

An Overview of Industrial Source Discharges into Water in the Albanian Territory

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Abstract: Direct and indirect discharges are released in the environment by many economic entities which operate in the territory of Albania. Different installations release many substances from separated sources or widespread, affecting the environmental quality and often causing pollution. Each economic entity that discharges substances in the environment is equipped with an environmental permit which is granted according to a system composed by two categories, A and B. Each Albanian citizen has the right guaranteed by the constitution to collect information regarding the city or country environmental conditions by this system. Furthermore, this system provides data regarding the state of the environment, polluting activity, different chemical components discharged, etc. The purpose of this study is to identify different sources of industrial discharge into water bodies, aiming to provide information that can be useful for the environmental protection, its preservation and improvement, the prevention and reduction of risks related to human and animal health and the improvement of the life quality. Data gained from the identification of economic entities equipped with an active environmental permit type A and B showed the various sources of waste discharges in the Albanian territory. The study was conducted using the QKB (National Business Center) database for a period of eight years from 2014 to 2022. Data show that an increase of technical unit discharging substances into water has increased over years due to a major number of installations of polluting economic entities in the country territory.

Key words: Industrial discharge, water, active environmental permits, Albania.

1. Introduction

Environmental pollution from different industries operating worldwide is a major source of water and soil pollution [1-5]. Each state individually or united under different intrastate agreements has been taking measures to prevent and reduce environmental pollution in the last decades such as Kyoto Protocol. Albania as a candidate state to the European Union is following European legislation and measures to reduce water and soil pollution coming from various economic entities. For this purpose, a system has been created in order to identify all entities that cause direct or indirect pollution. Thus, all economic entities that cause direct or indirect pollution to the environment are constricted by the country legislation framework to be equipped with an environmental permit which is classified in A

and B permits in order to prevent any serious environmental pollution. Types A and B of permits are classified according to Appendix 1 of Law no. 10448, 10.14.2011 [6]. The type of the permission depends on the production capacity of the industries which is classified on a list with a descending order of impacts on the environment. The lowest direct or indirect pollution are listed in the lower part of this list taking into consideration different factors affecting the environment.

Different substances are discharged by the industries into the surface or sewage waters in respect to the country legislation. However, we presumed that a deeper analysis was needed to correctly identify all economic entities that operate, causing the discharge of different substances into the environment in general, by identifying the number of permits given in a period of

time, in order to evaluate exact number of technical units causing indirect or direct pollution into water. Thus, the main aim of this study was to analyze all polluting industries with an active type A and B permit in the territory of Albania, at region and municipal level for a specific period of time.

2. Material and Methods

For the identification of industrial sources discharging into water in the Albanian territory the data published in the National Register of Licenses, authorizations and permits provided by the QKB (National Business Center) database were used.

Identification of the polluting economic operators equipped with an A or B environmental permission was done using the national open and available databases for a period of time beginning from 01.01.2014 to 31.12.2022 involving all the country territory. After that, each of the acts of approval of type A and B environmental active permits has been verified if there are discharges into water from industrial sources. Geospatial data (coordinates according to the Albanian coordinate system 1986/Gauss-Kruger Zone 4) which are located inside the act of approval of environmental permits of type A and B have been verified using the State Authority for Geospatial Information “ASIG”, through which the region and municipality are defined, for each source of industrial discharges [7].

A specific model has been created using Microsoft Excel in which all the collected information has been placed. Data analysis and processing was carried out by verifying each activity of polluting operators who are holders of an active environmental permit type A or B through the official site qkb.gov.al [8], searching in the national register of licenses and permits issued through QKB—by means of the serial number, and then for each operator, the relevant data are entered in the excel database. Then the obtained geospatial data were verified through the National Geoportal “ASIG” [7] and the Geographic Information System “GIS” [9].

3. Results and Discussion

The data gathered from the QKB for the entire territory of Albania, for the active environmental permits of type A and B during the period 2014-2022, are reported in Table 1.

As can be seen, all years’ active environmental permits of type A are less than those of type B. The highest number of type A environmental permits is issued in 2016, while the highest number of type B environmental permits is issued in 2022, respectively 23 and 582.

From the data analysis and processing an evaluation of the distribution of each industrial discharge source was done related to regions and municipalities of Albania.

The distribution of industrial discharge sources into water in the region level of Albania is shown in the map in Fig. 1.

It is evident that Dibër and Durrës region has the highest number of industrial discharge sources, with 142 sources in Dibër region and 124 sources in Durrës region, followed by Elbasan region with 117 sources. While the lowest number of industrial discharge sources is in Tirana region with 25 sources, followed by Gjirokastër region with 42 sources. From the analysis of the industrial discharge sources presented in Fig. 1 it results that the north-eastern and central region of the territory of Albania has the highest number of industrial entities discharging into waters.

Table 1 Active environmental permits of type A and B in Albania during the years 2014-2022.

<i>Year</i>	<i>Type A</i>	<i>Type B</i>
2014	4	127
2015	12	205
2016	23	402
2017	16	213
2018	12	165
2019	3	187
2020	5	137
2021	7	550
2022	5	582

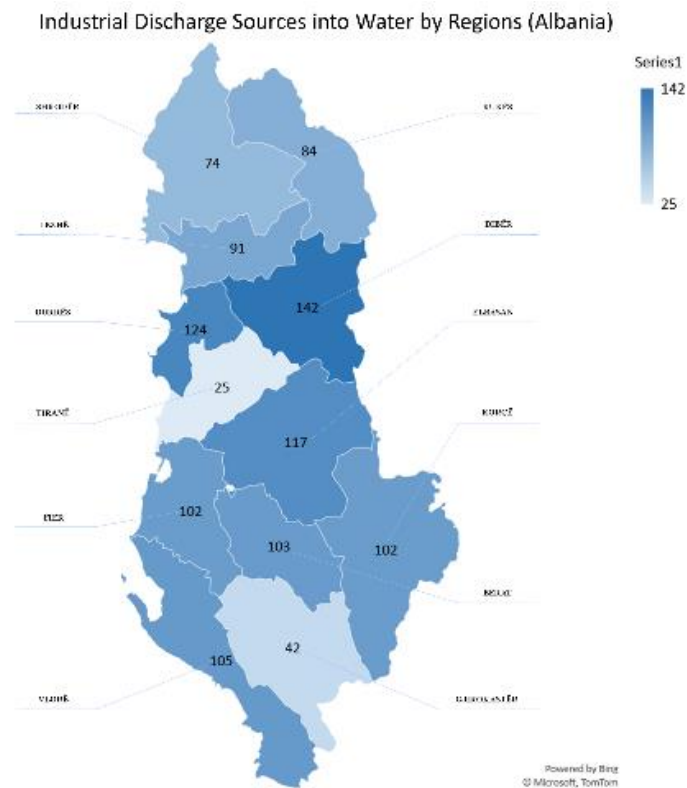


Fig. 1 Distribution of industrial discharge sources into water in the region level of Albania.

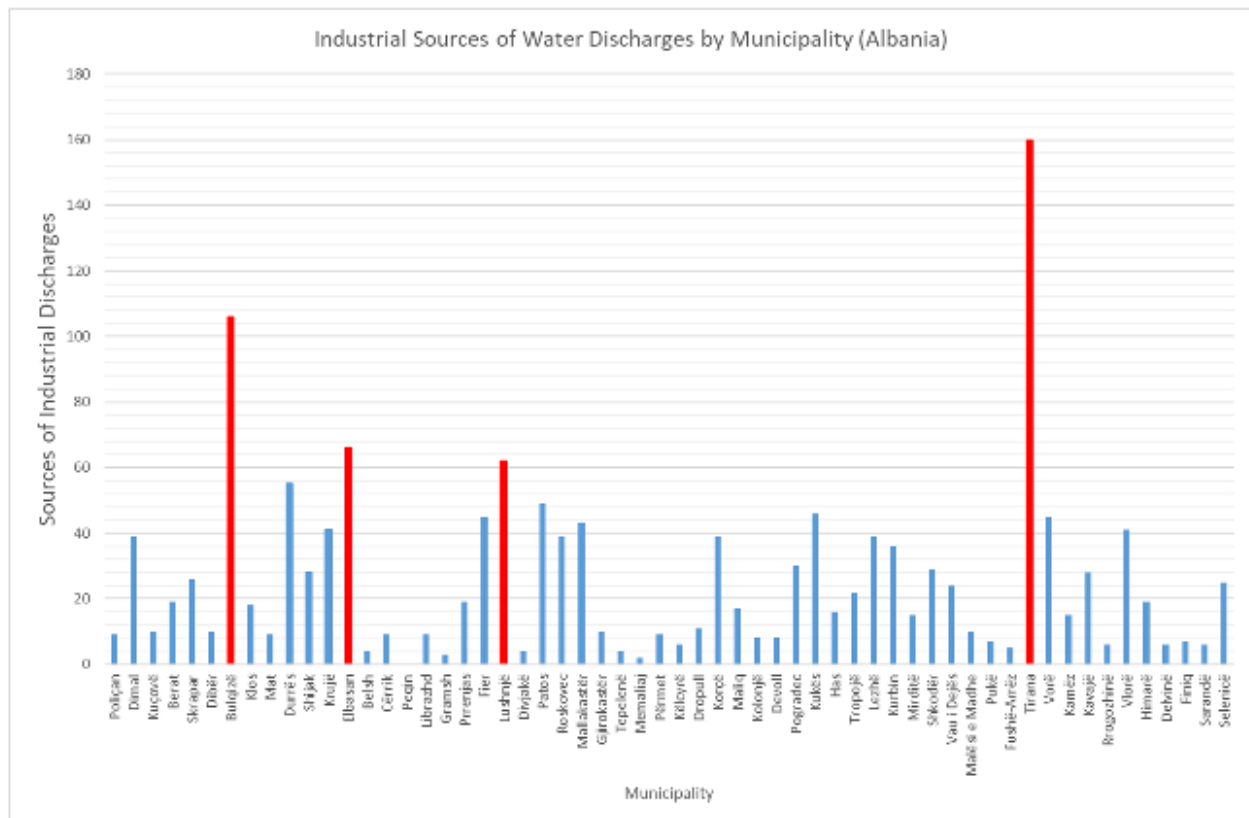


Fig. 2 Industrial discharge sources into water discharges for all Albanian municipality.

The Fig. 2 shows the distribution of all industrial discharge sources from type A and B installations, for each respective municipality of the territory of Albania.

From the data analysis, the highest number of industrial sources discharging into water is in the municipality of Tirana with 160 sources, followed by the municipality of Bulqizë with 106 sources, the municipality of Elbasan with 66 sources and the municipality of Durrës with 55 sources. Industrial discharges into water are the result of polluting economic activities for the extraction of minerals from surface and underground mines, concrete production plants, textile treatment factories, slaughterhouses, production of alcoholic and non-alcoholic beverages, management of waste (storage of scrap/scraps), vehicle services, etc.

4. Conclusions

This investigation has been carried out as a first step for the identification of industrial sources discharging into water in Albania. All data were gathered from public institutions responsible for issuing environmental permits for each economic operator.

From the results of this study, we can conclude that the highest number of active environmental permits issued for each year is the type B. At the region level for the period 2014-2022, in the territory of Albania, Dibër and Durrës regions have the highest number of industrial discharge sources, with 142 and 124 sources, respectively, followed by Elbasan region with 117 sources. While the region of Tirana has the lowest number of industrial discharges into water with 25 sources, followed by Gjirokastër region with 42 sources.

While, referring to the classification at the municipality level, for the period 2014-2022, the municipalities with the highest number of industrial discharges into water are: the municipality of Tirana with 160 sources, followed by the municipality of Bulqizë with 106 sources, the municipality of Elbasan

with 66 sources and the municipality of Durrës with 55 sources.

The industrial discharging into water is the result of economic activities in the field of extraction of minerals from surface and underground mines, concrete production plants, textile treatment factories, slaughterhouses, production of alcoholic and non-alcoholic beverages, management of waste (storage of scrap/scrap), vehicle services, etc.

The detailed information about industrial sources discharging into water gives a complete overview of all polluting activities and related environmental issues. Moreover, this information has to be taken into consideration by the authorities responsible for the environment during the preparation of national and/or local strategies and environmental plans.

Further studies have to be carried out in order to classify the industrial discharges based on their specific activity and type of pollutants discharged into water.

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