost efficiency. Chinese companies such as CATL and BYD have established themselves as major players, with robust supply chains and large-scale production capabilities. The influx of affordable Chinese EVs into the European market presents a significant competitive challenge for local manufacturers.

To counter China's dominance, the EU has implemented strategies aimed at enhancing its technological sovereignty. These include investing in local battery production, promoting recycling technologies, and encouraging partnerships between automakers and technology firms. Furthermore, the Carbon Border Adjustment Mechanism (CBAM) is intended to protect European manufacturers from unfair competition by imposing tariffs on carbon-intensive imports.

The United States is also becoming a formidable competitor, particularly following the implementation of the Inflation Reduction Act (IRA), which provides substantial incentives for domestic battery manufacturing and electric vehicle production. The EU's response has been to strengthen its own industrial policies and promote cross-border collaboration to enhance technological development and ensure supply chain resilience.

In addition to governmental initiatives, European automakers are increasingly focusing on developing high-performance EV models to differentiate themselves from international competitors. Emphasis is being placed on improving battery performance, enhancing charging efficiency, and expanding the range of EV models available to consumers.

The EU's strategic positioning in the global EV market will largely depend on its ability to foster innovation, enhance infrastructure, and create favorable conditions for investment. Continued collaboration among member states, coupled with effective industrial policies, will be essential in maintaining a competitive edge.

6. Environmental and Social Considerations

The transition to electric vehicles (EVs) within the European Union is not only an economic and technological endeavor but also a crucial element of the broader effort to achieve environmental sustainability and social equity. As the EU pursues its 2035 carbon neutrality goal, environmental and social aspects have become central to investment decisions and policy frameworks.

The adoption of electric vehicles is expected to yield substantial environmental benefits, particularly through the reduction of greenhouse gas (GHG) emissions. The transport sector currently contributes approximately 25% of the EU's total emissions, and replacing internal combustion engine vehicles (ICEVs) with EVs is a key strategy for achieving significant carbon reductions. The European Environment Agency (EEA) estimates that a complete transition to electric mobility by 2035 could reduce CO_2 emissions by over one billion tonnes annually, which is essential for meeting the EU's climate targets under the Paris Agreement.

Integrating EVs with renewable energy sources through smart charging systems and vehicle-to-grid (V2G) technology is expected to further enhance the environmental benefits of electric mobility. By optimizing charging during periods of high renewable energy generation, EVs can contribute to grid stabilization and improve the efficient use of clean energy resources. However, while EVs offer clear advantages over conventional vehicles in terms of emissions reduction, their environmental impact is not negligible. The production of EV batteries, particularly the extraction and processing of critical raw materials such as lithium, cobalt, and nickel, has significant environmental implications. Unsustainable mining practices and energy-intensive manufacturing processes contribute to pollution, habitat destruction, and substantial carbon emissions.

To address these concerns, the EU is actively promoting the development of battery recycling technologies to recover valuable materials and reduce environmental harm. The proposed Battery Regulation aims to establish a circular economy framework that enhances resource efficiency, minimizes waste, and promotes the use of recycled materials. Moreover, improving the sustainability of raw material extraction through responsible sourcing practices is becoming a priority for companies seeking to align with the EU's environmental standards.

In addition to environmental considerations, the social implications of the EV transition are equally important. The shift from conventional automotive manufacturing to electric mobility is expected to generate significant economic opportunities, including the creation of high-quality jobs in battery manufacturing, software development, and charging infrastructure deployment. According to the European Commission, the EV industry could generate over one million new jobs by 2035. However, this transformation also presents challenges for regions that remain heavily dependent on ICEV production.

Ensuring a fair and inclusive transition is critical to achieving social equity. Retraining and reskilling programs are essential to help workers adapt to the changing industry landscape. Additionally, enhancing the affordability of EVs is a pressing concern. Despite the availability of subsidies and incentives, high purchase prices continue to limit accessibility for low-income consumers. Expanding financial support mechanisms and promoting innovative financing models will be necessary to encourage widespread adoption.

The social benefits of electric mobility are not limited to economic factors. The widespread adoption of EVs is expected to improve public health by reducing air pollution, particularly in densely populated urban areas. Eliminating tailpipe emissions from ICEVs can significantly decrease the incidence of respiratory illnesses and contribute to overall public well-being.

Nevertheless, regional disparities in investment and infrastructure development present further challenges. Western and Northern European countries continue to attract the bulk of EV-related investments, while Eastern and Southern European regions lag behind. Ensuring equitable distribution of resources and promoting investment in underserved areas will be crucial for achieving inclusive growth.

Public perception of electric vehicles remains a critical factor in achieving the EU's carbon neutrality objectives. Consumer education programs, improved charging infrastructure, and continuous technological advancements are essential for building consumer confidence and promoting acceptance of electric mobility.

Environmental and social factors are increasingly influencing investment strategies within the European EV

market. Environmental, Social, and Governance (ESG) criteria are becoming essential components of investment decisions as stakeholders seek to balance profitability with sustainability. Investors are progressively prioritizing companies that demonstrate a commitment to reducing carbon emissions, implementing sustainable sourcing practices, promoting diversity and inclusion, and supporting community development through regional investment programs.

Integrating environmental and social considerations into investment decisions is not only essential for ensuring long-term sustainability but also serves as a strategic advantage for companies seeking to attract funding from impact-focused investors. As the European Union continues its journey toward a carbon-neutral future, balancing technological progress with environmental stewardship and social inclusivity will be critical for creating a resilient and prosperous investment environment.

7. Future Outlook and Policy Recommendations

The investment environment for the electric vehicle (EV) industry in the European Union is poised for continued growth as the region advances toward its 2035 carbon neutrality goal. Technological progress, policy support, and increasing consumer demand are expected to drive further investment across the entire EV value chain. However, maintaining momentum and ensuring a balanced transition will require a comprehensive strategy that addresses existing challenges while capitalizing on emerging opportunities.

The future outlook for the European EV market is highly optimistic, particularly in battery technology and infrastructure development. Significant improvements in energy density, cost reduction, and manufacturing efficiency are likely to accelerate the adoption of electric vehicles. Solid-state batteries, in particular, are expected to become commercially viable within the next decade, offering substantial advantages in terms of safety, charging speed, and energy efficiency. Enhanced battery recycling systems will further contribute to supply chain resilience and environmental sustainability.

Charging infrastructure expansion will remain a critical focus area for the EU. As demand for EVs continues to grow, the deployment of fast-charging networks along major transport corridors will be essential for supporting long-distance travel and improving user convenience. The integration of smart charging technologies and vehicle-to-grid (V2G) systems will play a vital role in optimizing energy consumption and enhancing grid stability. Moreover, partnerships between automakers, energy companies, and technology firms will be crucial for addressing infrastructure challenges and promoting interoperability.

Policy frameworks will continue to shape the investment landscape. While the EU's 2035 ban on new internal combustion engine vehicles (ICEVs) provides a clear direction for the industry, further adjustments to emission standards, subsidies, and tax incentives will likely be necessary to maintain investment attractiveness. The European Commission's Horizon Europe program and other funding mechanisms will play a key role in promoting research and innovation, particularly in areas such as battery manufacturing, energy management, and recycling technologies. Additionally, the proposed Carbon Border Adjustment Mechanism (CBAM) is expected to protect European manufacturers from unfair competition while promoting sustainability across global supply chains.

Investment strategies will need to account for the evolving competitive landscape. As China and the United States continue to expand their EV capabilities, European companies must focus on innovation, efficiency, and differentiation. Strengthening the domestic supply chain for critical raw materials, improving battery recycling processes, and enhancing technological collaboration across member states will be essential for maintaining global leadership. At the same time, addressing regional disparities within the EU will be necessary to promote equitable growth and avoid leaving behind countries that currently lack sufficient investment.

Achieving the EU's carbon neutrality goal will also require greater attention to environmental and social factors. Investors are increasingly prioritizing companies that demonstrate strong Environmental, Social, and Governance (ESG) performance. As a result, businesses operating within the EV sector must align their practices with broader sustainability objectives. Implementing responsible sourcing practices, promoting a circular economy through recycling and reuse, and ensuring fair labor practices throughout the supply chain will be critical for attracting investment and maintaining social legitimacy.

To enhance the investment environment, policymakers must continue to provide clear and consistent regulatory frameworks that incentivize innovation and infrastructure development. Measures aimed at simplifying permitting processes, reducing administrative barriers, and promoting cross-border collaboration will be essential for accelerating the deployment of new technologies. Furthermore, expanding access to funding for small and medium-sized enterprises (SMEs) engaged in EV-related activities can help drive innovation and create new market opportunities.

Promoting consumer acceptance will be another key priority. Although technological advancements have improved the performance and affordability of EVs, public awareness campaigns and educational initiatives are

necessary to address lingering misconceptions about range, charging convenience, and total cost of ownership. Enhancing the visibility of government incentives and providing transparent information about the benefits of electric mobility can help accelerate adoption rates.

The EU's long-term success in building a resilient and competitive EV market will depend on its ability to balance technological progress with environmental sustainability and social inclusivity. Integrating environmental and social considerations into investment decisions will not only improve market attractiveness but also contribute to broader climate and social goals. The continued evolution of the investment environment will require collaboration among governments, businesses, investors, and civil society to ensure that the transition to electric mobility remains both effective and equitable.

Moving forward, strategic alignment between policy objectives, technological innovation, and investment priorities will be essential for establishing the European Union as a global leader in the electric vehicle industry. As the transition progresses, ongoing monitoring, evaluation, and adaptation will be necessary to address emerging challenges and optimize the investment environment for long-term growth.

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Research on the Global Marine Plastic Pollution Prevention and Control from the Perspective of International Law

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Abstract

The increasing marine plastic pollution seriously threatens the marine environment and ecosystem, human health and the global economy, attracting wide attention from the international community. Despite the continuous efforts and attempts made at the global and regional levels in the legal regulation of marine plastic pollution, there are still many legal dilemmas such as the fragmentation of marine plastic pollution legislation, the lack of legislative specificity, and the difficulty in the implementation of existing relevant international regulations. In this context, this paper seeks to explore ways to deal with global marine plastic pollution from three aspects: promoting the enactment process of the "Global Agreement on Plastic Pollution", coordinating hard laws and soft laws, and improving the implementation mechanism of marine plastic pollution prevention and control.

Keywords: marine plastic pollution, UNCLOS, legal regulation, soft law, hard law

1. Introduction

Long before the public became aware of the potential threats of plastics to marine ecosystems, the academic community had already discussed this topic. Initially, research mainly focused on plastics found on birds[1] and surface waters[2]. In the 1980s, the National Oceanic and Atmospheric Administration (NOAA) published a study that demonstrated the distribution of plastic waste in the North Pacific region between 1985 and 1988, outlining its characteristics. The phenomenon of higher concentrations of plastic waste in areas of oceanic circulation was discovered for the first time.[3] However, this discovery did not draw much attention at the time. It is undeniable that these persistent synthetic compounds do not naturally exist in nature, and the presence of human-made substances in aquatic environments essentially means that plastics are pollutants. Given the fundamental status of the ocean in the biosphere, if plastic waste is not effectively recycled and reused, it will ultimately flow into the ocean, making it an inevitable repository for global plastic waste.[4]

With reference to recent data, the growing scale of discarded plastics poses a significant threat to the global marine environment, and the public awareness of marine plastic pollution has notably increased. According to the report on marine plastic pollution by the International Union for Conservation of Nature (IUCN), at least 14 million tons of plastic waste enter the ocean each year, with marine plastic debris accounting for four-fifths of

[1] E J Carpenter, K L Smith, (1972). Plastics on the sargasso sea surface. *Science*, *175*(4027), 1240.

[2] E J Carpenter, S J Anderson, G R Harvey, et al., (1972). Polystyrene spherules in coastal waters. *Science*, *178*(4062), 749.

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the total weight of global marine litter.[1] This highlights the severity of marine plastic pollution. Furthermore, marine plastic pollution will not only cause severe damage to marine biodiversity and ecosystems, but also result in substantial economic losses and ultimately threaten human health through the food chain. The international community is continuously deepening its understanding of the dangers of plastic pollution and has made numerous efforts and attempts in legal regulation. In light of this, this paper will examine the existing international legal regulations on marine plastic pollution, explore the legal challenges in addressing marine plastic pollution, and propose strategies for tackling the issue.

2. Global Status of Marine Plastic Pollution

2.1 Sources of Marine Plastic Pollution

For legislators and law enforcement authorities, identifying the sources of pollutants is a critical step in determining marine pollution legally. Marine plastic waste comes from two primary sources: land-based sources and ocean-based sources.[2]

2.1.1 Land-Based Sources

Marine plastic pollution originating from land is referred to as land-based pollution. These pollutants primarily enter the ocean through urban waste discharge[3], littering by coastal residents and tourists, river runoff, and coastal construction activities. Additionally, extreme events such as floods, storms, and tsunamis may transport large amounts of plastic debris from coastal areas to the ocean, causing significant accumulation of waste along riverbanks, coastlines, and estuaries. As shown in the preface, land-based sources account for 80% of total marine plastic waste, making it the primary contributor to marine plastic pollution.

2.1.2 Ocean-Based Sources

Plastic pollution originating from activities in the ocean is referred to as ocean-based pollution. Of this, 65% of ocean-based plastic waste comes from fishing activities, including discarded fishing gear, abandoned buoys, foam plastics, and household waste generated by fishermen. Due to prolonged periods of operation at sea, these waste materials often go unaddressed and are eventually discharged into the ocean, causing significant pollution. Additionally, 35% of ocean-based plastic waste is attributed to shipping activities, including waste generated from ship repairs, loss of coating materials during regular navigation, and garbage produced by crew members.[4] Moreover, maritime accidents such as ship collisions or container losses can lead to large quantities of plastic products sinking into the sea, further exacerbating the marine plastic pollution problem.

2.2 Impacts of Marine Plastic Pollution

With the rapid increase in plastic demand and improper management of plastic waste, plastic and microplastic pollution have become global environmental issues. According to a UN report,[5] marine plastic pollution poses an increasing threat to ecosystems spanning from the rivers to the ocean, human health, and the global economy.

2.2.1 Ecosystems

In its 2024 Global Waste Management Outlook, the United Nations Environment Programme (UNEP) emphasized the negative impacts of plastic pollution on both biotic and abiotic environments.[6] These impacts are both visible and invisible. The visible impacts refer to the direct harm caused by microplastics to marine organisms, such as ingestion by animals. Marine animals like seabirds, sea turtles, and whales often mistakenly consume plastic fragments as food, leading to internal injury, poisoning, and death. Large plastic items, such as

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[5] United Nations Environment Programme (2021). From Pollution to Solution: A global assessment of marine litter and plastic pollution. Synthesis. Nairobi.

[6] The definition includes the leakage and accumulation of plastic objects and particles that can adversely affect humans and the living and non-living environment. United Nations Environment Program, (2024). Global Waste Management Outlook 2024: Beyond an age of waste — Turning rubbish into a resource. Nairobi.

fishing nets and gear, can also entangle animals, preventing them from living and feeding normally. The invisible impacts involve the transmission of microplastics through the food chain to a broader range of organisms, causing collective harm with the potential for widespread damage. For instance, chemicals in plastics may leach into the water, interfering with the reproduction, immune systems, and growth of organisms, thus broadly harming aquatic life and disrupting marine biodiversity.

Additionally, plastic debris can act as a buoyant object, aiding species in migrating from one location to another. This can lead to species invasions or cause some species to proliferate excessively, triggering a collapse of the ecological chain and causing imbalance in local ecosystems, which ultimately damages the entire ecological system. UNEP has passed the resolutions on Marine Plastic Litter and Microplastics[1], pointing out that the growing accumulation of plastic waste in the oceans is continuously threatening marine ecosystems, causing economic losses of up to $13 billion annually to global marine ecosystems.

2.2.2 Human Health

Most plastic degradation products, such as microplastics and chemical additives, have been confirmed to be toxic and pose significant health risks to humans. Microplastics can enter the human body through inhalation and absorption via the skin, accumulating in organs such as the placenta. Humans ingest microplastics through consumption of marine life, including fish, shrimp, and shellfish. The ingestion of microplastics may lead to alterations in human chromosomes, posing a major threat to human reproductive health and longevity.[2]

2.2.3 Global Economy

Marine debris and plastic pollution have a profound impact on the global economy, with significant effects on the shipping industry, marine fisheries, and tourism. In the shipping industry, marine plastic waste can entangle propellers or clog intake valves, leading to operational failures and increased ship maintenance and operational costs. Given the known effects of marine plastic waste on human health, there may be a reduction in the consumption of marine products, which would negatively impact the marine fishing industry. The accumulation of plastic waste reduces the aesthetic value of the marine environment, damages beach landscapes, and, in turn, affects tourism revenues. According to reports, in 2018, global marine plastic pollution caused an estimated economic loss of at least $6-19 billion, affecting industries such as tourism, fishing, and aquaculture, along with other costs like cleanup efforts. It is projected that by 2040, if governments require companies to cover waste management costs based on expected quantities and recyclability, companies could face financial risks of up to $100 billion annually. Additionally, large amounts of plastic waste may lead to an increase in illegal domestic and international waste disposal activities.[3]

3. Marine Plastic Pollution Governance from the Perspective of International Law: Current Status and Challenges

3.1 The International Legal Regime Regulates Marine Plastic Pollution in a Broad Sense

Since the 1970s, the international community's understanding of the negative impacts of plastic pollution on human society and the natural environment has gradually become clearer and more profound. The international legal regime embodied as international treaties, soft law documents, and regional agreements provides legal foundations for the prevention and control of marine plastic pollution in a broad sense.

3.1.1 International Treaty Law

Binding conventions, agreements, and other legal texts are important sources of international law and form the legal basis and support for international governance. The treaty law governing the global marine plastic pollution includes the following: 1) The Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter (the London Convention) and the London Protocol. These agreements provide a macro-level framework for preventing the dumping of waste, plastics included, into the ocean, using the precautionary principle to effectively control the source of microplastic pollution. This forms a strong international legal basis for pollution prevention. 2) The International Convention for the Prevention of Pollution from Ships (MARPOL 73) and its 1987 Protocol (MARPOL 78). This convention aims to eliminate intentional discharges of oil and other harmful substances into the ocean and minimize unintentional releases. MARPOL 78 recognizes the need for universally applicable regulations that go beyond oil pollution, addressing all forms of marine pollution from or caused by ships. Annex V of MARPOL 78 categorizes plastic waste as a type of ship-generated garbage and adds

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[3] UN News, (2021). Plastic pollution on course to double by 2030. https://news.un.org/en/story/2021/10/1103692. Accessed 5 March 2025.

provisions to ban the disposal of ship-generated waste at sea.[1] The revised Annex V, in 2016, specifically categorizes plastic as Category A ship waste and recognizes it as a substance harmful to the marine environment.[2] This provision applies to all types of ships and strengthens the management of plastic waste from ships from the perspective of international law, preventing the further spread of marine plastic pollution and reducing the environmental harm caused by plastics to some extent. However, it is important to note that only Annex I and Annex II of MARPOL 73/78 are currently in force, while Annex V has not yet come into effect. 3) The 1982 United Nations Convention on the Law of the Sea (UNCLOS). Although UNCLOS does not have direct provisions addressing marine plastic pollution, Part XII (Protection and Preservation of the Marine Environment) encourages states to exercise due diligence to prevent and control marine pollution, including plastics, thus providing an international legal basis for marine plastic pollution governance. 4) The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (the Basel Convention). This convention promotes the environmentally sound management of hazardous and other wastes.[3] It primarily addresses the scope of hazardous waste,[4] which includes the plastic waste treatment, thus indirectly contributing the reduction of marine plastic pollution. 5) The Stockholm Convention on Persistent Organic Pollutants, which bans the production and use of certain plastic products (the Stockholm Convention).[5] In summary, the international legal framework has made significant progress in providing legal tools to regulate marine plastic pollution. However, challenges remain in ensuring the full implementation and enforcement of these provisions, and further efforts are required to strengthen global governance in this area.

3.1.2 International Soft Law Instruments

Compared with “hard law”, “soft law” is instructive and flexible, with initiatives, action plans, resolutions, declarations and other non-legally binding documents as the main form of expression. Although it is not mandatory for national implementation, its regulatory effects can be similar to those of hard law, influencing behavior and setting standards. In the governance of global marine plastic pollution, soft law is represented by instruments adopted by major international conferences, state groups, and industry-based international organizations.

Early soft law instruments only address marine plastic pollution as one of the elements of broader marine environmental regulations. For example, the 1995 Global Program of Action for the Protection of the Marine Environment from Land-Based Activities (GPA) calls on countries to develop long-term action plans and implement effective measures to reduce and eliminate marine litter, including plastics and microplastics, as needed. The 2012 Honolulu Strategy: A Global Framework for Prevention and Management of Marine Debris (the Honolulu Strategy) details three goals[6] for reducing and controlling marine debris, and reviews MARPOL 73/78 Annex V. It encourages countries to take active steps under MARPOL 73 and its protocol to reduce the generation and harmful impacts of marine litter, providing specific recommendations for tackling marine plastic pollution.

In 2015, the UN Resolution[7] titled “Transforming Our World: The 2030 Agenda for Sustainable Development” offers guidance and overall objectives for marine plastic pollution prevention. This resolution highlights sustainable development goals, including measures to combat marine pollution and specifically addresses plastic waste as part of global sustainability efforts.

In recent years, specialized soft law instruments on marine plastic pollution have emerged. Notably, the four resolutions on Marine Plastic Waste and Microplastics adopted during the first to fourth UN Environmental Assemblies (UNEA) urge countries to proactively adopt measures from the perspective of the entire product lifecycle of plastic products, emphasizing strategies to reduce plastic pollution at all stages, from production to disposal. These soft law instruments play an important role in guiding global efforts, although they lack the binding force of formal treaties. Nevertheless, they contribute significantly to setting norms, raising awareness,

[1] The London Protocol, annex V, art 3.

[2] The London Protocol, annex V, appendix I.

[3] The Basel Convention, preamble.

[4] The Basel Convention, art 1.

[5] The Stockholm Convention, annex A.

[6] The three goals: Goal A — Reduced amount and impact of land-based sources of marine debris introduced into the sea; Goal B — Reduced amount and impact of sea-based sources of marine debris, including solid waste; lost cargo; abandoned, lost, or otherwise discarded fishing gear (ALDFG); and abandoned vessels, introduced into the sea; Goal C — Reduced amount and impact of accumulated marine debris on shorelines, in benthic habitats, and in pelagic waters.

[7] UN General Assembly Seventieth session, (2015). Transforming our world: the 2030 Agenda for Sustainable Development(A/RES/70/1).

and encouraging actions to mitigate marine plastic pollution.

3.1.3 Regional Treaties and Documents

Region is one of the central perspectives in the study of global governance, where neighboring countries in the same region often face similar environmental problems and tend to work closely together.

The region early focusing on marine plastic pollution is Europe. 1974, the seven Baltic countries signed the Convention on the Protection of the Marine Environment of the Baltic Sea Area (the Helsinki Convention), which is the first international multilateral treaty encouraging the use of integrated measures of prevention and control to protect the marine environment in the region.[1] Its amendment prohibits the dumping of all ship-based plastics into the sea under the Convention, including synthetics such as cables and nets, as well as plastic products such as garbage bags. This regulates at source the prevention and control of marine plastic pollution in the Baltic Sea. The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) redefines the concept of "dumping"[2] and establishes the precautionary principle[3] and the scientific principle[4], requiring member states to refrain from the intentional (excluding accidental) dumping of plastic debris into the ocean, and promoting the development of technologies and practices to prevent marine plastic pollution with specific and clear legal guidance.

With the trend of integration in Southeast Asia and the environmental consequences of economic development, the Southeast Asian region is increasingly emphasizing the prevention of marine plastic pollution. Since 2017, ASEAN has successively issued the Statement on Combating Marine Plastic Debris,[5] the Bangkok Declaration on the Combating Marine Debris in ASEAN Region,[6] the ASEAN Framework of Action on Marine Debris,[7] the East Asian Seas Regional Action Plan on Marine Litter,[8] and the ASEAN Regional Action Plan for Combating Marine Debris in the ASEAN Member States (2021-2025),[9] calling on stakeholders to collaborate, strengthen plastic assessment monitoring technology research, raising public awareness of environmental protection, and so on. These documents fully reflect the ASEAN region's determination and solidarity in addressing marine plastic pollution.

3.2 Existing Legal Frameworks Are Insufficient to Address Global Marine Plastic Pollution

3.2.1 Lack of a Systematic Legislation on Marine Plastic Pollution

As examined earlier, international legal regulations on marine plastic pollution often focus on specific areas of pollution. For example, the Basel Convention primarily deals with the transboundary movement of hazardous waste, MARPOL 73/78 and its protocol mainly regulate pollution from ships and offshore oil platforms, and the Stockholm Convention only partially addresses the production, import, and use of certain plastics. The lack of a comprehensive and integrated legal framework means that these fragmented treaties may conflict with or fail to align with other conventions in terms of legislative goals and objectives. The fragmented nature of these regulations leads to gaps in addressing marine plastic pollution, resulting in enforcement challenges, conflicts in rule application, and an inability to apply a holistic regulatory approach.

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[2] OSPAR, art 1.

[3] OSPAR, art 2.

[4] OSPAR, annex I, "best practice" and "best available technologies".

[5] East Asia Summit Leaders' Statement on Combating Marine Plastic Debris, (2018). https://asean.org/wp-content/uploads/2018/11/EAS_Leaders_Statement_on_Combating_Marine_Plastic_Debris.pdf. Accessed 16 March 2025.

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[9] ASEAN Regional Action Plan for Combating Marine Debris in the ASEAN Member States (2021-2025), (2021). https://asean.org/book/asean-regional-action-plan-for-combating-marine-debris-in-the-asean-member-states-2021-2025-2/. Accessed 16 March 2025.

3.2.2 Insufficient Specialized Legislation on Marine Plastic Pollution

The vacuum in regulatory rules will inevitably lead to the lack of a complete system of marine plastic pollution governance and a structural shortage of marine plastic pollution governance activities.[1] The biggest challenge facing global ocean governance at present is the mismatch between the supply of public products and the demand for them, especially the insufficient number of institutional public products such as treaties and conventions.[2] In the field of global marine plastic pollution governance, there is also a lack of specialized legislation. Although UNCLOS provides for principle-based provisions on marine pollution from land-based sources, the problem of marine plastic pollution is more complex due to the special nature of its basic attributes, and its pollution management is likely to involve multiple regions and countries, while most of the current international treaties regulating marine plastic pollution lack detailed provisions on the handling of controversial issues, such as specific means of treatment, preventive measures, monitoring and review standards, etc. In addition, there is currently no specialized legislation to specifically deal with remediation and compensation for environmental damage caused by marine plastic pollution, lacking clear mechanisms for prevention, accountability and compensation.

3.2.3 Difficulties in Enforcement and Limited Effectiveness of International Legal Instruments

International soft law instruments, such as the 2030 Agenda for Sustainable Development and the Honolulu Strategy, have no legal binding force and thus depend on the voluntary compliance of party states and regions. The role of these soft law instruments in addressing marine plastic pollution is limited. Compared with other environmental regulations, these soft law instruments lack binding targets and mandatory timelines for reducing plastic pollution.[3]

International hard law treaties, due to their limited scope of application, still have limited regulatory effectiveness in combating global marine plastic pollution. For example: 1) MARPOL 73/78 and its Protocol V, along with the London Convention and its protocol, while somewhat successful, mainly focus on ship-based pollution, which constitutes only a small fraction of global plastic pollution. Therefore, these treaties fail to address the broader issue of marine plastic pollution, especially when considering the entire plastic lifecycle. 2) UNCLOS Article 194 requires countries to take measures to prevent, reduce, and control marine pollution, but plastics are included in the list of specific types of pollution to be combated by States only if they are toxic, hazardous and an obstacle to health. Article 207 obligates the States to adopt laws and regulations to prevent, reduce and control marine pollution from land-based sources but internationally agreed rules, standards and recommended practices and procedures shall be taken into consideration. Despite the UNCLOS's sophisticated compliance mechanism through the International Tribunal for the Law of the Sea, the lack of specificity on plastic pollution means that it is not effective enough and cannot fundamentally address the growing issue of marine plastic pollution.

Furthermore, other potentially applicable legal instruments have not been widely ratified or are limited in scope, applying only to certain chemicals used in plastic production or specific types of plastic deemed hazardous. International legal-binding instruments aimed at protecting specific species or biodiversity may apply to marine plastic pollution but often lack enforceable provisions regarding plastic-related clauses. While there have been calls to further develop existing binding treaties, like the Basel Convention, to specifically address plastics, or to incorporate plastics into instruments now on negotiations, these attempts may not provide a comprehensive legal solution.

4. Constructing a Global Legal System for Marine Plastic Pollution Prevention

4.1 Advancing the Development of an International Legally Binding Instrument — The "Global Agreement on Plastic Pollution"

Plastic pollution is ubiquitous, persistent, and has transboundary impacts, making its regulation a new global challenge. While the international community has made efforts to address plastic pollution at the global level, significant gaps remain between these efforts and the intended goals. Currently, there is no global legal instrument specifically designed to regulate or manage marine debris. In other words, there is no agreement that comprehensively deals with plastic pollution covering its lifecycle from raw material extraction, plastic polymer

[1] L Zhiwen, K Yongli, (2024). Advancement in the international legal regulation on the marine plastic pollution and China's participation. *Journal of Hainan University (Humanities & Social Sciences)*, *42*(05), 36.

[2] C Ye, W Qi, (2019). The Dilemma of Global Ocean Governance in the Perspective of Global Public Goods: Phenomenon, Cause, and Solution. *Pacific Journal*, *27*(01), 62-64.

[3] G Carlini, K Kleine, (2018). Advancing the international regulation of plastic pollution beyond the United Nations Environment Assembly resolution on marine litter and microplastics. *RECIEL*, *27*, 237.

and additive design and usage, to final disposal and treatment.[1] However, at the 5th UN Environment Assembly in 2023, the resolution titled "End plastic pollution: Towards an international legally binding instrument" was adopted,[2] calling for the establishment of an intergovernmental negotiating committee to draft a legally binding global treaty to end plastic pollution by 2024. While the final name of this agreement has not been determined, this paper refers to it as the "Global Agreement on Plastic Pollution". This agreement is envisioned to address the entire lifecycle of plastics, including the design of reusable and recyclable products and materials, and the need for enhanced international cooperation to facilitate access to technology, capacity building, and scientific cooperation thus ending plastic pollution, reducing plastic leakage and contamination in the ecosystems, including marine environments.

Currently, the negotiations surrounding the Global Agreement on Plastic Pollution have sparked intense debates. Key issues include whether it should cover the entire lifecycle of plastics. This paper argues that, given the deterioration of the marine plastic pollution and the rapid increase in marine debris, the development of a legally binding Global Agreement on Plastic Pollution is urgently needed to fill gaps in existing regulations. This agreement should combine the flexibility of soft law with the enforceability of hard law to effectively strengthen global efforts in preventing marine plastic pollution.

4.2 Emphasizing the Coordination and Synergy Between Hard Law and Soft Law

International law governing marine plastic pollution includes legally binding "hard law" and non-binding "soft law". Both have distinct areas of application and regulatory advantages, with each complementing and promoting the other. Specifically, 1) When the time is ripe, political declarations, initiatives, resolutions, and other expressions of international consensus can be transformed into binding customary law or incorporated into formal international legal agreements. The Global Agreement on Plastic Pollution is a key example of this shift, moving from the soft law framework of the four resolutions on marine plastic debris and microplastics to the hard law instrument of "Ending Plastic Pollution: Towards a Legally Binding Instrument". This process is a result of recognizing the limitations of existing regulations and the need to establish a legally binding framework to mitigate marine plastic pollution. 2) Drawing from the amendment process of the Basel Convention, there is potential to introduce new clauses restricting marine plastic waste in higher-level international legislative instruments. For instance, future amendments to the UNCLOS could incorporate specific provisions on plastic waste under its existing section on land-based pollution. Such revisions would ensure that hard law evolves with the current environmental challenges posed by plastic pollution, further strengthening its enforcement and applicability. 3) The synergy of both hard law and soft law can provide a powerful international legal toolkit for the regulation and management of marine plastic pollution. To illustrate, hard law instruments have significant legal enforceability, effectively protecting the marine environment through explicit provisions, which can serve as the main approach to marine plastic governance. Soft law, on the other hand, provides flexibility and allows countries or regions to tailor their plastic pollution management strategies according to their specific circumstances. This flexibility ensures that local conditions are addressed while still contributing to global goals. By coordinating the hard law and soft law approaches, the international legal system can strike a balance between binding regulations and adaptive policies that encourage voluntary action, while also ensuring effective implementation and enforcement. The collaborative use of both legal frameworks can better address the diverse challenges of marine plastic pollution, ensuring that it is tackled comprehensively and efficiently.

4.3 Improving the Implementation Mechanism for Marine Plastic Pollution Prevention

International practice shows that the greatest challenge the international community faces is not the lack of capacity or feasibility to introduce targeted legislation, but rather the difficulty in ensuring that existing international legal rules are effectively implemented and that the goals are realized. Therefore, in addition to considering the development of international legislation on marine plastic pollution, the international community must also focus on improving the corresponding enforcement mechanisms. Specific and feasible approaches include 1) Establishing international cooperation mechanisms and multilateral arrangements. Global and regional multilateral cooperative arrangements should encourage countries to cooperate in sharing information, technology, best practices, and experiences, and to build open, inclusive, and mutually supportive partnerships with non-state actors (such as international organizations) to enhance states' compliance level. 2) Constructing a comprehensive compliance mechanism with a combination of compulsory measures and facilitative method. Compulsory measures typically include accountability of stakeholders, liability for damages, and sanctions for breaches of agreements. Facilitative methods focus on incentives, such as promoting compliance, enhancing

[1] UNEP, (2018). Combating Marine Plastic Litter and Microplastics: An Assessment of the Effectiveness of Relevant International, Regional and Subregional Governance Strategies and Approaches (UN Doc UNEP/AHEG/2018/1/INF/3), 12.

[2] United Nations Environment Assembly of the United Nations Environment Programme Fifth session, (2022). End plastic pollution: Towards an international legally binding instrument (UNEP/EA.5/L.23/Rev.1).

transparency (e.g., through information disclosure and sharing), and establishing reporting procedures (e.g., regular reporting). These measures encourage countries to take proactive actions in reducing plastic pollution. By combining both compulsory and facilitative approaches, a comprehensive enforcement mechanism can be established, ensuring the effectiveness of international regulations on marine plastic pollution and all parties' joint efforts to address the global plastic pollution crisis.

5. Conclusion

Marine plastic pollution is a global, complex, and multifaceted issue that requires global consensus and collective action from all nations. It wasn't until the 1970s that countries recognized the profound negative impact plastic pollution was having on human societies and the natural environment. To date, there is still no dedicated international legal instrument specifically governing plastic pollution. The international community is still grappling with the fragmentation of marine plastic pollution legislation, the lack of a specialized legal framework, and difficulties in enforcing existing regulations. Therefore, in the context of international law, in order to effectively end plastic pollution, there is an urgent need to accelerate the adoption of an international legally binding instrument, the Global Agreement on Plastic Pollution. It is important to focus on the coordination and synergy between hard law and soft law, and improve the implementation mechanisms for marine plastic pollution prevention and control. This can be achieved by establishing international cooperation mechanisms and multilateral arrangements, as well as promoting a comprehensive compliance system. These steps will collectively contribute to strengthening the global legal framework for marine plastic pollution prevention and ensuring effective action to address the global plastic pollution crisis.

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Research on the Integration and Development of Intelligent Legal Services with Civil and Commercial Law in the Context of Financial Innovation

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Abstract

With the acceleration of financial innovation and digital transformation, smart legal services, as an emerging field in legal services, have been widely applied in the financial industry. At the same time, the traditional legal framework of civil and commercial law faces many challenges in modernization, especially against the backdrop of financial innovation and technological changes. This paper explores the integration and development of smart legal services and civil and commercial law under the background of financial innovation. It first analyzes the technological foundations and development status of smart legal services and highlights its important role in improving the efficiency and quality of legal services. Then, the paper discusses the modernization challenges faced by civil and commercial law and its potential for integration with financial innovation. Finally, the paper proposes possible paths for the deep integration of smart legal services and civil and commercial law, the technological and legal challenges faced, and outlines the future development trends of this integration model. Through this study, the paper aims to provide theoretical support and practical guidance for legal innovation and the application of smart legal services in the financial field.

Keywords: financial innovation, smart legal services, civil and commercial law, legal integration, technological innovation

1. Introduction

With the rapid development of financial innovation, particularly the widespread application of technologies such as digital currencies, blockchain, and artificial intelligence, financial service models are undergoing profound transformations. These changes have not only brought new opportunities to the financial industry but also raised higher demands for legal services. Smart legal services, as an emerging legal service model, leverage technologies such as big data, artificial intelligence, and blockchain to significantly improve the efficiency and precision of legal services, gradually becoming an important component of financial innovation. However, the traditional civil and commercial law framework faces many challenges, particularly in addressing issues such as smart contracts, the complexity of financial products, and the legality of emerging payment methods (He, Wei, Wanqiang Li & Peidong Deng, 2022). Therefore, how to integrate smart legal services with civil and commercial law to meet the new demands brought by financial innovation has become an urgent issue to resolve. This paper aims to explore the integration and development of smart legal services and civil and commercial law under the background of financial innovation. By analyzing the technological foundation of smart legal services and its application in the financial field, the paper further explores the challenges faced by civil and commercial law and proposes feasible paths for integrating smart legal services with civil and commercial law. This integration not only helps improve the efficiency and quality of legal services in the financial field but also promotes the modernization of the legal system, ensuring its adaptability and foresight in dealing with new challenges. This

study uses methods such as literature review, case analysis, and comparative analysis to examine the current status, challenges, and prospects of the integration of smart legal services and civil and commercial law, providing theoretical support and practical guidance for policymakers and industry practitioners (Sharma, Sugam, et al., 2021).

2. Definition and Development of Smart Legal Services

2.1 The Concept of Smart Legal Services and Its Technological Foundation

Smart legal services refer to an innovative legal service model that utilizes modern information technologies, particularly big data, artificial intelligence, blockchain, and other technologies, to optimize and enhance the efficiency, quality, and accessibility of legal services. It not only involves the automation of legal tasks, such as generating smart contracts and legal documents, but also encompasses the rapid response and decision-making support for legal issues through data analysis and intelligent algorithms. The core of smart legal services lies in the deep integration of technology, making legal services more efficient and precise while reducing manual intervention, thus lowering costs, shortening processing time, and increasing the accessibility of legal services (Lescrauwaet, Lyytinen, et al., 2022).

The technological foundation of smart legal services mainly includes the following aspects: Artificial Intelligence (AI): AI can automate the processing of large volumes of legal documents, contract reviews, and legal research tasks through machine learning and natural language processing technologies. AI can learn from extensive legal precedents and regulations to provide targeted legal advice, enhancing the accuracy and timeliness of legal services. Big Data Analytics: Big data technology provides strong data support for smart legal services. By analyzing vast amounts of legal data and case data, smart legal service systems can identify potential legal risks and offer proactive legal solutions. Big data analytics can also be used for judgment prediction, litigation trend analysis, and other aspects, helping lawyers and legal professionals make more precise judgments. Blockchain Technology: The decentralized nature of blockchain gives it unique advantages in smart legal services. Blockchain enables more efficient document storage, contract management, and transaction verification, ensuring the immutability and transparency of legal documents. In particular, in the execution of smart contracts, blockchain technology can automatically execute contract terms, reducing human intervention and ensuring the fairness of contract fulfillment. The integration of these technologies makes smart legal services a powerful supplement to traditional legal services, playing an increasingly important role in many fields, especially in finance, business, and justice (Michalakopoulou, Kalliopi, et al., 2023).

2.2 Development History and Current Status of Smart Legal Services

As an innovative model in the legal service field, smart legal services have gradually developed into a relatively mature system over the years, particularly showing broad potential in applications within the financial sector, both domestically and internationally. Its development can be divided into several stages. Initially, the development of smart legal services focused mainly on automating basic legal document processing and contract management. With the advancement of artificial intelligence technology, particularly the introduction of natural language processing (NLP) and machine learning, smart legal services gradually expanded into more complex fields such as legal research, case prediction, and compliance analysis. During this process, tech companies, legal tech enterprises, and large law firms both domestically and internationally began increasing their investments in the smart legal services field, driving the rapid development of this area (Casanovas, Pompeu, Louis de Koker & Mustafa Hashmi, 2022). In foreign countries, especially in the United States and Europe, the application of smart legal services is relatively mature. Many large law firms and financial institutions have begun widely applying smart contracts, legal robots, and AI review tools. For example, AI technology is used for case prediction and risk assessment, helping legal professionals make decisions more quickly. At the same time, the combination of smart contracts and blockchain technology has begun to be widely applied in financial and commercial contracts, automating the execution of contract terms and reducing reliance on traditional judicial reviews. Domestically, with the continuous advancement of financial innovation, smart legal services have entered a rapid development phase. In recent years, many domestic tech companies and legal service platforms, such as “Fadada” and “Wusong,” have begun to enhance the efficiency and precision of legal services through smart contracts, AI lawyers, and intelligent legal services. In the financial sector, domestic fintech companies have begun leveraging smart legal technologies for intelligent compliance checks, risk prediction, and investment decision-making. For example, AI-based smart contracts have been applied in digital currency trading platforms, achieving significant results. Through the combination of blockchain and AI, the contract terms in financial product transactions can be automatically executed, and transaction data becomes more transparent, greatly improving the security and efficiency of financial transactions. Furthermore, under the background of financial innovation, the application scenarios of smart legal services continue to expand. For example, in investment banking, smart legal services are used to automate compliance checks for transactions. In financial product design and issuance, smart legal services can help identify potential legal risks in time and

provide corresponding solutions. In the cross-border e-commerce and digital payment sectors, smart legal services use smart contracts to automate the legal guarantee of transactions, increasing the transparency and fairness of the entire transaction process. As these technologies continue to mature, the application of smart legal services in the financial industry is not limited to compliance and contract management. More innovative models are emerging. It not only provides new solutions for the traditional legal industry but also supports the legal needs in financial innovation, driving the legal service innovation across the entire industry (Sourdin, Tania, Bin Li & Donna Marie McNamara, 2020).

3. The Current Status and Development Trends of Civil and Commercial Law

3.1 Basic Framework and Application Areas of Civil and Commercial Law

As one of the traditional legal systems in China, civil and commercial law mainly consists of two major parts: civil law and commercial law. It covers various civil and commercial legal relationships, such as property, contracts, and family matters, between individuals and legal entities. The basic framework of civil and commercial law includes property law, contract law, tort law, family law, inheritance law, company law, securities law, etc. Its core task is to regulate legal behavior in civil and commercial activities and protect the legitimate rights and interests of the parties involved. In practice, the implementation of civil and commercial law faces numerous issues. Firstly, due to the rapid changes in society and the economy, many legal provisions in civil and commercial law have not adapted to modern societal and market needs in time. For example, the rapid development of emerging fields such as internet finance and digital currencies cannot be fully covered by traditional civil and commercial law, resulting in certain lag in legal applicability (Kai, Yang, 2022). Secondly, while the detailed provisions in areas such as contract law and property law are clear, there are difficulties in actual implementation, especially in complex scenarios such as cross-border transactions and international investments. The application of relevant legal provisions often lacks consistency, leading to ambiguity in the law's applicability. Against the backdrop of financial innovation, the limitations of civil and commercial law are even more prominent. Financial innovation has introduced new financial products, payment methods, and transaction modes, such as smart contracts, blockchain, and P2P lending. These emerging financial forms have a significant technological gap with the traditional civil and commercial law framework. Smart contracts, as an automated contract form based on blockchain technology, present a major challenge to the contract management mechanism in civil and commercial law due to their automatic execution feature, particularly in terms of defining the legal validity of smart contracts and dispute resolution mechanisms. Additionally, the decentralized nature of blockchain presents a significant conflict with jurisdictional and judicial issues in traditional legal systems. How to effectively address the legal issues of these new technologies within the legal framework is another major challenge facing civil and commercial law. Overall, there is a certain disconnect between the traditional framework of civil and commercial law and modern financial innovations. This calls for timely legal reforms and adaptations to better address the new issues brought about by financial innovation (Wang, Ran, 2020).

3.2 The Modernization Development Path of Civil and Commercial Law

The modernization of civil and commercial law involves not only revising the traditional legal system but also adapting to emerging societal demands and economic changes. With the rapid advancement of technology and financial innovation, civil and commercial law faces significant challenges and must promote reforms to remain relevant. First, the reform of civil and commercial law is reflected in the revision of traditional legal provisions and responses to new issues. As the internet economy has risen, the application of civil and commercial law in areas like internet finance, digital currencies, and smart contracts has become outdated. To address this, civil and commercial law reforms have already begun, particularly in contract law, property law, and securities law (Schmitz, Amy J. & John Zeleznikow, 2021). These reforms gradually introduce more flexible and forward-looking provisions, such as legislation on digital payments, online contracts, and virtual property in the context of e-commerce and online transactions. This brings the law in line with modern business and technological needs. Driven by financial innovation, the integration of civil and commercial law with these innovations is also crucial for modernization. Technologies such as blockchain, artificial intelligence, and big data have become widely used in the financial sector, necessitating the updating of civil and commercial law to define the legality of these technologies and provide compliance frameworks. For example, smart contracts in financial transactions require civil and commercial law to confirm their legal validity and establish legal mechanisms for resolving disputes that arise during execution. This calls for innovative legal frameworks that can accommodate these new technologies, ensuring their applicability in the financial sector. Additionally, financial innovation offers a significant opportunity for the modernization of civil and commercial law. As blockchain and digital currencies blur the lines between traditional and digital finance, civil and commercial law must develop provisions that meet contemporary requirements while ensuring market order and protecting consumer rights. For example, clearer legal norms are needed for regulating blockchain transactions and

addressing data security issues to protect the rights of all parties involved and ensure compliance with financial innovations. In conclusion, the modernization of civil and commercial law is not only an adjustment to the traditional legal framework but also an active response to the challenges posed by new technologies and economic forms. By deepening reforms and introducing innovations, civil and commercial law can better support modern economic development and contribute to the rule of law, particularly in the financial sector, offering broader opportunities for growth (Qin, Bo & Su Qi, 2021).

4. The Integration and Development of Smart Legal Services and Civil and Commercial Law

4.1 The Role of Smart Legal Services in Promoting the Development of Civil and Commercial Law

Smart legal services play a crucial role in promoting the development of civil and commercial law, particularly in improving the efficiency and quality of legal services, with significant advantages. The application of technologies such as artificial intelligence, big data, and blockchain has not only transformed traditional legal service models but also provided new momentum for the innovation and development of civil and commercial law. Firstly, smart legal service technologies significantly enhance the efficiency and quality of legal services through automation and intelligence. For example, artificial intelligence, through machine learning and natural language processing technologies, can rapidly analyze large amounts of legal documents, case law, and regulations, helping lawyers and legal professionals quickly find relevant cases and legal precedents, saving considerable time. At the same time, smart legal service technologies can automate legal tasks such as contract review and compliance checks, reducing human error and ensuring the accuracy and consistency of legal services. For civil and commercial law, the introduction of smart legal services can reduce cumbersome manual operations, improve judicial efficiency, and make the handling of contract disputes, intellectual property protection, and corporate governance more efficient and accurate, thereby enhancing the overall effectiveness of the legal system. Secondly, the integration of smart legal services with civil and commercial law promotes innovation in the legal framework. Traditional civil and commercial law often appears outdated or inflexible when faced with emerging financial technologies and commercial activities. However, smart legal service technologies provide more modern and flexible solutions for civil and commercial law. For example, the introduction of blockchain technology has promoted the application of smart contracts, which not only have the characteristic of automatic execution but also ensure fairness and transparency in the performance of contracts. In this context, civil and commercial law needs to innovate by introducing the legitimacy and execution mechanisms of smart contracts, allowing it to adapt to these new legal practices. The integration of smart legal services provides a more flexible and innovative legal framework for civil and commercial law, enabling it to better adapt and adjust to emerging business models such as digital finance and cross-border e-commerce. In summary, smart legal services have not only improved the efficiency and quality of legal services, driving the development of civil and commercial law, but also driven innovation in the legal framework, helping civil and commercial law better adapt to the rapidly developing financial innovation environment. The integration of smart legal services with civil and commercial law not only enhances the precision and timeliness of legal services but also provides strong technical support for the modernization and innovation of the legal system.

4.2 Legal and Technological Challenges in the Integration of Smart Legal Services and Civil and Commercial Law

The integration of smart legal services and civil and commercial law presents both innovative opportunities and challenges. These challenges primarily relate to legal applicability, technological compatibility, data privacy, and legal responsibility. Firstly, legal applicability remains an issue as technologies like artificial intelligence, blockchain, and smart contracts lack clear legal frameworks in many jurisdictions. Smart contracts, for example, differ significantly from traditional contract law due to their automated execution. While traditional civil and commercial law relies on court trials for contract performance and dispute resolution, smart contracts execute automatically, creating difficulties for conventional legal systems. Effectively managing the legality, execution standards, and dispute resolution mechanisms of smart contracts within existing legal frameworks is a critical challenge. Secondly, technological compatibility is a concern. Smart legal services involve diverse technologies, such as big data, artificial intelligence, and blockchain, which often require integration with existing legal information systems, databases, and judicial platforms. However, current legal systems often suffer from inconsistent technical standards and data silos, hindering the seamless application of these technologies. Resolving compatibility issues between technologies is essential to ensure smooth collaboration across platforms and enhance the overall effectiveness of the legal system. Data privacy protection is another major challenge. Smart legal services rely on large amounts of data, including personal information and corporate secrets. Ensuring the security and privacy of this data, particularly in cross-border transactions and international investments, is crucial. As the complexity of legal frameworks and data protection regulations increases, both legal systems and technological solutions must work together to safeguard data privacy. Finally, legal responsibility poses a significant challenge. The automation of traditional legal services raises new issues

regarding the allocation of responsibility. For instance, if a smart contract's execution results in an error, it is unclear whether the developer, user, or platform should be held liable. Additionally, the legal validity of decisions made by artificial intelligence in legal services and the allocation of responsibility when errors occur need to be clearly defined. These challenges require civil and commercial law to adapt and establish clear definitions of responsibility within a new legal framework. In conclusion, while the integration of smart legal services and civil and commercial law has driven the modernization of legal services, it also highlights numerous legal and technological challenges. These must be addressed through gradual legal reforms and continuous technological improvements to ensure seamless integration and development.

5. Future Outlook: The Integration of Smart Legal Services and Civil and Commercial Law Under the Background of Financial Innovation

As financial innovation and technology continue to advance, the integration of smart legal services and civil and commercial law presents significant potential for development. Financial technology not only provides more technological support for smart legal services but also places higher demands on the civil and commercial law system. This integration is essential for legal service innovation and advancing the modernization of the rule of law. In the future, financial technology will further drive the deep integration of smart legal services and civil and commercial law, especially through smart contracts, blockchain, and artificial intelligence. Financial innovation will create new legal service needs, pushing smart legal services to become more intelligent and automated. These services will extend beyond contract management and legal consulting, integrating with financial technology to provide real-time compliance checks, risk assessments, and intelligent decision-making support for sectors such as financial product design, cross-border transactions, and digital asset management. As smart legal services develop, civil and commercial law will adapt to meet the demands of financial innovation. Traditional legal frameworks, including contract and company law, will undergo necessary adjustments to accommodate emerging financial forms like smart contracts and digital currencies. This modernization will make civil and commercial law more flexible and forward-looking, enabling it to better address globalized and digitalized business activities. The application of smart contracts and blockchain will significantly promote the integration of smart legal services with civil and commercial law. The automatic execution of smart contracts reduces reliance on traditional judicial processes, while blockchain ensures the transparency and security of legal affairs by storing and verifying legal documents on a decentralized platform. As these technologies mature, civil and commercial law must address legal challenges, particularly regarding the validity of smart contracts and dispute resolution mechanisms. Widespread use of smart contracts may also prompt reforms in the allocation of legal responsibility and the efficiency of contract execution. The integration of smart legal services and civil and commercial law will face more complex cross-border legal issues as global financial markets become more interconnected. International legal cooperation will become crucial, as different national legal systems must collaborate within the framework of smart legal services. Unifying legal standards, especially for smart contracts, cross-border e-commerce, and digital currencies, will drive the internationalization of legal services. To address legal conflicts in cross-border transactions, smart legal systems will provide more accurate solutions with a global perspective. This will improve compliance and security in international transactions, offering legal support for sustainable global economic development. As the integration of smart legal services and civil and commercial law deepens, legal talent and education will also evolve. Future legal practitioners will need technical knowledge in areas such as artificial intelligence, big data, and blockchain, in addition to traditional legal expertise. This transformation will enable the legal industry to adapt more quickly to the rapid changes brought about by financial innovation. In conclusion, the future integration of smart legal services and civil and commercial law holds great promise. As financial innovation and technology progress, this integration will enhance the efficiency and quality of legal services in the financial sector, drive the modernization of the legal system, and provide robust legal support for the digital and intelligent development of the global economy.

6. Conclusion

The integration of smart legal services and civil and commercial law under the background of financial innovation shows great potential. Through the application of artificial intelligence, big data, and blockchain, smart legal services have not only improved the efficiency and quality of legal services but also promoted the innovation and modernization of civil and commercial law. The rapid development of financial technology has generated new legal demands and fostered the widespread application of technologies such as smart contracts and intelligent reviews in the legal field. However, this integration still faces challenges such as legal applicability, technological compatibility, and data privacy protection. In the future, with the further maturation of technology and the improvement of legal frameworks, the deep integration of smart legal services and civil and commercial law will provide more efficient and reliable legal guarantees for the development of the global economy.

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China's Participation in Arctic Governance from the Perspective of International Law

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Abstract

From the perspective of international law, as a non-Arctic state, China's participation in Arctic governance evolves through three stages: passive involvement, active exploration, and policy integration. China holds significant interests in the Arctic region, spanning environmental, economic, and security dimensions, and possesses corresponding legal mechanisms under international law. Currently, China's engagement in the international legal system of Arctic governance faces challenges such as institutional exclusivity in Arctic governance, fragmentation of international legal rules, an underdeveloped domestic polar legal framework, and an immature capacity for rule-making. To address these issues, China may adopt strategies including leveraging existing international organizations and international law-based systems, advancing the construction of its domestic polar legal framework, fostering a multi-tiered and multi-stakeholder participation framework, and proposing responsible governance concepts and solutions.

Keywords: Arctic governance system, China's participation, international law

1. Introduction

Although eight states hold partial sovereignty over the Arctic region, the vast majority of the Arctic remains part of the global commons. Non-Arctic states are entitled to conduct activities in the Arctic and participate in its governance. On one hand, against the backdrop of global warming and melting sea ice, the Arctic's accessibility for development has significantly increased, with its abundant resources—such as biological resources, mineral reserves, and shipping routes—generating potential economic benefits that have attracted global attention. On the other hand, the protection of the Arctic is critical to humanity's survival, as unregulated development could severely harm its environment. For instance, uncontrolled fishing threatens fish populations and disrupts Arctic ecosystems, while increased shipping and mineral extraction risk marine pollution. Thus, Arctic affairs constitute a global public issue central to the fate of humankind. As a major maritime power and a responsible nation, China holds significant interests in Arctic governance and bears corresponding responsibilities to demonstrate global leadership. This paper focuses on international law, outlining the historical trajectory of China's participation in Arctic governance, analyzing the legal frameworks involved, identifying challenges, and proposing recommendations for improving China's engagement in the international legal system for Arctic governance.

2. Historical Progression of China's Participation in Arctic Governance Under International Law

2.1 Passive Participation Phase (1925–1991)

China's official involvement in Arctic affairs dates back to 1925, when the Provisional Government of Duan Qirui, at the invitation of France, acceded to the Svalbard Treaty (also known as the Spitsbergen Treaty), originally signed in Paris in 1920 by 18 nations, including the United Kingdom, the United States, France, and Japan. Under the treaty, Norway retains exclusive sovereignty over the Svalbard Archipelago, but the territory

must remain open to all signatory states, which are granted equal rights to conduct economic activities and scientific research there. However, the treaty lay dormant for over six decades until 1991, when Professor Gao Dengyi of the Chinese Academy of Sciences participated in a joint Arctic scientific expedition involving Norway, the Soviet Union, China, and Iceland. This event reignited domestic interest in the long-forgotten treaty, ushering in a new era of Arctic research in China.

During this period, China also ratified or joined several other treaties applicable to the Arctic, such as the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and the 1985 Vienna Convention for the Protection of the Ozone Layer. Yet, lacking awareness or intent to utilize these frameworks for Arctic activities at the time, the relevant provisions remained largely inactive. Thus, this phase can be termed China's "passive participation in Arctic governance"—a period during which it possessed legal grounds for engagement in the Arctic but took no concrete action.

2.2 Active Exploration Phase (1991–2013)

As previously noted, the Chinese government affirmed its status as a signatory to the Svalbard Treaty in 1991, providing a robust legal foundation for its participation in Arctic governance. Subsequently, China joined a series of international treaties applicable to the Arctic, including the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD). Additionally, China initiated organized Arctic scientific expeditions. Throughout the 1990s, its polar research primarily involved joint field studies, with Chinese scientists participating in expeditions led by Arctic states such as the United States, Canada, Finland, and Norway from 1991 to 1997. In 1996, China joined the International Arctic Science Committee (IASC), marking the institutionalization and regularization of its Arctic research programs.

In 1999, China's Arctic expedition team completed its first independent scientific survey aboard the domestically built icebreaker Xuelong (Snow Dragon). Between 2003 and 2012, China conducted four additional expeditions before attaining formal observer status in the Arctic Council in 2013. A pivotal milestone came in 2004 with the establishment of China's first Arctic research station, the Yellow River Station, in Ny-Ålesund, Svalbard. This station, China's third polar research facility following the Antarctic's Great Wall and Zhongshan Stations, made China the eighth country to operate a research base in the Svalbard Archipelago. (Wang, C. X., 2017)

In 2006, China applied for observer status in the Arctic Council and began attending meetings as an ad hoc observer in 2007, including Senior Officials' Meetings, the 2009 and 2011 Ministerial Meetings, and the 2012 Deputy Ministerial Meeting. During this period, Chinese experts also contributed to working groups such as the Arctic Monitoring and Assessment Programme (AMAP) and the Protection of the Arctic Marine Environment (PAME). (People's Daily Online, 2013, May 15) On May 15, 2013, at the Arctic Council's 8th Ministerial Meeting in Kiruna, Sweden, China—alongside Italy, Japan, South Korea, India, and Singapore—was granted formal observer status, a landmark event signifying China's transition from scientific exploration to institutionalized engagement in Arctic governance.

2.3 Policy Integration Phase (2013–Present)

Since formally becoming a Permanent Observer to the Arctic Council in 2013, China has adopted a markedly proactive stance in Arctic governance. In 2017, building on the concept of the "21st Century Maritime Silk Road," China proposed the "Polar Silk Road" initiative. The same year, the National Development and Reform Commission and the State Oceanic Administration jointly issued the "Vision for Maritime Cooperation under the Belt and Road Initiative," which for the first time designated the Arctic shipping routes as one of the three primary maritime corridors under the Belt and Road framework. In 2018, China released its inaugural Arctic policy document—the "China's Arctic Policy" white paper—outlining its core positions, policy objectives, guiding principles, and key proposals for Arctic engagement. This document serves as a strategic blueprint for coordinating domestic Arctic activities, fostering international cooperation, and advancing collective efforts to ensure the Arctic's peace, stability, and sustainable development. (The State Council Information Office of the People's Republic of China, 2018, January 26)

Furthermore, since the 18th National Congress of the Communist Party of China, successive Five-Year Plans have prioritized Arctic governance. The 13th Five-Year Plan (2016–2020) emphasized active participation in shaping international rules for polar regions, (The Central People's Government of the People's Republic of China, 2016, March 17) while the 14th Five-Year Plan (2021–2025) and the 2035 Long-Range Objectives explicitly called for "pragmatic Arctic cooperation and the development of the Polar Silk Road". (The Central People's Government of the People's Republic of China, 2021, March 13) Over the past decade, China has also engaged in drafting Arctic-related international treaties, such as the 2018 Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean and the 2023 Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ Agreement) under UNCLOS. In this phase, China's Arctic activities have expanded beyond scientific research to asserting rule-making

authority in governance, reflecting its evolving role as a key stakeholder in shaping the Arctic's future.

3. International Legal Frameworks for China's Participation in Arctic Governance

At present, China lacks dedicated Arctic legislation, relying instead on policy documents such as the China's Arctic Policy white paper for guidance. However, China's engagement in Arctic governance is firmly grounded in international law. As a key stakeholder with environmental, economic, and security interests in the Arctic, China leverages relevant international legal frameworks to legitimize its activities and participation. Below is a detailed categorization of Arctic affairs and their associated international legal regimes pertinent to China.

3.1 Environmental Affairs and Related Frameworks

3.1.1 Environmental Protection

The Arctic environment represents one of Earth's most unique and fragile ecosystems. Characterized by extreme conditions—prolonged winters, brief summers, subzero temperatures, intense winds, aridity, hypoxia, and high radiation—the region sustains relatively low biodiversity levels yet harbors numerous endemic species. However, climate change and human activities are driving profound and irreversible ecological shifts, with cascading global repercussions. For instance, the melting of Arctic ice sheets accelerates sea-level rise, directly threatening coastal cities worldwide, while glacial retreat contributes to ocean warming and acidification, destabilizing marine ecosystems. Notably, the Arctic Ocean and broader Arctic region exert significant and distinct influences on China's climate system. As one of the countries most vulnerable to climate impacts, China faces heightened environmental security risks from Arctic changes, including altered monsoon patterns, increased extreme weather events, and disruptions to freshwater resources. (Zhang, C., 2019)

The legal basis for China's participation in Arctic environmental protection can be divided into two interconnected layers. The first layer consists of global multilateral treaties that apply universally, including those applicable to the Arctic region. These include the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and its subsidiary agreements, the Convention on Biological Diversity (CBD), and the United Nations Framework Convention on Climate Change (UNFCCC). Additionally, specialized treaties addressing marine pollution further reinforce this framework, such as the 1973 International Convention for the Prevention of Pollution from Ships (MARPOL), the 1990 International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC), and the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention), along with its updated 1996 London Protocol. The second layer comprises regional multilateral treaties specifically tailored to the Arctic or polar regions. For instance, the 2013 Agreement on Cooperation on Marine Oil Pollution Preparedness and Response in the Arctic, adopted by the Arctic Council, and the 2015 International Code for Ships Operating in Polar Waters (Polar Code), established by the International Maritime Organization (IMO), directly address Arctic-specific challenges. These regional agreements complement the global treaties, collectively forming a cohesive legal foundation for China's role in promoting environmental governance and sustainable practices in the Arctic.

3.1.2 Scientific Research

Scientific research stands as a cornerstone of human activity in the Arctic, driven by two intertwined realities: first, the region's ice-covered conditions remain unsuitable for large-scale, routine economic operations, and second, humanity's scientific understanding of the Arctic remains incomplete. Moreover, as a low-political-tension endeavor, scientific exploration serves as China's primary avenue for engagement in Arctic governance, while also laying the foundational knowledge required for future activities. Consequently, China holds dual-dimensional interests in Arctic scientific research—both existential and aspirational—encompassing research stations, expeditions, and robust international collaborations. (Lu, J. Y., & Zhang, X., 2016)

China's scientific activities in the Arctic are firmly grounded in international law. Beyond the United Nations Convention on the Law of the Sea (UNCLOS), often termed the "Constitution of the Oceans," the 1925 Svalbard Treaty—to which China acceded—provides critical legal underpinning. While Norway retains sovereignty over the Svalbard Archipelago under the treaty, all contracting parties are granted rights to conduct economic and scientific activities there. Article 5 of the treaty further stipulates that "Conventions shall also be concluded laying down the conditions under which scientific investigations may be conducted in the said territories," meaning the scope, timing, and procedures for scientific research must be negotiated multilaterally among signatory states. In essence, scientific endeavors in Svalbard require collaborative international arrangements. Additionally, the 2017 Agreement on Enhancing International Arctic Scientific Cooperation, adopted by the Arctic Council, applies to China through the third-party effect principle in treaty law, further legitimizing its research engagements.

3.2 Economic Affairs and Related Frameworks

3.2.1 Arctic Shipping Routes

The opening of Arctic shipping routes under global warming is profoundly reshaping global maritime systems and even the world trade landscape. These routes, connecting the Atlantic and Pacific Oceans through Arctic waters, represent the shortest maritime corridor linking Asia, Europe, and North America. However, historically dubbed the "legendary passage" due to their year-round ice cover, limited navigable windows, and treacherous conditions, they remained largely inaccessible for centuries. In recent years, accelerated glacial melt driven by climate change has significantly enhanced their usability, unlocking vast commercial potential. By offering time and cost savings compared to conventional routes like the Suez Canal, Arctic shipping is poised to attract growing maritime traffic. For China, as a global manufacturing powerhouse, logistics leader, and maritime giant, the operationalization of Arctic routes promises direct trade benefits and regional economic opportunities. Beyond immediate gains, China's interests extend to navigation rights, safety protocols, regulatory frameworks, and infrastructure development along these routes, while also encompassing broader strategic and geopolitical advantages. (Lu, J. Y., & Zhang, X., 2016)

Regarding the international legal basis for China's participation in Arctic shipping route governance, the United Nations Convention on the Law of the Sea (UNCLOS) serves as the foundational framework. Furthermore, the International Code for Ships Operating in Polar Waters (Polar Code), developed by the International Maritime Organization (IMO), is directly relevant to Arctic shipping governance. Prior to the Polar Code, the IMO had already established a series of global conventions to regulate international maritime navigation, such as the International Convention for the Safety of Life at Sea (SOLAS), the International Convention for the Prevention of Pollution from Ships (MARPOL), and the International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers (STCW). Specifically, the Polar Code aims to standardize safety, environmental protection, and crew welfare in polar navigation. Applicable to both Arctic and Antarctic waters, it covers ship design, navigation practices, operational protocols, and maintenance requirements, marking it as the first legally binding international rulebook exclusively tailored for polar operations. Structurally, the Polar Code is divided into two distinct parts: Part I addresses safety measures, while Part II focuses on environmental safeguards, collectively ensuring a holistic approach to polar maritime governance.

3.2.2 Resource Development

The polar regions serve as critical repositories of global natural resources, encompassing oil, natural gas, minerals, freshwater, and fisheries. Among these, oil and gas stand out as the most commercially significant resources in polar areas, with the Arctic holding one of the world's largest untapped reserves of hydrocarbons. However, the extraction of these resources carries substantial environmental risks, necessitating stringent management and mitigation measures to balance economic gains with ecological preservation. Meanwhile, the Arctic's abundant fisheries resources—though vital—face growing challenges in sustainable management due to the dual pressures of climate change and human activities, transforming their conservation into a pressing global issue.

China's international legal framework for participation in Arctic resource governance operates across three interconnected dimensions.

First, it is primarily anchored in global multilateral treaties. A cornerstone example is the United Nations Convention on the Law of the Sea (UNCLOS), notably supplemented by the 1994 Agreement Relating to the Implementation of Part XI of UNCLOS, which addresses deep-sea mineral resource management.

Second, the framework extends to regional multilateral treaties. For instance, the 2018 Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean represents a critical regional effort. Specifically, this agreement mandates signatory states to immediately suspend unregulated fishing in the Central Arctic Ocean's high seas, prioritizing scientific research and the development of sustainable management plans. Only after assessing fish stock levels, determining sustainable harvest limits, and establishing binding conservation measures can commercial fishing activities proceed, thereby safeguarding Arctic marine ecosystems and fisheries.

Third, the framework incorporates foundational principles of international law, such as the "common heritage of mankind" principle. While applying this principle to the entire Arctic is impractical due to overlapping sovereignty claims by Arctic states, it retains partial relevance. As articulated in UNCLOS Article 136, "the Area and its resources are the common heritage of mankind," implying that mineral and hydrocarbon resources beyond national jurisdiction in the Arctic should be collectively managed. Consequently, states exploiting these resources must adhere to international legal obligations to protect the Arctic's ecological and climatic systems, balancing development with environmental stewardship.

3.3 Security Affairs and Related Frameworks

China holds corresponding rights and interests in Arctic security affairs, which can be categorized into five interconnected dimensions: geostrategic and military security interests, shipping route safety interests, asset and

personnel security interests, climate and environmental security interests, and resource and energy security interests. (Liu, F. M., & Liu, D. H., 2018) Broadly speaking, both China's traditional and non-traditional security interests in the Arctic align with general national rights under international law.

Regarding China's current participation in Arctic security governance, its engagement is primarily guided by international treaties focusing on non-traditional security domains. These include conventions under the International Maritime Organization (IMO) framework, such as the 1974 International Convention for the Safety of Life at Sea (SOLAS), the 1978 International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers (STCW), and the 1979 International Convention on Maritime Search and Rescue. Additionally, the International Code for Ships Operating in Polar Waters (Polar Code) and the 2011 Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic, adopted by the Arctic Council, further shape China's role in addressing safety, environmental, and operational challenges in polar regions. These treaties collectively address risks such as maritime accidents, environmental degradation, and search-and-rescue coordination, reflecting a holistic approach to safeguarding shared security interests in the Arctic.

4. Challenges and Responses to China's Participation in the International Legal System for Arctic Governance

4.1 Challenges Facing China's Participation in the Arctic Governance Legal System

4.1.1 Inherent Issues in the International Legal System for Arctic Governance

(1) Insufficient Institutional Openness

The insufficient institutional openness of the Arctic governance legal system is an inherent issue rooted in Arctic geopolitics. The Arctic Council, as the primary international body overseeing Arctic affairs, restricts full membership to the eight Arctic states, while non-Arctic states like China, India, South Korea, and Japan are confined to observer status. Observers hold limited influence, unable to directly engage in decision-making or rule-setting, and may only voice opinions through reports or statements during meetings. This marginalizes non-Arctic states, diminishing their impact and participation in Arctic governance.

The root of this institutional exclusivity lies in the politicization of Arctic issues, which have become a focal point for international power struggles. On one hand, unresolved sovereignty disputes among Arctic states, such as overlapping territorial claims, intensify political tensions within the region. On the other hand, Arctic affairs are increasingly leveraged as bargaining chips in broader geopolitical rivalries, complicating governance as external actors' involvement becomes contingent on shifting political dynamics. This politicization permeates even low-politics domains. For example, the Arctic Council's 2017 Agreement on Enhancing International Arctic Scientific Cooperation, while promoting intra-Arctic scientific collaboration, entrenches information monopolies among Arctic states and raises barriers for non-Arctic states to access critical data. Such institutional discrimination fosters an asymmetric power dynamic, where Arctic states dominate scientific knowledge while excluding others, undermining equitable cooperation. (Xiao, Y., 2019) In the economic sphere, competition over Arctic resources—such as oil, gas, and fisheries—further politicizes governance. States vie for resource allocation, eroding neutrality and fairness in decision-making. The Arctic Economic Council, the region's foremost economic governance mechanism, exemplifies this imbalance. Arctic states wield collective institutional hegemony by imposing restrictive membership criteria, effectively blocking non-Arctic states from gaining meaningful influence despite their economic stakes in the region. (Xiao, Y., 2020)

The institutional exclusivity and politicization of the Arctic governance system may also lead to broader adverse effects. First, the absence of a comprehensive and open international cooperation mechanism within the current system leaves critical issues—such as resource development, environmental protection, and scientific collaboration—vulnerable to interstate conflicts of interest and competitive dynamics, resulting in institutional rigidity. Second, the existing governance framework lacks sufficient adaptability and flexibility to address rapidly evolving environmental challenges, while failing to adequately incorporate the concerns and interests of non-Arctic states. Consequently, the system struggles to respond effectively to emerging issues, exhibiting significant lag and inefficiency in addressing pressing global priorities.

(2) Severe Fragmentation of Rules

The fragmentation of rules within the Arctic governance system refers to the coexistence of multiple norms, regulations, and organizations with divergent origins in addressing Arctic affairs, which may conflict or lack consistency, thereby amplifying systemic complexity and uncertainty. This issue manifests in several key dimensions:

First, the multiplicity of international governance frameworks complicates Arctic governance. For instance, overlapping mechanisms like the Arctic Council, the United Nations Convention on the Law of the Sea (UNCLOS), and the Svalbard Treaty operate under distinct mandates and principles, resulting in a decentralized

and often contradictory legal landscape. Second, the absence of a unified legal architecture exacerbates contradictions between disparate regulations. Since Arctic-related treaties are negotiated and enacted by different entities, their provisions frequently clash, leaving ambiguity in legal applicability and undermining predictability in resolving specific disputes. Third, the fragmentation of governance themes hinders holistic policymaking. While some organizations prioritize environmental protection, others focus on resource exploitation or shipping regulations, creating siloed rules that resist integration into a cohesive framework. Finally, unilateral state actions further destabilize the system. Certain Arctic states may adopt self-determined measures or issue unilateral declarations without consensus, compounding governance challenges and eroding multilateral cooperation. Collectively, these factors—competing frameworks, legal inconsistencies, thematic dispersion, and unilateralism—undermine the coherence and effectiveness of Arctic governance, urgently necessitating institutional reforms to harmonize rules and enhance collaborative governance.

4.1.2 Insufficient Institutional Capacity in China's Participation in Arctic Governance

(1) Inadequate Legal Frameworks for Domestic Arctic Affairs

At the domestic level, a pressing challenge lies in China's incomplete legal framework for polar governance. While Antarctic legislation has been included in the legislative agenda of the National People's Congress (NPC), Arctic-specific laws remain underdeveloped. Currently, China's polar governance is characterized by a scarcity of laws, narrow legislative focus, and a lack of high-level legal instruments to guide and regulate domestic polar activities. The absence of unified legislation addressing both the Arctic and Antarctic further exacerbates inconsistencies in implementation, leaving China's legal framework ill-equipped to meet the demands of global polar governance. (Yang, H., 2020)

Compounding these issues are deficiencies in the structure and operation of polar affairs management institutions. Specifically, China's polar management agencies operate at a low administrative level with limited mandates, hindering their ability to comprehensively regulate the expanding scope of Arctic activities. Moreover, fragmented oversight across agencies—such as the Ministry of Natural Resources and the Chinese Arctic and Antarctic Administration—impedes integrated governance, undermining China's capacity to address complex, cross-sectoral challenges. These institutional shortcomings underscore an urgent need to elevate administrative authority, broaden functional responsibilities, and streamline coordination mechanisms to enhance governance efficacy. (Yang, H., 2020)

(2) Immaturity in China's Arctic Rule-Shaping Capabilities

At the international level, China's capacity to shape Arctic-related international rules remains underdeveloped. This stems from China's status as a non-Arctic state, which lacks sovereignty over Arctic territories under international law and holds only observer status in the Arctic Council, resulting in a weaker legal standing and limited influence in rule-making processes. While this relatively closed institutional landscape is difficult to alter, China retains potential to enhance its agenda-setting capabilities and targeted rule-shaping expertise in specific domains.

Specifically, advancing agenda-setting requires crafting norm-setting initiatives that garner multilateral support, such as proposing Arctic-specific environmental or shipping regulations aligned with global priorities. Meanwhile, improving rule-shaping capacity demands systemic investments in specialized talent (e.g., Arctic legal and technical experts), increased participation in expert-level negotiations, and streamlined interagency coordination to unify China's diplomatic, scientific, and economic strategies in Arctic governance. (Jiang, C. Y., 2021)

4.2 China's Response Strategies

4.2.1 Effectively Leverage Existing International Organizations and International Law-Based Systems

To better engage with the international legal system for Arctic governance, China should prioritize leveraging existing international organizations and international law-based frameworks. Firstly, it must strengthen its role as an Arctic Council observer. By actively participating in council activities, contributing to specialized working group discussions, and offering expert recommendations on Arctic affairs, China can amplify its influence in regional decision-making. Secondly, China should deepen its involvement in Arctic-related international bodies such as the United Nations (UN) and the International Maritime Organization (IMO). Through these platforms, China can shape Arctic rule-making on a broader scale while elevating its global diplomatic clout. Thirdly, proactive engagement in Arctic-related international negotiations is critical. By fostering dialogue and consensus-building, China can secure greater discourse power, ensuring its perspectives inform the development of Arctic rules—a goal requiring enhanced diplomatic strategies and multilateral collaboration. Finally, China must cultivate a cadre of professionals skilled in international organizational dynamics, particularly legal experts capable of driving the drafting, amendment, and interpretation of international rules. This includes targeted training in Arctic law, multilateral negotiation tactics, and institutional diplomacy to bridge gaps in specialized

expertise.

4.2.2 Improve Domestic Legal Frameworks for Arctic Governance

To strengthen the domestic legal framework for Arctic governance, China must accelerate the development of a comprehensive polar legal system to fill gaps in domestic legislation. The legislative process should begin with Antarctic laws, which face fewer political obstacles, and progressively extend to Arctic-specific legislation, while ensuring regulatory coherence between the two poles to harmonize standards and avoid conflicts. Simultaneously, reforms to polar governance institutions are critical. First, elevating the administrative authority of polar management bodies will enhance their decision-making power and legitimacy. Second, expanding their functional mandates is necessary to address emerging challenges such as environmental monitoring, resource management, and international cooperation. Third, streamlining coordination mechanisms among domestic agencies—such as the Ministry of Natural Resources, the Chinese Arctic and Antarctic Administration, and environmental regulators—will improve interdepartmental synergy and governance efficiency.

By integrating these interconnected measures, China can establish a robust legal and institutional foundation to support its sustainable and influential participation in polar governance.

4.2.3 Promote Multilayered Cooperation and Participation in Arctic Affairs

Polar affairs transcend regional boundaries to constitute a global public issue central to humanity's shared future, necessitating coordinated international governance. China must pursue a multi-tiered, multi-stakeholder approach to Arctic engagement.

At the state level, China should deepen bilateral and multilateral cooperation with Arctic nations through joint research initiatives, collaborative projects, and economic partnerships. By forging stronger strategic partnerships, China can enhance its agenda-setting capacity in Arctic governance, ensuring its priorities align with global sustainability goals. Concurrently, scientific collaboration and data sharing with Arctic states are critical. Pooling research findings and datasets not only unlocks cooperative opportunities but also strengthens the scientific basis for China's policy decisions in Arctic governance.

Beyond official channels, China should empower non-state actors—including NGOs, research institutions, enterprises, and individuals—to actively contribute to Arctic governance. Leveraging track II diplomacy (civil diplomacy) and public diplomacy, these actors can foster grassroots dialogues, advance technological innovation, and promote cross-cultural understanding, complementing state-led efforts and enriching China's holistic engagement strategy.

4.2.4 Propose Responsible Arctic Governance Concepts and Solutions

China's engagement in reforming and shaping the international legal system for Arctic governance must leverage its role as a key stakeholder in Arctic affairs, guided by the principles of consultation, collaboration, and shared benefits, with the overarching aim of safeguarding humanity's common interests, while firmly protecting its core national interests. Specifically, building on scientific research, China can prioritize environmental protection—a low-political-tension domain—as an entry point, addressing the livelihoods of Arctic Indigenous communities and advocating for a sustainable, eco-centric Arctic governance model. By supporting and participating in Arctic ecological conservation, promoting green technologies (e.g., renewable energy, pollution control), and balancing economic development with environmental stewardship, China can champion equitable solutions that harmonize resource utilization and ecological resilience.

5. Conclusion

China's geographical remoteness from the Arctic inherently challenges its participation in shaping the international legal framework for Arctic governance, while the volatile international landscape further amplifies uncertainties in this process. Ultimately, China's strategy to strengthen its role in Arctic legal governance must center on capacity-building and enhancing institutional discourse power. To advance capacity-building, three priorities stand out: Firstly, China must prioritize enhancing its economic and scientific prowess, particularly in Arctic-related infrastructure, technology, and research, which form the bedrock for practical engagements such as icebreaker operations, climate modeling, and resource exploration. Secondly, establishing a comprehensive domestic legal framework for polar governance is critical to regulate Arctic activities, align domestic practices with international norms, and address China's specific strategic needs. Thirdly, cultivating a specialized talent pool—including experts in international law, Arctic diplomacy, and multilateral negotiations—is essential to bridge expertise gaps and sustain long-term engagement. In parallel, enhancing institutional discourse power demands a threefold approach: Concurrently, China should leverage existing international platforms (e.g., the Arctic Council, UNCLOS forums) to refine its legal advocacy and rule-shaping strategies, demonstrating mastery of international law. Furthermore, deepening international partnerships—both with Arctic states and non-Arctic actors—is vital to amplify China's voice in multilateral negotiations. Finally, fostering a

multi-stakeholder governance model—engaging governments, NGOs, academia, and industry—will diversify participation, enrich policy perspectives, and solidify China's role as an important stakeholder in Arctic affairs.

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Downsizing Government Through a Decentralized Approach to Public Employment

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Abstract

Increasing the number of civil servants, in addition to increasing costs, will lead to a large and inefficient government; therefore, the aim of the present study is to achieve innovations and initiatives to reduce the size of the government and its costs by reviewing the public recruitment process. The United States of America is an example of a movement towards reducing the number of civil servants at the state and federal levels. This issue is investigated using a descriptive-analytical method and a library method. The research findings indicate that adopting a decentralized approach to public employment, through methods such as: delegating matters to regulatory agencies, employment declassification, and at-will employment, leads to a reduction in the size of the government by reducing the number of civil servants.

Keywords: decentralization, declassification, downsizing, deregulation, civil service

1. Introduction

In the 1970s, following theoretical debates among conservative economic thinkers, strategies for reducing the size of government were adopted. The main goal of these discussions was to reduce government bureaucracy. Thinkers gave two main reasons for this: (1) Bureaucracy restricts a great deal of individual freedom and it is necessary to reduce the extent of its power. This idea further leads to the need to reduce the scope of bureaucracy and the size of the state; from this perspective, consumer freedom and choice are much more desirable than servitude and being under the authority of bureaucratic command. (2) In connection with the first reason, according to the aforementioned economists, the traditional bureaucratic model does not have incentives and rewards at the same level as the market; therefore, it is not as efficient as market processes. Therefore, it was not possible to enhance efficiency in a governance system with a large government and complex bureaucratic processes.

The public sector in the United States, by most definitions, is smaller than in European states. For example, there is no comprehensive universal health care system, and the “social safety net” is not as developed as in European welfare states; However, many people object to the size of the government, due to the large number of civil servants who provide public services at all three levels of government, federal, state, and local. It should be noted, however, that in the United States, as in federal regimes, all three levels of government have a certain degree of independence and a wide range of powers. In fact, although the federal government’s powers are not as broad as those of central governments in simplified systems, this does not mean that we should ignore the entirety of the public sector and its growing trend due to the structural fragmentation of the federal system. The important point here is that the small size of the federal government makes it more difficult to reduce its dimensions; even in almost all Western countries, when reducing the size of government is raised as an issue, simple interpretations and interpretations are relatively few.

A large government imposes heavy costs on its citizens, because although it is ostensibly expanded to provide for the welfare of its citizens, in reality, a large portion of the citizens' assets and income are spent on government expenses. Such a government resorts to increasing tax revenues to offset its current expenses, and as a result, instead of increasing public welfare, it takes steps to reduce it. One of the main current expenses of the government is the payment of salaries to civil servants, which accounts for a large part of the country's budget. Therefore, examining how to reduce the number of government employees and, consequently, reduce the size of the government, shows the necessity of this research. In this regard, studying how to reduce the size of the government in the United States by examining the new methods used in this country in the field of public employment is the focus of this research.

The main question of the present study is: Is it possible to reduce the size of the government using a decentralized approach to public employment? If the answer is yes, what are the mechanisms for implementing it?

Therefore, using a descriptive-analytical and library method, we will examine the issue in six chapters, respectively under the titles: institutional developments, the scope of civil service rules, the disaggregation pattern, reform in the public sector and downsizing of civil services, deregulation, and finally broad banding and merit pay.

2. Institutional Changes

In the United States, there have been changes in the roles and functions of institutions, and a decentralized approach is prominent and evident. In this regard, many of the responsibilities of central institutions have been transferred, through delegation, to regulatory institutions, which have broad powers for substantive decision-making as well as executive functions.

The Postal Service, the Federal Aviation Administration, and the Federal Intelligence Agencies each have a separate and distinct structure. To the extent that all agencies are exempt from the standards and processes of the Central Civil Service. By the mid-1990s, less than half of federal civil servants were subject to competitive service rules, and less than a third of new employees entered the government through recruitment processes that bore little resemblance to the traditional civil service model, which sought to ensure meritocracy through standards-setting, testing, and centralized hiring. Thus, the federal employment system, although identified as a centralized system, was in practice increasingly divided into a collection of different departments.

3. Scope of Civil Service Rules

Civil service coverage for federal employees has varied considerably since the inception of the civil service system, peaking in the early 1950s, when more than eighty-six percent of full-time federal employees were covered by the civil service system. This ratio remained largely the same until the early 1970s, but things changed when new employees were hired through excepted means. By the mid-1990s, just over half of federal employees were covered by civil service rules.

4. Disaggregation Pattern

The disaggregation pattern was achieved through regulations on "Personnel demonstration authority", "renovation initiatives" and the creation of "separate personnel systems" for specific regulatory bodies.

"Personnel demonstration authority" was created by the Civil Service Reform Act, enabling regulators to engage in innovative hiring processes that could serve as models for other governments. Under the Clinton administration, the use of this authority became widespread, often for purposes that allowed parts of the government to deviate from Civil Service rules; Under his administration, public administration restructuring followed a logic consistent with granting operational authority to regulatory agencies, allowing federal regulations to be eliminated in exchange for the benefits of improved performance. Among the initiatives related to public administration modernization were the "performance-based organizations" and changes to the rules that employees were required to follow.

Another source of Disaggregation in the employment system was the creation of alternative employment structures, through legal processes. Two clear examples of which are the Federal Aviation Administration and the Internal Revenue Service.

5. Public Sector Reform and Downsizing of Civil Services

In general, systems and structures that place more emphasis on executive and performance management prefer contracts with specific terms, performance agreements based on individual characteristics, and a reward-based system that is based on performance-based pay, as mandated by regulations. Here, the issue of improving the quality of work at a lower cost comes up, and consequently, a smaller government seems logical; therefore, from the perspective of advocates of public administration reform and modernization in the United States, a government that can be more efficient at a lower cost is an inevitable necessity for the future. Also, like previous

reform efforts in the United States, public administration reform in this country has focused on a mix of existing private sector models, best practice research, multiple levels of government, and rarely examples from other countries. In this regard, initial efforts to reform the federal government have been aligned with the process of "downsizing," which involves a combination of public sector reform and downsizing of the civil service.

For example, the National Performance Review program outlines a framework in which "entrepreneurial managers" in the private sector have the same conditions as those enjoyed in the public sector; furthermore, between 1993 and 2000, 324,595 federal government jobs were eliminated, of which 40,000 were in the executive branch.

Of course, downsizing the civil service is not limited to the aforementioned method, and in this regard, the Federal Workforce Restructuring Act of 1994 should also be mentioned. The said law had adapted the model used in the Department of Defense and tried to use it in line with the goal of downsizing; It created the possibility of purchasing the service records of certain groups of federal employees; therefore, for a limited period of time, most federal agencies were authorized to offer "early retirement bonuses" to certain groups of employees. Of course, in the latter example, the recruitment approach is centralized and based on government regulation and pursues government downsizing with a unified organization; While granting operational authority to regulatory agencies in employment matters and enabling departures from civil service rules represented a decentralized approach to public administration, which can be considered employment decentralization in order to reduce the size of the government and by reducing the number of government employees.

6. Deregulation

At the state level, the realization of the problems in the civil service systems has been a motivating factor for various reforms to improve the public employment situation and the overall functioning of the government. These reforms have created areas of research focusing on how they affect state governments. The practical result of the implementation of "deregulation" and "decentralization" among the states has led to a redefinition of the status and role of public servants; A redefinition that has had important consequences for the way human resources are managed in the public sector and in public administration. The move from a centralized approach to organizing public servants through a central agency, such as the Civil Service Commission or the Human Resources Department, to making department managers independently accountable for the actions of their employees is an example of a move towards a decentralized approach.

Regarding the negative effects of reforms in the field of public employment, Coggburan believes that deregulation in the field of public employee employment has led to an increase in the number of "part-time" employees, which brings to mind the existence of a connection between employment deregulation and the "job security" of government employees in the states.

Under the guise of decentralization, accountability, and flexibility, the rights of a large number of civil servants to benefit from the due process have been revoked, and the "at-will employment" approach has affected larger segments of the public sector workforce.

As a result of the above, four interrelated trends have emerged: (1) The continued decentralization of competences related to human resource management, coupled with the expansion of the influence of supervisory and managerial roles on the employment conditions of public servants; (2) The widespread increase in declassified job positions, which are not covered by the civil service guidelines; (3) The reduction in the ability of public servants to appeal supervisory decisions; (4) The increasing presence of active governors who intend to influence and impose business processes in public agencies; regardless of whether the business processes have a proven standard in terms of efficiency and effectiveness. In states such as Arkansas, Missouri, North Dakota, Oklahoma, and South Carolina, the old merit-based system was completely abolished. The centralized testing and screening of applicants for entry into the civil service was virtually abolished in the restructured state governments, and oversight of job classifications, compensation, job assignments, performance evaluations, and other employment conditions were delegated to regulatory agencies. Only eight states, to varying degrees, have retained a centralized, merit-based system, and two states, Indiana and Maine, are seeking to rebuild a centralized hiring system in order to regain oversight of human resource management structures.

7. Broad Banding and Merit Pay

Changes in human resource management, as part of the public administration modernization program, have made the position of civil servants vulnerable. In addition to what was mentioned earlier regarding employment decentralization, two new concepts, under the titles of "broad banding" and "merit pay", have also been introduced in a significant number of states.

The term broad banding was introduced in contrast to the narrow job classifications and the multiple pay grades and divisions, to increase flexibility by reducing these categories. The term merit pay was also considered as a solution based on the traditional method of rewarding civil servants, mainly based on length of service.

Broad banding seems to be a modified form of declassification that does not completely declassify a government employee, but rather abolishes their previous class. Merit pay can also be seen as a restorative strategy to reduce the vulnerability of government employees to their new job positions, which considers their job history as a factor in paying them fair wages; However, it is not considered a perfect solution and does not guarantee the job security of a government employee.

Criticizing the traditional merit-based system, the then governor of Florida (Governor Jeb bush, Elected in 1998) believed that the merit system prioritizes the protection of government employees over the protection of society, and instead of prioritizing public administration on protecting the rights of all citizens, it seeks to protect the rights of employees without considering their performance. He intended to free managers from the tedious and arduous hiring processes by eliminating job supports.

Subsequently, and in order to increase "productivity", the organization and structure of employment management was changed to an at-will employment model; by eliminating nine hundred career service positions, the responsibility for managing the salaries and benefits of more than two hundred thousand active and retired government employees was removed from the government, and the entire government employment structure in the state of Florida was outsourced.

Such programs, built on contemporary trends at the federal and state levels, seek to restructure government and downsize it.

8. Conclusion

Overall, the move to reform the civil service appears to have been successful, with several changes including the at-will employment model.

In fact, if we consider the number of civil servants as an indicator for calculating the size of the government, the reduction of civil servants in its original sense, which includes employees with a stable legal status and enjoying job protections in the civil service system, has led to a reduction in the size of the government. From this perspective, the priority is to increase the flexibility of public administration through restructuring the civil service system, in order to reduce the size of the government by reducing the number of civil servants in its specific sense.

Of course, there are differences at the federal level with the states; at the federal level, the main focus is on decentralization through the transfer of affairs to regulatory agencies, but in many of the aforementioned states, in addition to this, employment declassification and at-will employment practices are also prevalent.

It may therefore be inferred that employment decentralization is more organized in a significant number of states than at the federal level. Although a comprehensive examination of all states in this regard would require a series of independent studies.

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