

# Testing the Role of the Industrial Sector in Protecting the Iraqi Environment

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## Abstract:

The study of the role of the industrial sector in protecting and testing the Iraqi environment is one of the important matters and issues in diagnosing the path of the economy towards achieving sustainable development. The study shows the negative effects of the productive processes that occur in this sector. Our study was based on the hypothesis that "the industrial sector has a weak role in the process of protecting the environment in Iraq, and industrial investments have not adopted the environmental dimension at the level of the environmental problem in their accounts when making the investment. Depending on the methodology of descriptive and inductive analysis, through a study of the Iraqi industrial sector And testing its role in protecting the environment, and working on the use of scientific books and statistical publications to achieve the goal of the study and knowing the validity of the hypothesis or not.

The study concluded that many Iraqi industries were originally established on the basis of traditional production and not under the umbrella of a clean environment, and it was necessary to strengthen the role of these industries in the economic and environmental fields. Also, it is necessary to re-evaluate existing industrial projects from an environmental point of view, and to introduce environmental feasibility studies for modern industrial investments, and to obligate everyone to the Iraqi environmental determinants, conditions and specifications.

**Keywords: Industrial Sector, Environment, Clean Production.**

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## 1-1- Introduction:

Any industrial investment accompanies awareness and education with a program of the necessity of reusing or recycling and informing workers of the importance of the economic value found in production waste and the necessity of conducting a detailed analysis of it available over a period of time for at least one year. And the establishment of industrial projects or production lines added, accompanied by a certain amount of industrial waste and waste consisting of the production process that is used as primary inputs on good quality products through some other additions to production, because industrial waste varies in terms of quality and quantity from time to time according to the

change in the types and quantities of products. The cost of treating industrial waste is higher than setting up a factory that relies on waste as a raw material.

The safety of the environment and nature is no longer a unilateral act with local goals stemming only from the self as much as this goal has become one of the goals of the whole world since the global institutions realized the danger facing the whole world, so it is necessary for the economic sectors in Iraq, especially the industrial sector, to work on concerted efforts to reduce Environmental deterioration that results from uncontrolled production activities and events, paying attention to the environmentally friendly production process by using the modern model with advanced technologies, advanced informatics and high-tech automation, which requires large funds to invest in this method that supports the environment, which requires studying the role of the Iraqi industrial sector in Protecting the environment, thus improving the environmental, economic and social reality of the country in which productive investments operate.

**The importance of the study:**

The importance of the study is to try to clarify the role of the industrial sector in protecting the Iraqi environment, by adopting an environmentally friendly method when carrying out the production process, in a way that ensures alleviating the negative effects of this process, and achieving sustainability of natural and economic resources.

**The aim of the study:**

The study aims to clarify the impact of the Iraqi industrial sector on environmental protection, and the level of adoption of environmentally friendly production, which will achieve a positive impact in access to a clean environment that reduces negative economic and social costs, and achieves sustainable development goals in achieving environmental protection to preserve economic resources.

**Study problem:**

The problem stems from the fact that production methods in the Iraqi industrial sector are traditional methods, which result in environmental damage and risks to Iraq. Therefore, a study must shed light on the importance of the Iraqi environment and the role of industry in protecting it.

**The hypothesis of the study:**

It stems from the hypothesis that "the industrial sector has a weak role in the process of environmental protection in Iraq, and industrial investments have not adopted the serious environmental dimension and environmental protection measures less than the size of the environmental problem caused by the industrial sector in its investment accounts."

**Methodology:**

The study methodology is based on descriptive and inductive analysis, through a study of the Iraqi industrial sector and testing its role in protecting the environment, and working on the use of scientific books and statistical publications to achieve the goal of the study and knowing the validity of the hypothesis or not.

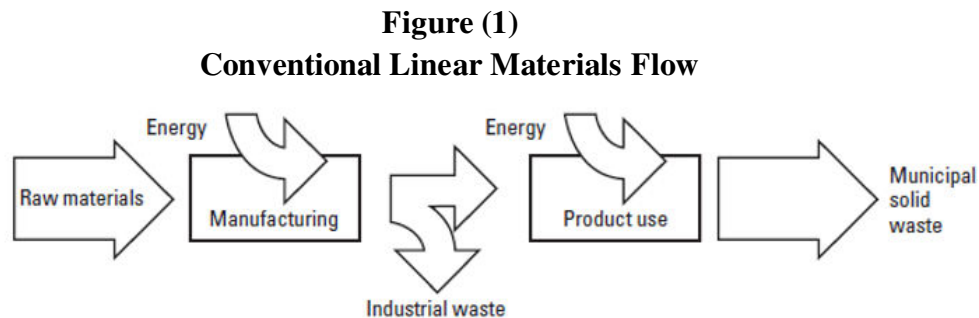
## 1-2- Theoretical Models used in Protecting the Environment across the Industrial Sector:

There are three production methods that help in the process of protecting the environment through the resources used in the production processes in the industrial sector, where these methods can be used individually or in combination, and this depends on the nature of the industry, the materials involved in the production process and the conditions surrounding the industrial establishment, and these methods are as follows: (Callan, and Thomas, 2013: 487)

- 1- The method of reducing harmful waste at the source, including correcting the manufacturing process, modifying products, substituting suitable alternative materials, and organizing and arranging.
- 2- The method of recycling the waste and waste generated from the manufacturing process, internally or externally, after the production process.
- 3- The method of using energies those are not harmful to the environment from renewable energy resources because their impact on the environment is less harmful.

The new reality has taken existing industries that depend on industrial waste and waste to offer one of the most important and most promising solutions to environmental pollution problems today, as well as to many future industrial economic problems and to avoid any damage that may occur in the future. Therefore, investment models have emerged that use methods that address the technical and environmental problems that accompany investments. These models include:

**The first model:** Linear model for balancing the flow of linear or open materials (cradle-to-grave model on use): Figure (1) illustrates this model for balancing materials that work in one direction and enter a production system as inputs and exit waste or waste, confirms this flow called Cradle-to-grave-to-use on waste generation and disposal, and this model is associated with policies that aim to reduce contaminated waste only at the end of the flow, as shown in the following figure:



**Source: Congress, OTA 1992, as cited in Gibbons, USA, 1992, P 31.**

This approach has not been effective in addressing environmental damage appropriately, especially for the long-term consequences, that the realization of the causes through

reviewing the dynamics of the materials budget model in the context of policy initiatives, as follows: (Congress, 1992: 31)

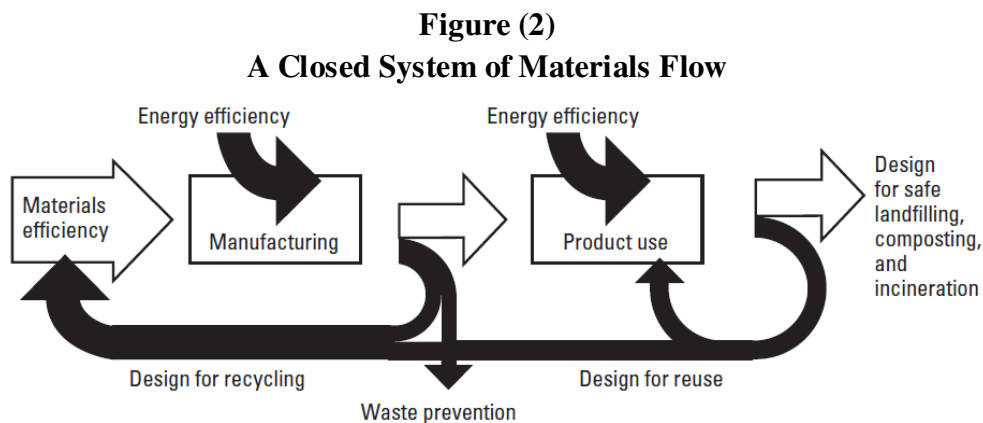
- 1- Nature's ability to convert matter and energy is limited, although waste can be converted into other forms that can be returned to productive use. This process is not without restrictions. Policy decisions affect the use of resources and the environment and this damage has implications for future generations.
- 2- End-of-pipe policy controls take the form of mitigation or remediation after damage has occurred. These techniques draw resources away from other productive activities - resources that are eventually added to the residual flow, such as working to use raw materials and energy to clean up a hazardous waste site or clean a stream Contaminated water for these resources, once spent, return to the remaining flow.
- 3- Command-and-control initiatives generally operate in conflict with private market incentives and the broader social objective of economic growth, and with this observation pointing to the potential for time trade-offs between the present and the next generation, the pursuit of economic development today can harm the natural environment in order to leave future generations powerless. Continue this progress.

**The second model:** the closed periodic flow of materials according to the clean production approach (cradle-to-cradle model): that the flow of materials is not in the form of a linear picture of linear inputs through and according to production needs instead of a linear flow in the prevailing concept of treatment at the end of the pipe, it can be a design Product, manufacturing processes, and energy use modified to achieve a cyclical or closed flow of materials, sometimes called circular production, refers to a much broader scope in environmental protection approaches from the control of waste after it is generated as a result of the production process and waste prevention, energy and resource efficiency, and this design in investment for reuse Or recycling is among the options proposed by the investment approach in environmentally friendly production. The main implication of the periodic system is that the production activity can change throughout the production and consumption cycle to achieve a reduction in the negative effects associated with the environment, in addition to achieving economic abundance by converting waste into production inputsnew. The Life Cycle Assessment (LCA) periodic or closed material flow assumes that materials operate in a circular pattern as a closed system, i.e. allowing waste to be returned to the production process again.

To put the concept of periodic flow of materials into practice, it is necessary to assess the life cycle (LCA) and the possibility of implementing this tool, analytical and examining the environment and the impact of the product by re-evaluating all the production stages or the extractive process of raw materials to get rid of the environmental damage caused and additional improvements can be made to reduce the risk to the environment In general, closed life cycle assessment consists of four main components (EPA, 2006, 44):

- 1- **Objective Definition and Scoping:** Describes the product or process to be evaluated, the context of the evaluation and the environmental impacts to be reviewed.
- 2- **Stock Analysis:** It determines the use of natural resources and waste released into the environment.
- 3- **Impact Analysis:** assesses the human and environmental impacts based on actual inventory and scientific analysis.
- 4- **Interpretation:** evaluates the results of inventory and impact analysis and selects the preferred product or process. More information is available at the National Risk Management Research Laboratory.

Allowing waste to be returned to the production process as a closed system for the flow of materials as shown in Figure (2), we note that this model is an alternative to the previous model of waste control after its creation, this model shows how economic activity can be changed throughout the production and consumption cycle to reduce environmental impact Associated with the production process beginning with design, and throughout the product life cycle, manufacturing processes and energy use can be modified to achieve a cyclic or closed flow of materials (Congress, 1992: 31).



**Source: Congress, OTA 1992, as cited in Gibbons, USA, 1992, P 31.**

### **1-3- The State of the Iraqi Industrial Sector and its relationship to the Environment:**

Although the activity of the industrial sector in Iraq does not exceed the percentages of contribution of this sector to the GDP during the period (2004 - 2019) between (1.32% - 2.82%)<sup>1</sup>, and these percentages are considered simple compared to similar countries, but the commitment by this sector seems It is clear in his administration to implement a policy that works to protect the Iraqi environment, an example of this in the recent period by adopting a new mechanism as a context for the work of future projects and existing ones, as defined by the Ministry as Clean Development Projects (CDM), in its directive

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**1-The ratios were extracted by the researchers based on the data:**

**- Ministry of Planning, Statistical Group for the Period (2004 - 2019), Central Statistical Organization, Directorate of National Accounts.**

No. 20212 on 13/4/2013, which includes these Directives Facilitating work and approving projects based on the numbered project cycle document (CDM5.A32-PROC), and this global document issued by the Framework Convention on Climate Change that shows procedures for approving and registering projects and includes: (Ministry of Industry and Minerals, Department of Industrial Development and Organization)

- 1- Informing the authority of clean development projects, and informing the secretariat of the agreement.
- 2- A condition that the project information includes the geographical location and the environmental classification of the project in an annex.
- 3- The design documents of the project according to the data of the project type.
- 4- Publication of the project with documents for the purpose of directing on the website of the United Nations Framework Convention on Climate Change.

Iraqi industries are characterized by their different ownership dependencies, as they represent the majority of industries owned by the private sector, which often aims at economic profitability, where the social benefit is not always the first goal of the owners, so the responsibility to achieve an environmental policy for a clean environment needs more monitoring, specialization and support As well as more application of laws and procedures in force, either the state-owned industries or the mixed sector that have central departments and instructions directed to them through the state's industrial policy, as there are departments for the environment in all ministries, including departments concerned with the issue of the environment for all public and mixed companies and provide the central departments of all the ministry Available data, that this does not explain that public and mixed sector industries are less polluting to the environment, but rather the opposite because public and mixed industries have greater capital intensity and wider production, and their outputs and inputs are greater if they work. For environmental cadres, this also applies, of course, to industries owned by the government and In order to show the distribution of the number of factories according to the investor sector, the following table (1) has been prepared:

**Table (1)**

**Distribution of factories in Iraq, according to the investor sector**

Sector	Public	Governme nt	Mixe d	Private	Cooperativ e	Foreig n	invested public factories	Tot al
The number of factories	209	194	45	1530	5	2	11	199 6
Percentage (%)	10.5	9.7	2.3	76.7	0.3	0.1	0.6	100

**Source: The table prepared by the researchers based on: Ministry of Planning, Industrial Sector Indicators 2011, Central Bureau of Statistics.**

Where industrial environment policies focus on direct instructions and official supervision of factories invested by the public and governmental sectors, as well as mixed, by following the policy of direct guidance, as well as continuous periodic monitoring procedures, where environmental tax policies are not effective from fines for being all owned by the state, despite the presence of many cases that State-owned factories are subject to fines for removing pollution or compensating fines for those affected by the environmental pollution resulting from their waste. The number of factories owned by the public sector is 209 factories, the governmental 194 factories, and mixed factories 45 factories, and the proportion of government and mixed factories is 22.5% of the total factories. invested in Iraq, but these policies are more expanded with non-state-owned sectors such as the private, cooperative and continuous public sectors by private investors, in addition to achieving the environmental safety of foreign factories in Iraq through their application of Iraqi environmental laws, where the private sector represents The largest percentage of investment in the industrial sector, which amounts to 1530 factories, 76.7% of the total factories , which requires more environmental policy measures to spread to different regions. As for foreign factories in Iraq and public factories invested by the private and cooperative sectors, they represent only 1% of the Iraqi factories, and environmental policy measures similar to those of the private sector are taken with them.

Table (2) shows the distribution of Iraqi industries according to the environmental region in which they are invested:

**Table (2)**

**Distribution of Iraqi industries according to the environmental region in which they are invested**

<b>Environmental region</b>	<b>Industrial</b>	<b>Agricultural</b>	<b>Commercial</b>	<b>Residential</b>	<b>Others</b>	<b>Total</b>
<b>The number of factories</b>	<b>1170</b>	<b>531</b>	<b>74</b>	<b>176</b>	<b>45</b>	<b>1996</b>
<b>Percentage (%)</b>	<b>58.6</b>	<b>26.6</b>	<b>3.7</b>	<b>8.8</b>	<b>2.3</b>	<b>100</b>

**Source: The table prepared by the researchers based on: Ministry of Planning, Industrial Sector Indicators 2011, Central Bureau of Statistics.**

From Table (2) it is clear that the factories in the industrial areas are the largest, the number registered in them is 1170 factories, at a rate of 58.6%. This environmental indicator shows that the environmental policy is not new to the industrial sector in Iraq, but these industrial areas were outside the urban and urban borders and because of The urban expansion of urban areas and the expansion of cities towards them made most of these industrial areas at the present time adjacent to cities or urban areas or within them, and in this case the environmental measures multiplied because industrial pollutants became in direct contact with citizens and the infrastructure services allocated to them, an

example of these areas (Al-Waziriyah area Al-Sinaiyah, Jamila Al-Baladiyat, Jarf Al-Naddaf, and the Industrial District in Najaf, Babil, Basra, and many others), and the number of factories in the agricultural areas is 531 factories, which ranks second in terms of the distribution of factories to Iraqi locations, and it is one of the most widespread factories in Iraq for the following most common reasons:

- 1- Factories need larger areas, and land prices are relatively low compared to industrial and residential land prices.
- 2- These industries exploit the infrastructure services allocated to agricultural lands, such as water and drains for drainage, as is the case in areas north of Baghdad and many others.
- 3- Close to the presence of manpower, this is often close to the cities or to the inhabitants of the surrounding countryside.
- 4- In many cases the industry is linked to the agricultural product itself, the crop in the area on which the factory is built.

The task of the industrial environmental policy is more challenging when the factories are in the agricultural areas, because these lands are the food basket that provides the cities with good air, and bypassing the factories may spoil this natural resource, which is a principle contrary to environmental sustainability, but this does not negate the existence of many factories in addition to the ones listed in the table (2). There are also factories in commercial and residential areas and other separate areas, numbering 295 factories, or 14.8% of the total registered factories, in which the role of environmental policy is effective, in addition to the concentration of the environmental control role and the conditions of the environmental determinants of work permits.

Political and social problems is reflected on the regulatory bodies represented by the bodies of the Ministry of Health and Environment, in addition to the technical and guidance bodies of the Ministry of Industry and Minerals, and this is reflected in the performance of the industrial environmental policy, as many built industries did not obtain environmental approvals as far as the connection of these industries in the industrial loans that are imposed Environmental conditions and far from the activities of the regulatory bodies, and to clarify this situation through the following table (3):

**Table (3)**

**The Iraqi factories that obtained and did not obtain environmental approvals and continue to work for the year 2011**

Type Approval	Approved	Approval of continuity	Not approved	Total
The number of factories	786	505	142	1433
Percentage (%)	54.9	35.2	9.9	100



**Source: The table prepared by the researchers based on: Ministry of Industry and Minerals, Industrial Environment Indicators for 2011.**

**Note: The total of factories that own or do not have processing units does not equal (1433) factories, as it represents the total operating factories in whole and in part, because the number of factories affiliated with one company owns one or more treatment units in the same location and covers the needs of all factories.**

Table (3) indicates that not all industrial activities are subject to environmental control, as the number of Iraqi factories that obtained environmental approval amounted to only 786, and a percentage of 54.9% of the total factories that were subject to the census amounting to 1433 factories, and there are existing factories that have obtained environmental approval. The number of factories reached 505, representing 35.2% of the total factories, which raises controversy and puts the industrial environment policy in the weakness of procedures through the number of factories that operate without environmental approval, because they fall outside the environmental conditions and determinants and the continuation of their work indicates the weakness of the environmental authority and policies. The deterrent and measures provided by the law in this regard, and this may cost the society more economic and social damages and troubles. The number of factories that did not obtain environmental approval reached about 142 factories, 9.9% of the total factories.

#### **1-4- Testing the Environmental Protection Policy through the discharges of the Iraqi Industrial Sector:**

The data has been prepared in Table (4), which includes industrial water treatment policies according to the discharge party and affiliated to the public and mixed sectors. The industrial water drains are classified into nine outlets, such as rivers, drains, adjacent lands, sewage networks, etc., and the number of laboratories that use those outlets and the quantities and percentage of water in each discharge, where this shows the industrial environmental policy for the specified year and compared to the same indicators for the following year represents the test of the industrial environmental policy regarding the short-term industrial water, and the comparison of the same indicators after nine years is a test of the industrial environmental policy for the long term, and this will be clarified by the annual rate of change between the years Short-term, which is one year and long-term, approved by the researcher for a period of nine years, as shown in the following table (4)

**Table (4)**  
**Environmental Policy towards Industrial water discharge facilities for Public and Mixed Sector Factories for the years (2011, 2018 and 2019)**

Water Discharge	2011			2018			2019			short term Policy Test	Long Term Policy Test
	Number	Amount (m <sup>3</sup> / day)	Percentage (%)	Number	Amount (m <sup>3</sup> / day)	Percentage (%)	Number	Amount (m <sup>3</sup> / day)	Percentage (%)	Change Percentage (2018-2019) (%)	Change Percentage (2011-2019) (%)
Specific Location	19	2056	0.89	27	19408	10.7	28	5919	11.1	-69.6	187.8
Trocar	14	46475	20.31	43	31016	17.1	22	4639	8.7	-84.4	-90.0
River	26	61910	27.05	17	12152	6.7	15	3199	6.0	-73.6	-94.8
Sewage	20	598	0.26	54	42443	23.4	47	9972	18.7	-76.5	1579
Rotate	9	2468	1.07	1	726	0.4	1	213	0.4	-70.0	-91.3
Agricultural Use	6	217	0.09	8	5804	3.2	7	1493	2.8	-74.2	588.0
Neighbouring lands	5	655	0.28	0	0	0.0	0	0	0.0	00.0	-100.0
Others	6	8820	3.85	1	726	0.4	1	213	0.4	-70.0	-97.5
Factor not Draining water	151	105627	46.20	101	72733	40.1	131	27728	52.0	-61.8	-73.7
<b>Total</b>	<b>256</b>	<b>228826</b>	<b>100</b>	<b>252</b>	<b>181379</b>	<b>100</b>	<b>252</b>	<b>53324</b>	<b>100</b>	<b>-70.6</b>	<b>-76.6</b>

**Source:** The table prepared by the researchers based on: Ministry of Industry and Minerals, Statistics of the Department of Industrial Organization and Development, Department of Environment.

From Table (4), when considering the year 2011 as a base year for evaluating environmental policies regarding the methods of disposal of liquid waste for the public

industrial sector in 2019, that is, after a period of nine years, which is a long period, we note from the column of 2011 that the number of factories that dispose of industrial and waste water In specific locations, there are 19 factories for storing a specific site. These factories emit a quantity of liquid pollutants amounting to  $2056 \text{ m}^3 / \text{day}$ , at a rate of 0.89%. Compared to the column of 2019, the percentage increased to 11.1%, and the number of factories increased to 28 factories, which adopt this method. In the disposal of liquid pollutants, and this indicates the presence of advances in this procedure from the industrial environmental policy, where the rate of change is 187.8% between the comparison years 2011 and 2019, and this progress in the procedure does not prevent environmental pollution despite an improvement in this outlet, and in the row that shows the discharge of pollutants This measure increased from 14 factories to 22 factories, despite the decrease in the amount of liquid water from  $46475 \text{ m}^3 / \text{day}$  to  $4636 \text{ m}^3 / \text{day}$ , and at rates from 20.31% to 8.7% of the amount of polluted liquids, and a change rate between the two comparison years, -90.0%, and this refers to Significant decrease in production and water use in these factories. It is also worth noting that most of the wastewaters in Iraq are open and have contact with the ground, people and animals, and this in itself is far from the strategic goals because there is no serious treatment of wastewater in Iraq. As for the outlet for the disposal of industrial and waste water in Iraqi rivers, the Euphrates River Basin, the Tigris and Shatt al-Arab, where the number of factories that dump industrial water into river basins decreased from 26 factories in 2011 to 15 factories in 2019, and the amount of water ejected into rivers decreased from  $61910 \text{ m}^3 / \text{day}$ , and by 17% of the quantities of industrial water to  $3199 \text{ m}^3 / \text{day}$ , and by 6% for the year 2019, with a change rate between the two years of the comparison with a decrease of -94.8%, and this is a significant improvement in diverting the discharge of industrial water from natural water sources. Good by the industrial environmental policy, and despite this, it should prevent factories that use rivers as a dumping ground for their liquid waste and directly without a complete treatment for it. As for factories that use sewage networks to get rid of their industrial liquid waste, the number of these factories reached 20 factories in 2011, and they dispose of  $598 \text{ m}^3 / \text{day}$ , with a small percentage of 0.26%, bringing the number of this factory to 47 factories in 2019, and  $9972 \text{ m}^3 / \text{day}$  are dumped into the sewage system, at a rate of 18.7%, with a rate of change for the comparison years of -76.5%. This shift is from river water to sewage networks, that leads any In addition to the great pressure on the sewage networks, which are already unable to treat most of the wastewater generated by public services, and thus this shift to the industrial environmental policy was not successful at the level hoped for in implementing a promising environmental strategy. As for the trend towards recycling industrial water, which is used by 9 factories, with a quantity of  $2468 \text{ m}^3 / \text{day}$ , and a rate of 1.07% in 2011, to decrease to 0.4%, and with a quantity of  $213 \text{ m}^3 / \text{day}$ , and the number of factories decreased to only one, so that the rate of change for the two comparison years reached -91.3 %, and this indicates the failure of the industrial environmental policy in

treating the water resulting from the production process and reusing it, and this approach is a waste of water and pollution to the environment. And about the outlet for the discharge of industrial water to be used in agricultural lands, and this requires that the quality of water be of high quality and within the environmental determinants appropriate to the Iraqi environment, where the number of factories is 6 factories, and liquid waste is disposed of agricultural areas with an amount of  $217 \text{ m}^3 / \text{day}$ , and a small percentage of the total industrial water This amounted to 0.09% for the year 2011, and in 2019 the number of factories was 7 factories that dump polluted water with an amount of  $1493 \text{ m}^3 / \text{day}$ , with a rate of 2.8%, i.e. an increase in the reuse of industrial water generated after the industrial process, so the ratio between the two comparison years was 588% ( That is more than five times), and this is a good indicator of the industrial environmental policy in the use of natural resources in the event that the quality of the industrial water supplied does not negatively affect the agricultural environment.

As for the factories that dump liquid waste in the neighboring lands, there are 5 factories, and they put out an amount of  $655 \text{ m}^3 / \text{day}$ , at a rate of 0.28%, which is a polluting situation for the environment, as industrial environmental policies were able through their procedures to stop this phenomenon and there is no industrial water thrown into the neighboring lands for the year 2019, with a change rate for the two comparison years of -100%, as well as the significant decline in the other unmentioned discharge points from 6 factories for the year 2011 to one factory for the year 2019 with an amount from  $8820 \text{ m}^3/\text{day}$  to  $213 \text{ m}^3/\text{day}$ , and at a rate of 3.85% to 0.4 %, and with a change rate between the comparison years -70%, and this is a good indicator of the shift to the ports known to the industrial environmental policy. These results are a test of the industrial environmental policy in the long term and for a period of nine years. From the observation of the rows of columns for the years 2018 and 2019, where the amount of industrially polluted industrial water that is dumped in specific locations decreased from  $29,408 \text{ m}^3/\text{day}$  to  $5919 \text{ m}^3/\text{day}$  with the increase of one factory in the use of this outlet for water drainage, and the percentage increased from 10.7% to 11.1%, This explains that the factories that used water storage in a specific location did not work regularly for the year 2019, and most of the periods are suspended from work and the indicator of this significant decrease in the generation of industrial water with a change rate of -69.6% for the two years of comparison, which is a significant decrease in the industrial water generated and drained to The specified sites, as for the ones that are discharged into the drains, where the number of factories decreased from 43 factories to 22 factories, and the amount of polluted industrial water decreased from  $31016 \text{ m}^3 / \text{day}$  in 2018 to  $4,693 \text{ m}^3 / \text{day}$  with a decrease in the percentage from 17.1% to 8.7%, with a change rate between The two years amounted to -84.8%, and this represents a major shift for this year in reducing water to the sewage disposal, i.e. the existence of an industrial environmental policy in this outlet, and despite that there are still 22 factories, and 8.7% of water is thrown into the sewage disposal, meaning that the environmental policy in this area is not

completely deterrent . As for the factories that dispose of industrial water in rivers, their number decreased from 17 factories to 15 factories, and the amount of polluted industrial water decreased to almost a quarter from 12,152 m<sup>3</sup> / day to 3199 m<sup>3</sup> / day for the year 2019, but the percentage of water generated for both years of comparison is almost It is close to 6.7% for the year 2018 and 6.0% for the year 2019, and this explains the suspension of some factories due to the significant decrease in the amount of polluted water directed towards rivers and a slight decrease in the number of factories and water percentages from the total industrial water of the public sector, with a change rate between the two years of -73.6%, this decrease in the amount of water ejected into rivers does not represent as much as this indicator represents a cessation of production factories or their work with a low production capacity. Nevertheless, the decrease in industrial water directed to natural water sources represents an improvement factor in this policy, and temporarily, as if the factories return To work at its highest production capacity, it will produce more polluted industrial water, or a change in the nature of production lines as a result of active work by industrial environmental policies in this context.

To test the use of sewage networks to get rid of polluted industrial water, some factories were transferred from this side, which amounted to 7 factories, which amounted to 54 factories in 2018, and polluted industrial water is dumped into sewage networks with an amount of 42443 m<sup>3</sup> / day, and at a rate of 23.4% in 2019 amounting to The number of factories that use the sewage network is 47, and they pour out a quantity of mineral water in the amount of 9972 m<sup>3</sup> / day, at a rate of 18.7%, and a change rate between the two comparison years, which is -76.5%, and this indicates the existence of political measures for the environment in the transformation of 7 factories into destinations As for the significant decrease in the amount of water, it also indicates a decrease in production because the percentage of the decrease in the amount of water is greater than the percentage of the decrease in the number of factories that use sewage networks. As for factories that use industrial water recycling in production and factories that have other sites for drainage, one factory for each side, where each factory puts out 726 m<sup>3</sup> / day, at a rate of 4%, which is the same as the water percentage for 2019, with a change in the amount of water to 213 m<sup>3</sup> / day , with a change rate between the two comparison years of -70%, and this change can be explained in industrial policy measures in reducing polluted and waste water or switching to another disposal destination, and this is a negative indicator of the industrial environmental policy because recycling and other means of the company reduce environmental pollution, which is one of the requirements Clean production with respect to the environment. In both cases, there is a decrease in liquid pollutants, but this confirms that one third of the water is still used by the same discharge points. It seems clear from the table that industrial environmental policies have managed to stop the diversion of industrial water to neighboring lands and have also been able to reduce The percentage of industrial water reused for agricultural purposes from the amount of 5804 m<sup>3</sup> / day, and by 3.2% for the year 2018 to the amount of water

amounting to 1493 m<sup>3</sup> / day, by 2.8%, and the rate of change for the two comparison years is 74.2%, and this test It shows that there is a general trend, not completely, from a relative prohibition in the use of industrial water for agricultural purposes, and conclusions can be drawn from the analysis included in the last two columns, which refer to the long-term industrial environmental policy, which is characterized by its most negative results, and this indicates the existence of an environmental improvement through the policy The long-term and there are shortcomings in other measures, so there are some positive signs that indicate an increase in environmental pollution, and the short-term column, which is characterized by a negative sign on all discharge sides, indicates an improvement in the performance of the environmental policy in the short term, but it is a relative improvement and not completely.

### **1-5- Conclusions and Recommendations:**

#### **1-5-1- Conclusions:**

Through our study, we reached the following conclusions:

- 1- The industrial sector in Iraq still suffers from a lot of deterioration and neglect that prevents rapid progress towards a real contribution to the economy and the environment, and the economic goal is often the main goal of establishing industries in return for the decline of other goals such as the social and environmental goal.
- 2- Many of the Iraqi industries were originally established on the basis of traditional production and not under the umbrella of a clean environment, and it was necessary to strengthen the role of these industries in the economic and environmental fields.
- 3- There are many investment and production projects in various Iraqi sectors that do not work on the principle of the sustainability of natural resources completely, despite the large official procedures and means that support the direction of improving the industrial environmental reality so that this matter is one of the tributaries of the development of the Iraqi economy and supporting it and with minimal Environmental damage.
- 4- Testing the environmental role of the Iraqi industrial sector. Through our study, our hypothesis was proven that the environmental measures of the industrial sector are not sufficient for the size of the environmental problem, and there is a lack of support for environment-friendly production, especially for private industries far from environmental control, and making environmental practices in this sector have a real impact on the Iraqi environment

#### **1-5-2- Recommendations:**

- 1- Activating the oversight role of the Iraqi Ministry of Environment and separating it from subordination to other ministries, and its affiliation with higher official bodies such as the Prime Minister or the Presidency of the Republic, because this ministry exercises a supervisory role over the activities of ministries and

- economic sectors, and this ministry must be independent in environmental decisions and impose deterrent penalties.
- 2- Develop industrial policies that cover the gaps in the environmental imbalance in Iraq, and compensate for the shortfall by increasing environmental and preventive measures while putting in place additional capacities and measures to bridge the gaps in emergency and immediate conditions and environmental shocks.
  - 3- Working seriously in harnessing technology, applied and technical Sciences in directing industrial investment towards clean products in Iraq, by finding industrial alternatives that are included in cleaner production and compensating for the inputs with environmental damage.
  - 4- Re-evaluating existing industrial projects from an environmental point of view, introducing environmental feasibility studies for modern industrial investments, and obligating everyone to comply with the Iraqi environmental determinants, conditions and specifications. Environmentally friendly projects must be replaced as an alternative to polluting and harmful projects.
- Spreading environmental awareness and culture and considering it part of the ethics of productive work, with the participation of workers, investors and all groups of Iraqi society in an ethical and environmental work that guarantees product safety, environmental safety, economic well-being and general social benefits.

## **1-6- References:**

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