

STATE REGULATION OF THE INTELLECTUALIZATION OF THE FUNCTIONING OF AZERBAIJANI INDUSTRIAL PARKS

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ABSTRACT

Due to the productive operation of industrial parks in the Republic of Azerbaijan, a demand for their further deployment in the context of digitalization has formed. The main objective of this article is to reflect the potential of AI in industrial parks with a focus on ISO 14001 implementation. To this end, as a task the abstract-practical aspects of the research area, their potential application in the Republic of Azerbaijan were examined. The research methodology consists of grouping, comparing, analyzing statistical, factual data and time series, case study. The article summarized the advanced (Chinese, Thai and Ethiopian) skills in environmental regulation mechanism and AI applications (by the World Electrotechnical Institution, Smart Global Governance, Ellen MacArthur Foundation) in the field of environmental management in (Vietnamese) industrial parks. As a result of the analysis of the process of implementing environmental regulation mechanisms in industrial parks for the Republic of Azerbaijan the peculiarity of the early stage of certification by residents was revealed. In order to accelerate progress in achieving sustainable promotion of industrial parks the guidelines for the deployment of development opportunities in the research area for the Republic of Azerbaijan were proposed: the implementation of prototype pilot versions of AI applications in industrial parks, a guideline for the application of emission prediction models, the promotion of subsidies for services to residents through the mediation/initiation of specialists from management structures of industrial parks represented by a state entity, technical support for their personnel, a guideline for the implementation of the country's current strategic measures.

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ARTICLE HISTORY

Received: 11/04/2026

Accepted: 21/08/2026

Published online: 25/10/2026

KEYWORDS

Industrial park, artificial intelligence, ISO 14001, environmental regulation mechanism, management structures

1. Introduction

During the accelerated industrialization phase, industrial parks (IPs), while participating in economic development, face significant environmental challenges – waste, wastewater, gas emissions. Traditional approaches to environmental regulation are characterized by standards such as a lack of forecasting and infrequent monitoring. Artificial intelligence (AI) has become a decision-making mechanism for improving and regulating environmental monitoring.

After manufacturing processes were fundamentally transformed by Industry 4.0, AI began to impact complete supply chains through automation of everything (Customer Stories and Use Cases, 2024).

Industrial AI is generally accepted to refer to the deployment of AI in industry. Generally, general AI is designed for creation of the computerized mechanisms that implement functions that require human thinking and acts as a pioneering area of research. In contrast, industrial AI is primarily designed to be deployed to resolve industrial complex issues of relevant technologies: extraction of analytical information, productivity growth, value-based organization for employers. Despite the fact that, in the totalitarian interpretation regarding the use of AI, thinking machines are capable of generating moral and social difficulties, taking over public work, in total, the industry has a favorable reaction to AI, predicts significant business potential from mentioned transition and recognizes it as irreversible (Creazione, 2019).

Therefore, the subject of the article's research is the aspect of intellectualization of IPs (object of research) from an angle of the potential of state regulation.

In this regard, the scope of application of the results is presented to representatives of the management structures of Azerbaijani IPs.

The main reference point of the green economy is modernization based on reducing the use of non-renewable materials and improving environmental protection at global and local bands of life characteristics. Focused on the investment and regulation of skills, innovations the green system has a complex structure that includes legal, political, environmental, economic and social sides.

By implementing an entrepreneurial environmental strategy as a means of developing tool of green eco-criteria on a micro scale in the field of business ISO 14001 is approved (Gorlova, 2024).

Companies around the world are delving into the essence of mitigating the impact of climate change, conserving sources and reducing environmental impacts. In order to regulate these activities guaranteeing a basis for environmental regulation ISO 14001 was developed. Although the standard serves as a mechanism for enterprises which adhering the environmentally responsible approaches, the use of AI radically transforms their approach in terms of incentivizing compliance with the standard (Mukherjee, 2023). In order to increase environmental indicators, the management structures of IPs are able to use the mechanism of environmental regulation as this standard (Geng & Côté, 2003).

The scientific significance of the research topic consists of the presentation of the AI tool in the order of a reformation reception to the environmental management of IPs.

In this regard, the scientific novelty of the article is represented in the definition of the eco-direction of the use of the AI tool by Azerbaijani IPs, consistent with the framework of the program regulatory contexts in force in the country.

2. Related works

2.1. Abstract data on the topic

ISO 14001, as a generally accepted regulatory standard that fundamentally supports IP's organizations-residents for the fixed and mandatory consolidation of AI, is actualized by the phase of immediate innovative transformations. By referencing the basic rules through the implementation of AI, the ISO 14001 mechanism is able to rationalize similarity control, stimulate the most accurate analysis of threats and consequences, improve the efficiency of source implementation. Residents of IP by implementing the standard are able to present obligations, reduce threats, enlist the support of an expanded team represented by customers and regulatory structures (Economit, 2023).

It is extremely important to promote the deployment of AI within the boundaries of organized industrial areals – which act as points of economic, primarily industrial

functioning, forming job positions, stimulating zonal development, partnerships among industrial organizations through the economic design of selected territories (Cihan, 2024).

Effective regulation of IPs plays a decisive role in entrepreneurial achievement in competitive situations. Thus, AI has recently been forming a defining challenge in transforming the mechanisms for regulating such territories (Corporate Author, 2023).

Factories serve as real-world operational environments for testing and rationalizing new technologies. AI is being promoted there with the aim of rationalizing, evaluating and verifying production stages. By evaluating instrumental information, the AI procedure is able to provide adequate regulation by early detection of potential difficulties in technological lines (Cihan, 2024).

ISO 14001 promotes a comprehensive analysis of the interaction of services, products and operations with the environment, their management, support for the achievement of the intended priorities and responsibilities of enterprises (Geng & Côté, 2003).

2.2. Literature research

Before moving on to a specific disclosure of the content of the research, let us turn to the author's grouping of sources referenced in the subsection (Table 1).

This grouping may be of interest to sides conducting similar research.

In his work Cihan thoroughly examines the various forms of AI implementation in organized industrial areals: the formulation, historical content and industry implementation of AI. In the form of a world practical example AI applications at leading corporations such as Toyota, General Electric and Siemens, implementation in industrial areals at producing prototypes factories and at engineering and scientific-experimental points of AI, challenges in industry related to AI integration, significant steps toward successful deployment of the technology are being explored. The work lists the possibilities, advantages in industrial areals of AI, the successful measures required for enterprises implementing these technologies (Cihan, 2024).

Due to the presence of difficulties in the deployment of AI, the author identified the mastery of AI technologies by personnel, the solution of which is realistically achieved

through the development of training modules with resource support from the organization (Cihan, 2024).

Table 1: Grouping of thematic distribution of studies

Author/institution	Topics			
	<i>IP</i>	<i>AI</i>	<i>ISO 14001</i>	<i>Environmental Regulation Mechanism (ERM)</i>
Cihan, 2024	+	+		
Côté & Balkau, 1999	+		+	+
Da Cruz, n.d.		+	+	+
Dung, 2025	+	+		+
Ellen MacArthur Foundation, 2019		+		
GDS, 2017	+		+	+
Geng & Côté, 2003	+		+	+
IEC, 2018		+		
JICA, 2014	+		+	+
Smart Global Governance, n.d.		+	+	
Weikal & Scott, 2025		+		

Source: Compiled by the author.

In his work Dung provides the current status of AI-applications in environmental regulation in IP:

- environmental monitoring, real-time format notification;
- rationalization of waste management mechanisms;
- monitoring and forecasting environmental impacts.

As an example of this benchmark, machine learning models (LSTM, SVM) are given that are capable of predicting CO₂, SO_x, NO_x emissions from industrial units according to information on climatic conditions, equipment, temperatures, fuel;

- stimulation for decisions in IP regarding environmental protection regulation (Dung, 2025).

In addition, Dung showed the development guidelines and prospects of Vietnamese AI in regulating the environment of IP:

- raising awareness and improving of training;
- improving environmental information and infrastructure;
- activating pilot schemes in leading IPs;
- integrating into governance mechanisms;
- stimulating cooperation between businesses, international organizations, government structures;
- developing legal and policy programs to promote AI (Dung, 2025).

Dung also suggests steps for further research:

- dissemination of AI applications;
- integration with innovative AI options;
- improvement of regulatory documents;
- fundamental data aggregation, monitoring;
- research of AI-based options of circular economy (Dung, 2025).

The Ellen MacArthur Foundation notes in its publication that AI, as an accelerating force for transformation into a closed-loop mechanism, offers three sides to its application:

- component-based design;
- leveraging business-options;
- rationalizing infrastructure under the cyclical flows (Ellen MacArthur Foundation, 2019).

The White Paper presents a compelling arguments for AI's potential to be applied in the overall perspective of applications, helping to address specific current difficulties-megatrends.

The work describes real-world application options in four sectors (smart energy, transportation, manufacturing, and homes), clearly demonstrates the large-scale implementation of the current AI mechanism in individual spheres.

The subsections provide significant guidance from the White Paper, directed generally to industry, coordinating structures and the World Electrotechnical institution with its structures.

In AI eco-mechanism is interested a comprehensive selection of the involved industrial actors. It is acceptable that AI technologies will contribute to the gains of these industrial actors, but they need to regulate their efforts in order to maintain the acceptability of first-class information, the continuous increase in infrastructure productivity, the security of AI mechanisms. Their work will in fact bring closer the large-scale deployment of AI and contribute to the growth of competence in relation to social superiority (IEC, 2018).

In order to assimilate by IP of ERM, Côté and Balkau formulated a comprehensive ERM (CERM) – a conceptual version to the IP, aimed to improve the universal characteristics of environmental regulation. The CERM demonstrates an innovative trend that promotes the implementation of universal regulatory approaches for the sake of collapse of disproportions in IP on the surrounding environment. ISO 14001 appears to be the mechanism for the deployment of ERM. The significant priority of the deployment of ISO 14001 in IP is that it acts as a controller of environmental regulation, is capable to promote its regulation in government structures. It can also enhance IP's ability to develop the economy, express environmental effectiveness. Consequently, the standard provides a sound foundation for the sides to control the version of the CERM (Côté & Balkau, 1999).

In the article Geng and Côté on the option of the Dalian areal of economic-technological promotion (DAETP), described how to form the CERM at the IP level based on ISO 14001 in view of Chinese circumstances. A very attractive characteristic of the mentioned work is the adoption of the CERM (by example of ISO 14001) by the management of the DAETP in order to use the most comprehensive approach to the full range of environmental difficulties that they encounter when regulating the areal. In reality, the priority is to resolve most of the challenges at the scale of areal. The obstacles and advantages associated with the standard's implementation (Table 3), incentives are reflected.

A publication by Global advancing solutions lists the benefits and challenges of implementing ISO 14001 certification in Ethiopia's IP. The benefits include the following:

- based on ISO 14001 ERM facilitates the implementation of the government's green industry approach by enterprises and the IP Corporation. Thanks to this, the economic sustainability of IPs is increased, high environmental indicators are achieved through resource use.

Significant challenges in the implementation of ISO 14001 certification by the ERM in the IP are considered to be a lack of practices and information in the sphere, specialized personnel within the IP Corporation capable of managing the implementation of the standard in the IP (GDS, 2017). Global advancing solutions offers the necessary measures to address these challenges for enterprises:

- to inform about the superiority of ERM-certification;
- to formulate the enforcement of various forms of ownership through technical assistance;
- profile employee;
- comply with regulatory requirements for compliance with environmental standards;
- establish relevant objects for their certification in the IP;
- support residents with a collective certificate (GDS, 2017).

Smart Global Governance`s article explores innovative skills to successfully implement ISO 14001 (Table 2), how Optivalue.ai can improve productivity.

Table 2: Selected skills for productive mastery of ISO 14001

Recommendations	Essence
1. Stability of the governing structure	An enterprising environmental strategy, executed at a high position, stimulates all personnel and gives prioritizes reception
2. Formulate environmental factors	Systematically adjust environmental factors of the activity (use of raw materials, waste, emissions, energy consumption,

	etc.); weigh the importance of each action (severity, frequency), mobilizing production personnel to work
3. Formulate the calculated priorities	Implement the SDAFT (specific, definable, achievable, factual, time-bound) approach; combine the structure of activities and performance indicators (KPIs) with priorities
4. Studying and improving the literacy of personnel	Coordinate the relevant study across all positions: specialized study for the management structure of actions, a comprehensive study of personnel on environmental protection requests, etc.; locally stimulate initiative feedback communication
5. Stable development and periodic checks	Coordinate a periodic process of internal audits to identify spheres for development, analyze the usefulness of the ERM; prevent discrepancies with preliminary and corrective approaches; conduct at least one annual regulatory review to correct the established priorities and evaluate the achieved achievements; take feedback into account; potential is each specific deviation

Source: Compiled by the author (Smart Global Governance, n.d.).

Optivalue.ai, an AI assistant specialized in compliance of regulatory requests, can evaluate internal protocols (strategies, audit reports, algorithms, etc.) and apply them to independently develop clear responses to requests associated with compliance to regulatory requirements. Ultimately, it can reduce the time spent on transforming periodic audits or questionnaires by approximately 90%. In this case, there is appears a high level of controllability and thoroughness of the provided responses (Table 5) (Smart Global Governance, n.d.).

In his article Da Cruz envisions a future where AI applications will take on exceptional rank of thinking, allowing experienced experts to combine AI sources into their work, enhancing personal productivity and recognition. He outlines the following alternatives for how ISO 14001 expert-consultants are prepared to deploy AI in their work:

- AI mechanisms for transforming environmental inspection;
- AI mechanisms for conceptual regulation;
- AI mechanisms for rationalization of the office workflow process;
- oriented chatbots on the AI platform.

According to the article, at least in the current five years, the experts of ISO 14001 mastering ERM will begin to develop individual AI mechanisms, the developed ones of which will form digital assistants and chatbots on the AI platform, supporting continuous support and references, implementing ERM more quickly and productive.

The author discusses how AI chatbots can support the experts of ISO 14001 in the following ways: - responding to requests and facilitating in the real regime routine; - saving time on inspections; - accelerating deployment; - supporting pre-certification inspections and internal audits; - forming training resources by providing interactive developmental surveys and competencies.

Da Cruz provided on certain samples of how this could be implemented through Experta, a specialized knowledge platform in the form of an AI-based chatbot for the sake of standart (Da Cruz, n.d.).

According to the publication of the Japanese world cooperation structure, there are global eco-standards for IP developed by international structures, among which is ISO – ERM (ISO 14001 group) (JICA, 2014).

The publication, analyzing the environmental criteria and the context of the THAICOBAN – a sustainable to IP standard, highlights eco-management among the supporting measures. This criterion distinguishes five levels for IP:

1. IP does not realize the degree of development by tenants' of ISO 14001 deployment;
2. IP is aware of this, but does not assist them;
3. Assistance is provided by Japanese-speaking specialists;
4. IP provides substantial assistance them in certification;
5. IP encourages applicants in certification structures (JICA, 2014).

Weikal and Scott discussed the prospect of expectations of a cardinal transformation of the industrial property market through the collaboration of automation, robotization and AI. For example, SoftBank is providing to finance \$1 trillion in IP with the deployment of AI (Weikal & Scott, 2025).

3. Methodology

3.1. Problem statement

The industrial implementation of AI is associated with the challenges and the implementation of ERM according to ISO 14001 in IPs is associated with the barriers (Table 3) which were presented in this section.

Table 3: Features of using the ERM according to ISO 14001 in the DAETP (based on three years of experience)

Superiorities	Barriers
- local environmental regulation has become more unified and streamlined; - more employers have launched incentives for greener production and adopted the ERM; - helped maintain natural resources and improved the characteristics of the local environment.	- insufficient public involvement, coordination between companies; - local governing structures do not conduct periodic assessments of compliance with regulatory documents and environmental legislation in their field, have not mastered unified requirements for environmental regulation for customers offering territorial services; - many employers who have achieved certification are Japanese-based, meaning they export and find ISO 14001 a major competitive element. Local management structures need to continue to motivate more Chinese and various external companies to implement ISO 14001; - the significant costs of mastering ISO 14001 have contributed to the fact that SMEs are not eager or inclined to apply it. Therefore, the DAETP offered a subsidy to cover almost half the costs of certification and expert services for companies seeking standardization. The local forecasting and construction institution offered comprehensive services — advertising consistent regulatory documents and environmental laws, examples of environmental regulation and information on eco-technologies — to organizations that were either preparing for standardization or had already completed it.

Source: Compiled by the author (Geng & Côté, 2003).

Challenges in industrial deployment of AI (according to German companies) are as follows:

- non-existence of versions (information basis even for the purpose of preparing scenarios) of implementation;
- a lack of specialized personnel;
- lack of conviction;
- lack of adaptability (the regulatory mechanism complicates the combination to rationalization of industrial actions) (Customer Stories and Use Cases, 2024)

3.2. Problem solution

There are exist the directions of adoption of industrial implemantation of AI (Table 4) and capabilities of AI for ISO 4001 (Tabel 5) which were grouped in this section.

Table 4: AI Features

Progress in IP Regulation (Corporate Author, 2023)	Proposals for the issemination of industrial implementation (Cihan, 2024)
- industrial robotization; - rationalization of operations; - preliminary regulation.	- research and development; - education and literacy; - ensuring the integrity of information and maintaining the confidentiality of mechanisms; - funding.

Source: Compiled by the author (Corporate Author, 2023; Cihan, 2024).

Table 5: Optivalue.ai`s Capabilities for ISO 14001

Optivalue.ai's feature	ISO 14001 compliance`s leadership
<i>Robotic survey responses.</i> In order to respond to external questionnaires, AI implements internal reports on compliance with requests (management structures, contractors, customers).	- <i>time saving:</i> staff are able to concentrate not on generating periodic responses, but on what is important; - <i>high accuracy:</i> responses are consistent with ISO 14001 procedures, it is possible to control which reporting materials support the response.
<i>Smart regulation of audit reports.</i> Robotically inspects external and internal audit reports.	- <i>features and comprehensiveness:</i> AI fixes ISO 14001-related discrepancies in audit reports, allowing for foreseeable issues before the audit begins; - <i>Productivity:</i> faster organization for audits, less monotonous manual reading.

<i>Alignment with corporate concepts.</i> Promptly reviews its strategy and actions in the sphere of environmental protection.	- <i>personalized responses</i> : AI recommendations demonstrate the realities and terminology of the environmental regulation mechanism; - <i>universality for many areas</i> : regardless of whether the enterprise is engaged in emissions regulation, energy or waste, the mechanism considers the characteristics and remains relevant.
<i>Information on assignments and standards.</i> Built-in information database according to ISO rules.	- <i>Predefined similarity</i> : Optivalue.ai is able to combine internal skills with ISO 14001 requirements; minimizes the risk of miscalculating significant standard components by combining in-demand checkpoints; - <i>primitive restoration</i> : when the standard is modified (modern climate rules are formed), AI is able to adapt to them and resonate.

Source: Compiled by the author (Smart Global Governance, n.d.).

At the same time, it is not recommended to regard the involvement of ERM as the ultimate priority in environmental management for IP. Future actions include stimulating further collaboration among the team, using an integrated approach which foster the formation of an industrial environmental mechanism capable of supporting the highest environmental values at IP scale (Geng & Côté, 2003).

3.3. Research methodology

The research methodology consists of grouping, comparing, analyzing statistical, factual data and time series, case study.

Primary data on registered residents of Azerbaijani IPs was collected from the websites of two governing structures of the country's eight operating IPs. Based on collected information, a parallel study of data on their certification on an internet platform was conducted. Then, based on this information, an analysis regarding the certification process in the country's IP was made, presented in the form of a graphical representation.

The process brought to this contextual methodology interprets the essence of the borrowed author's algorithm (Ismayilova, 2025).

This study covers two analysis periods, conducted on aggregate residency and certification indicators: the first - from the residency period of the country's first IP – 2012

to August 2024, and the second – from September 2024 to July 2025. The choice of periods is related to the progress of the analyses conducted in connection with the stages of familiarization with the research area.

A limitation lies in the possibility of an incomplete analysis of the availability of certification among residents of the Republic of Azerbaijan's IPs due to the lack of coverage of this information by them in the media.

The main referenced sources are regulatory legal acts, author's research, expert documents, information from the governing structures of IPs.

4. Results

This case study analyzes the Azerbaijani conditions for the development of the conceptual version of the CERM by organizations-residents certified according to ISO 14001 in IP.

A distinctive characteristic of attempts to implement ERM is the stimulation of the purest production and adoption of ERM, compliant with ISO 14001, by local companies. These are presented as incentive levers for implementing ISO 14001 (Geng & Côté, 2003).

Since, according to Côté and Balkau, ISO 14001 appears to be the mechanism for implementing the concept of ERM in IP, the subsection analyzes the presence of certified residents of Azerbaijani IPs.

According to our conducted analysis, from 2012 to August 2024 and from September 2024 to July 2025, the number of residents of 8 operating Azerbaijani IPs holding a certificate increased by 5 units, reaching 16, while the number of themselves increased by 20 units, reaching 140, which shows an increase in the share of certified by 2.3%, reaching 11.4% (Figure 1).

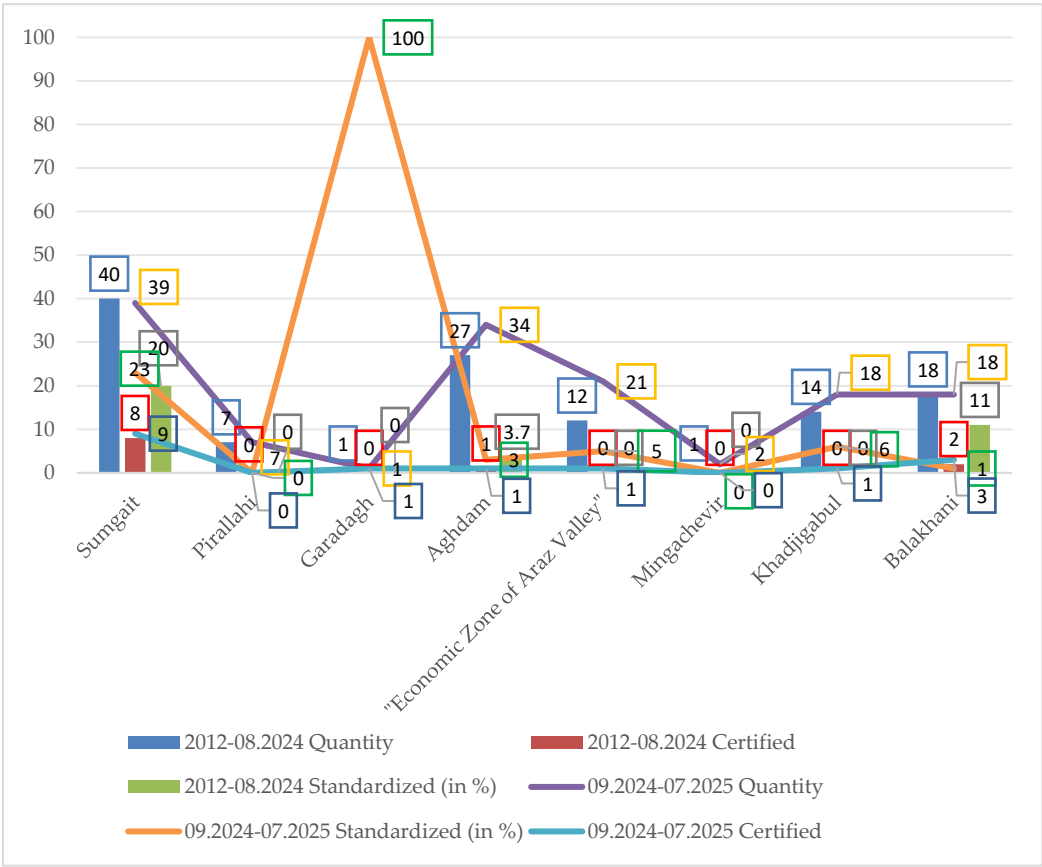


Figure 1. Standardized residents of Azerbaijani IPs (2012-August 2024, September 2024-July 2025)

Source: Compiled by the author (Google, 31 August 2024/31 July 2025; “Tamiz Shahr” OJSC, 31 Avqust 2024/31 July 2025; EZDA, 31 Avqust 2024/31 June 2025).

Being a practical mechanism for IP, the implementation of the CERM in accordance with ISO 14001 at their level is characterized for the Republic of Azerbaijan by an early stage, implying the stage of obtaining certificates by residents of the IPs.

5. Discussion

5.1. Grounds for the implementation of AI to Azerbaijani IPs

We will explore the aspects of the implementation of the topic of the article from the perspective of using the nuances of the Chinese experience for the presence of

opportunities from the point of view of the activities of the relevant Azerbaijani Agency – as an implementing actions of state support of the development of economic zones (EZDA) – or more precisely, the eight formed Azerbaijani IPs – an official legal institution (EZDA, n.d.).

According to the EZDA, the dominant residents of the IPs equally think that in terms of security guarantee priorities a specific emphasis will be placed on minimizing human involvement and giving priority to technology, mainly by using innovative technologies, including AI mechanisms in the near future (Godjamanlı, 2023).

Thus, the application of the AI to Azerbaijani IPs is possible in accordance with paragraph 3.2.12 of the Charter – the right of the EZDA to implement actions related to the use of innovative technologies, as well as 3.2.9 – the right to propose to the Ministry regarding zonal development and regulation.

The promotion of certification through subsidies of Azerbaijani residents can be implemented by the EZDA in accordance with paragraph 2.1.1 of the Charter – through the direction of activity as involvement in the formation of state support and strategy in the area.

Consulting can be implemented in accordance with paragraph 3.1.12 of the Charter – such an obligation as cooperation with experts, 3.1.32 and 3.2.4 – respectively, the obligation/right to guarantee the use of scientific-technological achievements based on international practice, 3.2.9 – the right to propose to the Ministry regarding zonal development and regulation, 3.2.10 – the right to guarantee consulting services, 3.2.19 – the right to interest independent specialists and experts (EZDA, n.d.).

Regarding the ninth Balakhani IP, in connection with the transfer of regulating its management structure – Tamiz Shahar – under the control of the Azerbaijan Investment Holding, the above-mentioned activities are correspond with the duty 6-1.2.6 of the Supervisory Board – to strengthen the internal principles and policies of the structure (Decree, 2021).

5.2. Proposals

We propose applying China's experience in subsidizing expert-certified services to residents of Azerbaijani IPs seeking to certify the release. It would be rational to extend the experience of China's the DAETP to Azerbaijani IPs, stimulate a more dynamic exchange of skills in environmental regulation between them, so that they can share their expertise and collectively leverage innovation.

Referring to our conducted study of the Chinese experience, the EZDA and Tamiz Shahar can act as intermediaries/initiators in this process, being capable in competence to guarantee comprehensive services to the resident-companies of the IP involved in the certification process, following the example of the Bureau of the DAETP.

Based on the Ethiopian experience, in order to promote the staff of the above-mentioned IP's management structures in the field of ERM, it is necessary to identify institutions providing technical assistance for developing certification in IP and establish business cooperation with them. Residents of Azerbaijani IPs should collaborate with the EZDA and Tamiz Shahar, the regulatory structures for the purpose of organizing execution by means of establishment of state environmental standards.

In implementing the above-mentioned measures, specialists from the EZDA and Tamiz Shahar or involved external consultants can take advantage of the described functions of AI bots, using Experta as an example.

In line with the often-cited adage that demonstrates the modifying effects of productive AI technologies in the ISO space — AI won't displace individuals, but individuals with AI will displace them without them — it's crucial for experts on the standard to combine and adapt AI into their operational procedures. Progress, coupled with increased productivity, will redefine the essence of functioning – from standards development to personnel training and passing standardization. The deployment of AI is a code for performance-based functioning, encouraging consultants to remain unrivaled in an environment of applied objectivity enabled by AI (Da Cruz, n.d.).

We think that an analysis of the results section of this study will help the staff of the EZDA and Tamiz Shahr to cover the first level, and the proposals of the discussion section will help them to cover the remaining levels of the developed criteria of the Thai standard THAICOBAN.

The AI strategy developed in the Republic of Azerbaijan, in line with Dung's research's last direction on AI prospects, also covers the IPs sector. In this regard, we propose to orient the envisaged event 8.4.3 towards regulating the environment by rationalizing AI application with a priority on minimizing the negative consequences of industrial work.

Let us take into account that the proposed direction, referring to the primary place of AI in environmental monitoring, is presented for implementation in accordance with the above-mentioned measure 8.4.3 of the AI strategy of the Republic of Azerbaijan – attracting residents producing AI technologies to industrial areas and technology parks of the country – according to the experience of specialized AI assistants, using the example of Optivalue.ai's ability in this aspect (Decree, 2025; Ismayilova, 2025). By utilizing innovative skills, IP residents will organize a profitable platform for implementing all the advantages of ISO 14001, systematize their reception, offer their robotization mechanisms a proven platform for functioning (Smart Global Governance, n.d.).

For the Republic of Azerbaijan, we propose implementing pilot variations (the Vietnamese version) of AI applications in the IPs on a prototype and local basis.

Referring to the example of Dung's study on the ability of models to predict emissions, it is proposed to use for the Republic of Azerbaijan the benchmark in accordance with the eighth Ministerial Decision of the Board in 2013 regarding the obligation of the IPs resident to submit, along with the specified ones, SO₂, CO-emissions (Resolution, 2013).

6. Conclusion

The following results were obtained as a result of the study:

- AI opens up new opportunities for advancing environmental regulation in IPs. By integrating to the sides of environmental monitoring, AI can support timely decisions more effectively than traditional methods. This minimizes industrial impacts, thereby forming the conditions for achieving sustainable development priorities;

- AI contributes organizations both comply with ISO 14001 and achieve significant breakthroughs along the path to sustainability. By enabling robotization, resource rationalization, proactive assessment, analytical insights, AI is evolving environmental management from a forceful action to an environmentally decisive, executive motivation;

- for the purpose of development the sustainability of IPs during the industrialization of the Republic of Azerbaijan, a decisive role will be given to the implementation of AI in environmental protection regulation;

- the article applies the approach of Côté and Balkau on the development of environmental management in IPs using the ISO 14001 mechanism, as well as that of Gang and Côté on the implementation of the CERM through the same certificate;

- in this regard, the EZDA/Tamiz Shahar should take on the regulatory role of collective ERM-certification of residents, helping to minimize certification costs.

A future research topic is proposed in studying the contribution of residents to the production of AI technologies in the IPs – perhaps even the proposed course of action for promoting ISO 14001. In this regard, further political or empirical development of this topic in the Republic of Azerbaijan could be explored.

The prospect of ISO 14001 compliance will prove to be quite demanding (with modern expectations and criteria) and adaptive (with robust robotization mechanisms to meet them). Companies-residents in the IP that leverage the best of these techniques – firstly, professional and inspired personnel, and secondly, virtual technologies, AI – will transform the regulatory framework into a sustainable advantage (Smart Global Governance, n.d.).

Cases in which an enterprise discovers ideal circumstances that facilitate the deployment of AI processes with the click of a button are rare. Before exploring the potential of integrating tasks into an AI platform, there is a need for initial digitalization of processes. For most organizations, it is typical to stay in the following situations: either

they have not adopted a unified and reasonable progress, or their information and stages are still not digitalized. Without this foundation of information, AI is unable to calculate costs, occupied space and resource rank. Therefore, being the foundation of AI stages, it is essential for entrepreneurs to think globally, starting with the insignificant: AI follows digitalization.

Therefore, it is essential to ensure the availability of a cross-functional database in the cloud, encompassing all business processes and serving as the foundation for industrial AI. Subsequently, it is acceptable to gradually start developing AI-based activities and applications. AI will ultimately be integrated into all processes (Customer Stories and Use Cases, 2024).

In the process of improving technology it is expected that advances of AI in IP's regulation will fill significant gaps in the rationalization of processes, regulation of assets and determining priorities. This progress is transforming the rules of operations of industrial areals, acts as a property of a more productive tomorrow (Corporate Author, 2023).

Organizations-residents that use environmental regulation methods on the AI platform will, as the use of AI technologies spreads, both implement their legal provisions and participate in improving the planetary situation (Mukherjee, 2023).

Disclosure statement

No potential conflict of interest was reported by the author(s).

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CITE THIS ARTICLE AS: İsmayilova.N. (2026). State Regulation of the Intellectualization of the Functioning of Azerbaijani Industrial Parks. *International Journal of Humanities and Social Development Research*. 10(2).52-73. <https://doi.org/10.30546/2523-4331.2026.10.2.52>