

Review**Integrated Pollution Prevention and Control (IPPC) Directive and Turkey's Compliance***Oylum Gökkurt Baki^{a*}, Muhammet Yakan^b*

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Abstract

There is an organic link between the ecological problems of the contemporary world and their impacts and the solutions. The measures that will be taken for one or two problems will be immediately reflected on one another or some others. Therefore, the Directive on Integrated Pollution Prevention and Control which comprises the realization of waste reduction and recycling activities that will be implemented in order to minimize the polluting effects of the industry to the air, water and the soil is of great importance. In this context, in this study the introduction of Integrated Pollution Prevention and Control (IPPC) and its compliance with Turkey was investigated. In addition, this study aims at emphasizing the environmental obligations brought to government organizations and industry with the introduction of European Union's Directive on Integrated Pollution Prevention and Control (IPPC 96/61/EG). Particularly, the details regarding the importance of fulfilling the obligations of the related the Directive for the candidate countries that are obliged to ensure compliance with EU legislations in terms of the process of compliance with the Directive. In addition to all these obligations and environmental implementation measures related to the Directive, the level of implementation of the Directive in Turkey, its effects were also included in the evaluations conducted in this study. Because, the studies show that a viable method for assessing the impact of environmental regulations has not gained effect so far in Turkey. This study aims to assess the current situation of the Directive on Integrated Pollution Prevention and Control for Turkey.

Key words: Environmental management, industrial pollution, Integrated Pollution Prevention and Control Directive, pollution prevention, waste minimization

Entegre Kirlilik Önleme ve Kontrol Direktifi ve Türkiye'nin Uyumu**Öz**

Günümüz dünyasının ekolojik sorunları ile bunların etki şekilleri ve çözüm yolları arasında organik bir bağ vardır. Dolayısıyla bir ya da iki sorunda alınacak önlemler veya uygulanacak yöntemler diğerine ya da diğerlerine de hemen yansiyacaktır. Bu nedenle endüstrilerin havaya, suya ve toprağa olan kirletici etkilerinin en aza indirilmesi için uygulanacak olan atık azaltma ve geri kazanım faaliyetlerinin sağlandığı Entegre Kirlilik Önleme ve Kontrol Direktifi önem taşımaktadır. Bu kapsamda, çalışmada Entegre Kirlilik Önleme ve Kontrol (EKÖK) Direktifinin ortaya çıkış amacı ve bunun Türkiye ile uyumlaştırılması araştırılmıştır. Avrupa Birliği Entegre Kirlilik Önleme ve Kontrolü Direktifi (96/61/EC)'nin kamu kuruluşlarına ve sanayiye getirdiği çevresel yükümlülükleri vurgulamayı

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amaçlamaktadır. Özellikle AB mevzuatına uyum sağlamakla yükümlü aday ülkelerin ilgili direktifin yükümlülüklerini hangi noktada yerine getirmesinin ne gibi önem arz ettiğinden de bahsedilmiştir. Tüm bu gereklilik ve Direktife bağlı çevresel uygulama tedbirlerinin yanında ilgili Direktifin ülkemizde uygulanma düzeyi ve etkileri de değerlendirmeler arasında yer almıştır. Çünkü çevresel düzenlemelerin etkilerinin değerlendirilmesine yönelik uygulanabilir bir yöntemin ülkemizde henüz etkinlik kazanmadığı yapılan çalışmalardan görülmektedir. Çalışma Entegre Kirlilik Önleme ve Kontrolü Direktifi'nin Türkiye için bir durum tespiti ortaya konmasını amaçlamaktadır.

Anahtar Kelimeler: Çevre yönetimi, endüstriyel kirlenme, Entegre kirlilik Önleme ve Kontrol Direktifi, kirlilik önleme, atık minimizasyonu

Introduction

For an efficient and extensive protection of the environment, the prevention and the control of pollution caused by air emissions, wastewater discharges and solid wastes should be carried out in a holistic approach that is in compliance with the other legislations. Accordingly, the European Commission has introduced the Directive on Integrated Pollution Prevention and Control (IPPC-96/61/EC) in 1996 which contains some rules for the regulation of permission and control procedures of the industrial facilities. The most important feature of the Directive is the novel and effective approach that aims at pollution prevention during the production procedures [1]. Niemczynowicz (1994) [2] states that, for the prevention of pollution at its source during all procedures, the most important action is the implementation of pollution prevention strategies and it should be integrated with other activities including waste processing, industrial production, transportation, energy production. Novel implementation projects including preventive approach rules and new technologies can provide a practical path for the realization of such an approach. Additionally, Fresner et al. (2007) [3], in a study conducted in a galvanizing plant in Austria, studied on operating the facility with zero emission by taking the current water and chemical input and output under control. The researchers reduced the water

consumption in acid cleaning baths by 50% while reduced the acid consumption by 40%. Turan and Bayhan (2009) [4] studied the compliance of environmental legislation in Turkey with the environmental legislations of the EU and water protection policies and advanced water management in the EU and Turkey. The researchers have stated that although the objectives of both EU and Turkey's environmental legislations were the same, there were still differences between them.

It can be said that, in general, the current by-law regulations regarding the control of industrial pollution are in compliance with the regulations established in the developed countries. However, there are no by-law regulations in Turkish Environmental Legislation that will fulfill the requirements of the "Directive on Integrated Pollution Prevention and Control" yet. Because, the Directive on Integrated Pollution Prevention and Control brings many different and novel approaches and applications along. The Directive on Integrated Pollution Prevention and Control also requires higher investments for the companies. Due to both the determination and the implementation of "Best Available Techniques" and the investments required for regular storing, combustion, solid waste disposal units, the implementation of the Directive on Integrated Pollution Prevention and Control will be a challenging and long term process in Turkey [5]. In order to accelerate the

compliance process, the studies on subjects including waste reduction, pollution prevention, recycling, reuse, environment friendly product design, etc. have intensified. The idea of leaving less wastes and scraps behind the products and services have been introduced in the industry with sample applications [6].

Therefore, in this study, the contents of the Directive were examined and the current status of the process of compliance with the Directive on Integrated Pollution Prevention and Control for the EU candidate Turkey was evaluated. Also, evaluations were made regarding the objectives and the application guidelines of the Directive.

Table 1. . Considerations for the determination of Best Available Techniques [7;1]

1	The use of technologies that produce less waste,
2	Reducing the use of hazardous substances (Substitution of non-hazardous or less hazardous substances where possible)
3	Development and implementation of re-use and recycling of materials and wastes used for the substances produced and used, where possible.
4	Use of previously tried and proven similar processes, facilities and methods
5	Advances in science and technology
6	Properties, effects and amounts of pollutants
7	The time that new and current facilities have
8	The time required for the implementation of the currently best techniques
9	The properties of the raw materials used in the process and their amounts of use and the energy savings they provided
10	Prevention or minimization of the environmental effects or the risks of pollutant
11	Measures that has to be taken for the prevention of accidents and the minimization of their environmental effects
12	Documents published by commissions or international organizations

In this manner, the Directive brings, beyond the pollution control end-of-pipe solutions, restrictions regarding the reduction at the source. BAT concept aims at a high level protection as a result of the prevention or reduction of pollution to air, water and soil. Considerations for the determination of Best Available Techniques are as follows [1].

Due to both the determination and the implementation of “Best Available Techniques” and the investments required for regular storing, combustion, solid waste disposal units, the implementation of the Directive on Integrated Pollution

Directive for Industrial Pollution Prevention and Control (IPPC)

IPPC Directive (96/61/EC) EU Environmental Legislation aims at the prevention of industrial pollution and the provision of waste minimization by the industrial facilities within the framework described in the Directive, effective and efficient use of raw materials and energy used in the production, noise reduction and introducing a risk management. Accordingly, limit values, parameters or equivalent technical measures that will be determined for the emissions should be based on the “**Best Available Techniques**” (BAT) (Table 1).

Prevention and Control will be a challenging and long term process in Turkey [5]. Best Available Techniques for an industrial sector should be determined. The “Best Available Techniques” should include technics and technologies that will be used by each industrial sector for the minimization of the negative environmental effects. During the determination of the “Best Available Techniques”, a collaboration with industrial sector representatives, universities and experts will help to obtain more successful results. [8].

The investments that will be made within the IPPC Directives framework

should be determined, the knowledge on the Best Available Techniques should be improved and the institutional capacity of the private sector should be strengthened. Also, in addition to all regulations, within the concept of the Directive on the emissions of volatile organic compounds (VOC) (1999/13 EC), a legislation should be established on the minimization or elimination of volatile organic compounds.

The current Turkish Legislation “Regulation on the Control of Industrial Air Pollution” obliges to receive emission permissions according to their capacities. However, the compliance has not been maintained yet by establishing an integration for the reduction of volatile organic compounds [7].

Target sectors should be determined and VOC emissions should be reduced in site using cleaner and appropriate technologies in these sectors [9].

European Union Directives and Clean Industrial Production

Today, the main guidelines of the EU environmental legislation can be summarized as “the prevention of wastes at the source before they occur”, “recycling and re-use of unavoidable wastes”, “the proper disposal of the wastes by using environmental technologies if the recovery is not possible”. The concepts “pollution prevention at its source, substitution of chemicals, life cycle assessment, recovery and reuse” were included in many EU Directives. The Compliance and Implementation Schedule for EU Legislations is shown in Table 2. On the other hand, 96/61/EC Directive on Integrated Pollution Prevention and Control (IPPC) first published in 1996 makes a strong emphasis on the “pollution prevention” approach and proposes the use of “Best Available Techniques” for the prevention and the control of pollution in order to reduce the pollution caused by industrial production sectors. The term “pollution prevention” directly corresponds to *clean production* [10]

Eco-Labeling Regulation (1980/2000) which contains clean production applications encourages the companies for more environment and consumer friendly products and services and their certification. This Regulation is on a voluntary basis and requires a coordinated collaboration of the related institutions in order to fulfill its requirements (Ministry of Environment And Forestry) In addition, The European Union’s Eco-Management and Audit Scheme (EMAS) Regulation is a management tool for the companies and other institutions in order to evaluate, report and develop their environmental performance. EMAS is on a voluntary basis and applied to economic sectors including all production sector, public and private sector services [7;1]. The Directive on the control of major-accident hazards involving dangerous substances (SEVESO II 96/82/EC) aims to prevent the industrial accidents and to reduce the environmental and human effects occurring as a result of possible accidents. The “Regulation for the control of major-accident hazards” was prepared in 2006 and presented to the public as a draft regulation. The next step for Turkey is to provide the requirements the effective use of the Regulation [9].

The Assessment of Turkish and EU Legislations within the Scope of Clean Production

It is thought that many legislations and especially the regulations on “waste management” that are in force in Turkey have mainly become in compliance with the EU Legislation with the studies planned within the EU Acquis Compliance Program, and the compliance will be extensively maintained if the new legislations (WEEE, Mining Wastes, Waste Framework Directive, the Directive on Landfill Waste) and the studies conducted to reinforce the infrastructure planned for 2009-2011 period and the national waste management plan will be realized in terms of the concept of waste management. In addition, Strategic Environmental Impact Assessment

Legislation which was planned for 2009-2011 period but still in the process will also have an effect on the improvement of the capacity and the dissemination of the applications if adequate emphasis on the clean production and the related subjects is made in the legislation.

It can be said that the environmental legislation in Turkey has been improved

over the years and serious steps were taken for fulfilling the requirements of the sustainability in today's conditions. Also, EU integration compliance studies conducted in the recent years have provided further momentum to the studies on this subject. Current Legislations on waste management and pollution control have been improved and is still under improvement [11].

Table 2. The Compliance and Implementation Schedule for EU Legislations [7;1]

Name of EU Legislation	Foreseen Transposition Date	Foreseen Implementation/Enforcement Date
Integrated Pollution Prevention And Control (IPCC) (96/61/EC)	2007	The proposed date is 31.12.2008 however it can be changed depending on the investments on the current facilities.
Large Combustion Plants (LCP) (2001/80/EC)	2006*	The year 2007 was given as the effective date for the new facilities in the draft regulation while the year 2017 was proposed for the current facilities. This duration may vary for some old facilities depending on investments and negotiations.
The emissions of volatile organic compounds (1999/13 EC)	2008	2012
Volatile organic compounds from petroleum distribution	A detailed study is required as there are multiple authorities related to this Directive (Ministry of Transport, Energy Market Regulatory Authority, Ministry of Industry and Commerce, The Undersecretariat Of Maritime Affairs and Ministry of Environment And Forestry). Therefore no date has been proposed.	The effective date will be determined according to the legislation to be prepared based on the results of the technical studies.
Legislation 761/2001 that permits the voluntary participation of the institutions in Eco-management and Audit Scheme (EMAS) program.	Evaluations will be made based on the results obtained as a result of technical work.	Evaluations will be made based on the results obtained as a result of technical work.
Legislation 1980/2000 on Community Eco-label Award Scheme	Evaluations will be made based on the results obtained as a result of technical work.	Evaluations will be made based on the results obtained as a result of technical work.
The Directive on the control of major-accident hazards involving dangerous substances (SEVESO II 96/82/EC)	2007	
The Directive on reduction of Sulphur content of certain liquid fuels (99/32/EC) modified with 1882/2003/EC Legislation and 2005/33/EC Directive.		

Conclusion

IPPC which focuses on the introduction of industrial applications based on clean production will help for a more efficient and effective use of natural sources, minimization of the wastes, reduction of the toxic contents and thus the environmental and human effects will be minimized. Also, a company that implements cleaner production strategies will not only be advantageous for the compliance with the current regulations but also be prepared for the future modified regulatory applications. The real benefit that IPPC provides is *“the efficient use of the resources”*. Because, improving the alternatives for the reduction and the recovery of the wastes at the source will contribute to the preservation of production inputs including raw materials/water/energy. Accordingly, the costs for the use of energy and chemical, manpower, facilities, space requirements and disposal will be reduced. Especially in the international arena, the companies which have adopted these strategies will be able to respond to the higher quality demands of the market and thus will gain advantage before their competitors and increase their reliability in the customers. Due to its context and highly technical content, the Directive requires experts trained on this subject. The researchers in some studies have proposed a 10-year process for the compliance with the Directive. In this process, inter-agency network will be developed, environmental information will be stored in a data bank, the integrated environmental management model concept and permission process will be renewed in compliance with the EU norms.

There are no regulations in Turkish Environmental Legislation that corresponds to the Directive on Integrated Pollution Prevention and Control and supports its legal requirements. This will extend the compliance and implementation process. The first step to be taken within the

framework of compliance with the Directive on Integrated Pollution Prevention and Control is to determine the legal regulations and the legislations that will be adapted. The context and the highly technical content of the Directive, especially for being a Directive that requires high investment costs, indicates a long term process that requires detailed studies. One of the issues that will be important for a more effective and rapid progression of the EU compliance process for Turkey is the evaluation of the compliance process of the current EU member countries for the Directive on Integrated Pollution Prevention and Control during their EU membership candidate period and the presentation of these experiences.

During the compliance, especially for the elimination of situations that might cause conflicts of authority, the only authority for the implementation of the Directive on Integrated Pollution Prevention and Control should be the Ministry of Environment and Forestry. An IPPC unit should be established within the supervision of the Ministry and this unit should be responsible for the determination of the Best Available Techniques and monitoring the application methods and techniques of the companies. Efficient progression of the Directive can be possible only if the industrialists in Turkey embrace this process. Additionally, for a complete compliance of the Directive, interviews should be made with the representatives of the industrial sector and their opinions should be taken. Compliance will be economically very beneficial to the product quality of the industry and the product management. The representatives of the industrial sector should be informed that the market share of the products will be maximized with the resolution of the problems. The Directive on Industrial Pollution Prevention and Control has four main elements. Best available techniques which are the most determinative among these main elements. However, limit emission values, public access and sharing

of the information is as important as the Best Available Techniques in the implementation and compliance phase of the Directive. Therefore, a public participation and informing the public is necessary. Also, the extension of the current various infrastructure studies (briefings, trainings) will be very important.

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