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Policy challenges in transferring the integrated pollution Prevention and control approach to Southern Mediterranean countries: a case study

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ABSTRACT

The Integrated Pollution Prevention and Control Directive is one of the most relevant environmental regulations in Europe. It affects approximately 50,000 installations belonging to the most polluting industrial sectors. Several scholars have studied the effects of the Directive at the firm level, investigating its effects on environmental performance and competitiveness. Despite this, few studies have focused on experiences related to the transference of the Directive's principles to countries beyond the borders of the European Union. This paper describes a case study that assessed the transposition of the European Union Integrated Pollution Prevention and Control scheme to Egypt, Morocco and Tunisia by means of a method designed for this purpose, which provides the guidelines for analysing and benchmarking policy and legislative frameworks in these Mediterranean Partner Countries by supplying information on the European integrated system for Pollution Prevention and Control. The paper outlines the methodological approach adopted in the two-year international 7th Framework Programme project, *Boosting Best Available Techniques in the Mediterranean Partner Countries*, pointing out various policy scenarios suitable for implementing the key principles of this scheme in Southern Mediterranean countries. The evaluation of these scenarios establishes the steps to take in order to gradually approach the adoption of the most relevant aspects of the European Union's Integrated Pollution Prevention and Control system and the adoption of the Best Available Techniques in the Mediterranean Partner Countries.

1. Introduction

The need to manage the various environmental aspects associated with the activities of production processes in an integrated way is one of the main challenges facing the environmental management of industrial companies. In order to stimulate this integrated approach, the European Commission adopted the European Union (EU) Directive on Integrated Pollution Prevention and Control (IPPC) in 1996 (European Commission, 1996). This Directive was codified[1] in 2008 (Schoenberger, 2009) and has recently been recast along with the Directive on Industrial Emissions (IED), Directive 2010/75/EU[2] – (European Parliament, 2010). The principles (explained in Section 4 of this article) and requirements included in these EU Directives established the EU IPPC scheme, which is a strategic approach to environmental management, as was also shown in various studies in the literature. Testa et al. (2014) show that Integrated Pollution Prevention and Control regulations positively affect the environmental performance of facilities. However, this depends on how the regulation is designed and implemented by the Member States.

Ngwakwe (2011) demonstrates that pollution prevention decisions by management and, as a consequence cleaner production,

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[1] The codified act includes all previous amendments to Directive 96/61/EC and introduces a number of changes (e.g., updates to the legislation numbers referred to in the text). The substance of Directive 96/61/EC has not been changed.

[2] Adopted in November 2010, it came into force on 6 January 2011 and was adapted by Member States in the contexts of their national legislations by January 7th, 2013. The IPPC Directive wias repealed by the IED starting on January 7th, 2014.

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are faciliated through cost accounting. Daddi et al. (2013b) show how the method of IPPC Directive implementation can be strategic for companies.

IPPC approach aims to stimulate the introduction of eco-innovation in the production processes through the role of Best Available Techniques (BAT). The BAT are the reference techniques that the Competent Authorities must use to establish Emission Limit Values (ELV) in the integrated permits. According to this approach the companies in the scope of the IPPC Directive are stimulated to innovate their production processes, pursuing the level of emissions achievable through these techniques.

Pollution prevention consists of reducing or eliminating pollution at the source. It is based on the internal practices of industrial plants to eliminate the pollutantsthat would otherwise be released into the natural environment (Ngwakwe, 2011; Asian Development Bank, 1994). It means residues, emissions and discharges from production processes are reduced through measures that decrease the amount of contaminants requiring final treatment (Cardona, 2007; Siebel and Gijzen, 2002).

This approach is the opposite of end of pipe solutions. Reduction of pollutants at the source includes all practices, processes and technologies that aim to reduce or eliminate the volume, concentration or toxicity of generated source residues (Brião and Granhen Tavares, 2007). It consists of changing consumption habits and adopting the use of low consumption devices (Galvis et al., 2014). Pollution reduction at the source includes preventative measures oriented towards pollution control. This approach makes it possible for firms to reduce their costs through efficiency improvements, based on a lower level of resources used and by reducing compliance and liability costs (Hart, 1995; Porter and Van der Linde, 1995).

In the literature, there are a small number of case studies and experiences that describe the transference of the EU IPPC approach to other extra-European contexts. First of all, there are some IPPC experiences in countries that aim to join the European Union in a short time. In the case of Serbia, where the Ministry of Energy, Development and Environmental Protection, is working with the Department for Integrated Permits on the European project “Law enforcement in the field of industrial pollution control (IPPC), prevention of chemical accidents (Seveso) and establishing the EMAS system”. The aim of this project is, among others, to assist the Ministry in the process of implementation of the environmental legislation on the IPPC/IED (Hulla & Co. Human Dynamics KG, 2013).

Turkey, on the other hand, is working on the European project “Technical assistance for IPPC – Integrated Pollution Prevention and Control”. The beneficiary of the project (started in May 2012 and ending in May 2014) is the Republic of Turkey's Ministry of Environment and Urbanization. The project aims to assess the potential impacts (from an economic and social point of view) of Industrial Emissions and the Integrated Pollution Prevention and Control Directive in Turkey (Niras IC Consortium, 2013).

The document “Convergence with EU IPPC policies: Short Guide for ENP partners and Russia” (Neubauer, 2007) is addressed to Europe's neighbouring countries. The document shows how a gradual and partial alignment with European environmental policy can help these countries to face environmental issues, also by including a description of the expected benefits of convergence with IPPC policy.

Few literature studies deal with pollution prevention in extra European countries. Some papers focus on pollution prevention initiatives in the United States of America. One of these is the study of Miller et al. (2008), which includes references to the history of pollution prevention programmes and policies in the USA since 1985. The study of Zarker and Kerr (2008) also describes some pollution programmes developed over 20 years in United States, considering permitting systems as well. The study shows the need to achieve a higher level of the integrated approach to environmentally sustainable systems. The study by Calia et al. (2009) explores the USA's pollution prevention programmes, paying particular attention to the better performance of a pollution prevention programme of a multinational company that adopted a specific organizational approach for process improvement and the development of new products and services. Another paper (Cagno et al., 2005) provides an analysis of more than 130 pollution prevention projects in various companies and countries, with a particular focus on the USA. The analysis reveals that even if the pollution prevention strategies of companies are still in their early stages, the environmental management of production processes is oriented towards this as a strategic issue for long-range company competitiveness.

Another key contribution to pollution prevention is the technical report issued by the National Center for Environmental Innovation, part of the United States Environmental Protection Agency Office of Policy, Economics and Innovation (US EPA, 2008). The report describes the IPPC scheme adopted in the United Kingdom (UK) and subsequently assesses its potential transferability to US legislative framework for the improvement of the USA's permitting systems. This study mainly refers to pulp and paper and the specialty organic chemical sectors. The activities carried out in the study include a literature analysis, the selection of UK and USA mills and permits for carrying out a comparison, interviews, and setting up a network for integrated permitting. The study reveals some differences in permitting systems in these two areas.

Many pollution prevention initiatives and studies are also present in countries besides the USA. For example, a number of pollution programmes exist in Canada as well. Their main aim is to encourage industries to meet sustainability targets. One of these initiatives is the Toronto Regional Sustainability Program, which provides assistance to enterprises in the implementation of pollution prevention strategies (Granek and Hassanali, 2006). The study by Sarmiento (2004) considers the Ecuador Environmental Pollution Prevention Project, which aimed to promote cleaner production in companies in Ecuador. The paper affirms that the project introduced cleaner production “thinking”, but no real implementation and adoption.

Hoque and Clarke (2013) deal with pollution prevention, focusing specifically on Bangladesh. The study states that pollution prevention initiatives in Bangladesh are underutilised in comparison to developed countries. The study reveals that the lack of awareness concerning the effects of pollution is a key contributing factor to pollution from industrial activities. The 2012 paper by Liu and Wen includes a Best Available Technology selection model for pollution prevention and energy conservation, with a focus on the Chinese thermal power industry. The proposed model could support the government in optimizing the technology structure of future power plants to obtain energy savings, but it can be useful also to innovate in existing ones.

Our paper aims to contribute to the existing literature on the EU IPPC scheme by outlining specific principles and their transferral to Southern Mediterranean countries. The following sections of the paper include a description of project activities, an indication of the main principles of the EU IPPC scheme, and a discussion of the results. Finally, a number of the study's most important conclusions are provided.

2. Methods

The BAT4MED project assesses the possibility and impact of spreading the EU IPPC scheme to the Mediterranean Partner Countries (MPC) by analysing the policy and legislative frameworks