

IMPLEMENTATION OF THE EU NITRATES DIRECTIVE IN TURKEY

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Abstract

The EU Nitrates Directive is of a prime importance in respect of sustaining the natural resources for the reduction and prevention of nitrate pollution resulting from agricultural activities, and it constitutes an integral part of the EU Water Framework Directive. Accepted by the European Council in 1991, the directive entered into force being published in *Official Gazette* in 2004 in Turkey as "Regulation on the Protection of Waters against Pollution Caused by Nitrates from Agricultural Sources." As of this date, works on harmonization have been intensely continued. The works brought together multiple organizations that are notable in terms of waterworks and ensured informatory exchange through the contributions of the EU member states. Approaching to the finalization of its harmonization process, Turkey will proclaim its country either a "border to border nitrate-sensitive zone" or "nitrate vulnerable zone" in order to issue the secondary legislations required by the Nitrates Directive in accordance with these approaches. This paper covers the current works conducted with regard to the implementation of the Nitrates Directive and it has been prepared aiming at inviting attentions to the current and possible complications in the implementation process.

Keywords: Agriculture, Environment, The European Union, The Nitrates Directive

TÜRKİYE'DE AB NİTRAT DİREKTİFİ'NİN UYGULANMASI

Özet

AB Nitrat Direktifi, tarımsal faaliyetlerden kaynaklanan nitrat kirliliğinin azaltılması ve önlenmesine yönelik doğal kaynakların sürdürülebilirliği açısından önemli bir direktif olup AB Su Çerçeve Direktifi'nin bütünüleyici bir parçasıdır. Avrupa Konseyi tarafından 1991 yılında kabul edilen direktif, 2004 yılında Türkiye'de Tarımsal Kaynaklı Nitrat Kirliliğine Karşı Suların Korunması Yönetmeliği olarak Resmi Gazete'de

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yayımlanarak yürürlüğe girmiştir. Bu tarihten itibaren uyumlaştırma çalışmaları yoğun bir şekilde devam etmektedir. Çalışmalar Türkiye’de su konusunda birden fazla söz sahibi olan kurumları bir araya getirmekle kalmamış aynı zamanda AB’ne üye ülkelerin katkılarıyla da bilgi paylaşımını sağlamıştır. Uyumlaştırma sürecinin sonuna yaklaşan Türkiye, Nitrat Direktifinin gerekliliği olan ikincil mevzuatı çıkarabilmek için ülkesini ya sınırdan sınırı nitrate hassas alan olarak ya da bölgesel düzeyde nitrate hassas bölge olarak ilan edecek ve bu yaklaşımlara göre ikincil mevzuatlarını çıkaracaktır. Bu çalışma Nitrat Direktifi’nin uygulanması için gerçekleştirilen güncel çalışmaları kapsamakta ve uygulama sürecinde mevcut ve olası komplikasyonlara dikkat çekmek için hazırlanmıştır.

Anahtar Kelimeler: Tarım, Çevre, Avrupa Birliği, Nitrat Direktifi

1. INTRODUCTION

With the objective of meeting the demand for food by the growing population in the world, use of intense agricultural applications has been increased. As a result of the negative outcome of the fertilizers utilized in such intense agricultural applications, agriculture-environment relations have become an attention-calling issue especially in the European Union (EU) countries. Upon the invoking of awareness regarding the fact that fertilizers render impact on water sources, implementations in terms of reducing the fertilizers and their negative effects as well as sustainable environment in the EU countries became a current issue.

The EU has issued the Nitrates Directive (ND) as the regulatory policy option intended for preventing the pollutions occurred in waters as a result of the agricultural activities. The Council of the European Communities passed "Regulation on the Protection of Waters against Pollution Caused by Nitrates from Agricultural Sources," known as ND, with 91/676/EEC number on 12 December 1991. Objective of the Directive is to reduce the water pollution resulting from agriculture-based nitrate and to prevent possible future pollutions (Güzelordu, 2008).

The EU ND is an integral part of the European Parliament and Council’s 2000/60/EC Water Framework Directive (WFD) that designates the environmental impacts in the area of water policies for all the aquatic ecosystems through its integrating impact on the grounds of industrial, agricultural, and rural development as well as nature protection and forestry together with the transboundary cooperation among the European countries (Moroglu and Yazgan, 2008; Hödl et al., 2010).

The ND requires that the member states identify water masses within the boundaries of their own countries and under pressure in terms of nitrate pollution (sensitive regions), that they designate the plans that will take such nitrate pollution under control, and that they take the necessary precautions (Zwart et al., 2007).

Turkey, as an EU candidate country, announced "Regulation on the Protection of Waters against Pollution Caused by Nitrates from Agricultural Sources" (RPWPCNAS) in *Official Gazette* on 18 February 2004 to become in force, and it conducts works in order to harmonize its legislations.

This document will shed light on the ND harmonization works for the countries advancing toward the EU membership (candidate and potentially candidate countries) and provide the member states of the EU with the information regarding the works for the implementation of the ND in Turkey. As a result, in this work, latest updated information for the ND's Turkey application was provided and some recommendations for the future were made.

2. AGRICULTURE IN TURKEY

Because nitrogen input into the ground waters and surface waters is rendered through agricultural activities such as irrigation and fertilization, form and time of agriculture in a country affect the amount of nitrate in waters. Thus, agriculture in Turkey simply takes place as follows.

According to the 2001 data, the area which allows agriculture in Turkey is 1/3 of the overall areas and approximately 70% of this area is used as annual products (except for vegetables and flowers), 11% as long-term products (including orchards), and 17% as fallowed area (Anonymous, 2001).

Rains are not sufficient enough in most of the areas, especially in springs and summers, as to ensure water vaporization stability. This condition affects productivity of the crops negatively and necessitates irrigation in agriculture. Total area of irrigation is 5 million hectares and economically irrigable area is 8.5 million hectares. 93% of this area is irrigated by surface waters and 7% by ground waters. In Turkey, in 18% of the completely irrigable areas, intensive agriculture and in 78.5% extensive agriculture are carried out on the products irrigated by rain waters (dry agriculture) (Anonymous, 2008).

Production of the crops requiring substantial amount of nitrogen increases the need for nitrogenous manures. Therefore, in Turkey, nitrogen is used in the production of wheat and barley pro rata 53%. In addition, potatoes, tea, citrus fruits, corn, cotton, and sugar beets are the products that require high level of nitrogen and that are mostly grown (Anonymous, 2008).

Fertilizer types utilized as the agricultural production input are the nitrogenous, phosphorous and potassium-based fertilizers. 21% N containing nitrogenous manure is the most commonly used fertilizer and followed by 17% phosphorus containing manure and 50% potassium containing manure, respectively. Quantities of use between 2000 and 2009 are shown in Figure 1 (Anonymous, 2010). Distribution of the amounts of application of different nitrogenous fertilizers (mineral and manure) in agricultural areas is given on the following map. It is seen on the map prepared using data on fertilizer between 2005 and 2007 that fertilizers exceeding 170 kg N/ha values have been used in some provinces (Fig. 2) (Hödl et al., 2010).

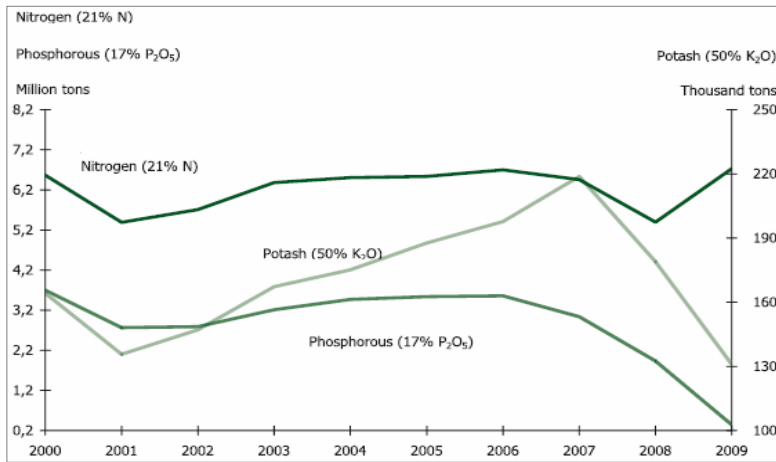


Figure 1. Utilization of chemical fertilizers in Turkey between 2000 and 2009.

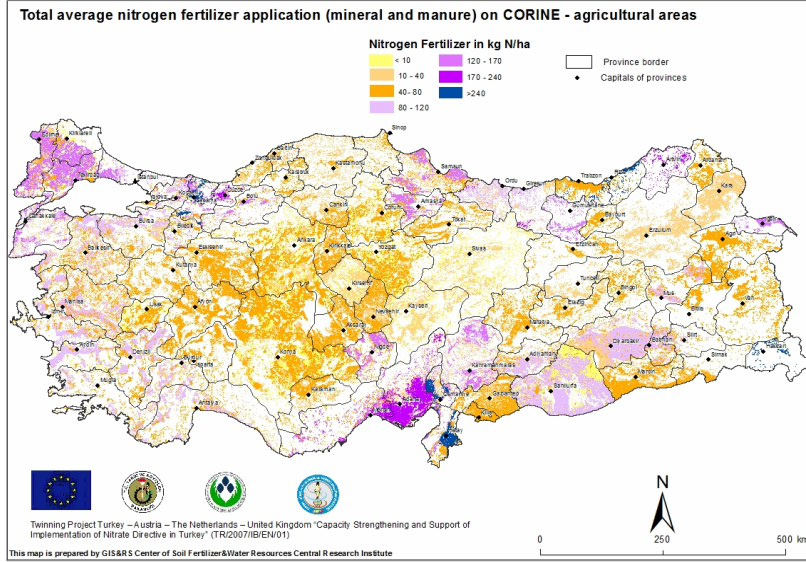


Figure 2. Average aggregate of fertilizer application in the agricultural areas in Turkey.

Animal breeding in Turkey is a small-scale activity carried out together with plant production. Major types of animals bred are fowls and cattle followed by sheep and goats (Anonymous, 2008)

3. NITRATES DIRECTIVE AND TURKEY

Turkey's EU Accession Partnership was officially accepted by the EU Council on 8 March 2001. Together with the Accession Partnership, Turkish Government accepted the National Programme for the Adaptation of the Acquis (NPAA) in March 2001 and revised it in 2003 (Güzelordu, 2008).

Under the heading of "Environment" of the 2003 Accession Partnership Document, priority was the issue of "Improvement of Water Quality." Water Nitrate Pollution from Agricultural Activities and WFD are the main elements under this heading (Anonymous, 2003).

Turkish Government, in the period committed through the Accession Partnership Document, put RPWPCNAS into effect on 18 February 2004

being published in *Official Gazette*. Together with the Regulations, the EU ND requirements are being transformed into the Turkish national legislations. The Ministry of Agriculture and Rural Affairs (MARA) and the Ministry of Environment and Forestry (MoEF) are the offices that are responsible for the Regulations (Anonymous, 2003).

The ND's adaptation and implementation constitute one of the most important steps in Turkey's EU accession process and its implementation consists of five steps.

1. Detection of the waters that are polluted or under the threat of being contaminated by nitrate.
2. Designation/identification of nitrate vulnerable zones (NVZ).
3. Development and implementation of application of Code/s of Good Agricultural Practices.
4. Development and application of Action Programmes for NVZ.
5. Composition of a national monitoring and reporting system (Zwart et al., 2007; Hödl et al., 2010).

When these steps are taken into consideration, some differences between 91/676/AET Nr. ND and RPWPCNAS would come to the surface. While, these differences result from the clauses regarding the obligations of the Member States, Turkey is not obliged to comply with such obligations since it is not yet a member of the EU. Another difference is that the amount of fertilizers mentioned in ND Appendix-III applied per farm is not more than 170 kg N per hectare. There is no such limitation in Turkish legislations (Zwart et al., 2007).

4. APPLICATIONS OF THE NITRATES DIRECTIVE IN TURKEY

Through the harmonization of the EU ND, Turkey will proclaim its country either a "border to border nitrate-sensitive zone" or "NVZ." Constitution of the secondary legislations depends on these two approaches. When Turkey proclaims border to border nitrate-sensitive zone, only action plans shall be designated while it shall be obliged, when proclaimed NVZ, to establish a Code of Good Agricultural Practices as well as Action Plans. Works for proclaiming one of the approaches and issuance of the secondary legislations are ongoing.

The first step for the ND's application in Turkey is "Application of Nitrates Directive in Turkey Project" supported financially through the MATRA programme by the Government of the Netherlands, the Ministry of Environment (VROM). Objective of the project is to support Turkey for the implementation of the ND. Initiated in January 2005, the project was terminated in December 2006.

With the MATRA project, commencement for the implementation of the ND took place through the following steps:

1. Detection of polluted waters in ground waters and fresh surface waters
2. Identification of the vulnerable zones
3. Development of the Code of Good Agricultural Practices (Hödl et al., 2010).

During the project, quality of the ground waters and fresh surface waters was evaluated for the period of 2005 and 2006. In addition, for the nitrate measurement stations, a monitoring network was established under the responsibility of both the MARA and the MoEF. Erection of monitoring stations in almost every province through the cooperation of these two institutions is the fundamental outcome of the MATRA project (Hödl et al., 2010).

With the information obtained through the implementation of the MATRA project, works of purchasing mobile laboratories by MARA especially in the areas where intense and irrigate agricultural production is carried out due to the necessity of monitoring nitrate, in 20 provinces among the 81 provinces and neighboring provinces, in order to conduct the in situ analyses stipulated by the ND, are ongoing.

In Turkey, the second step of the ND implementation is the twinning project under the name of "Capacity Strengthening and Support for the Implementation of Nitrates Directive in Turkey Project." The project that took place between January 2009 and February 2010 between Turkey and the UK, the Netherlands, and Austria Consortium is oriented to capacity strengthening and was supported by the EU Pre-Accession Financial Assistantship.

Mandatory results of the twinning project are as follows;

1. For the required secondary legislations (the Code of Good Agricultural Practices, Action Programme/s) making a legal assessment of the EU ND

through the applications compliant with the national legislation to compose a framework that also includes the policy options.

2. Through the combined monitoring approach, development and adaptation of the monitoring networks in compliance with the EU ND requirements.
3. Empowerment of the MARA's institutional and technical capacity and especially exchange of information between the respective institutions like the MoEF as well as the increased farmers' awareness (Hödl et al., 2010).

Together with the twinning project, number of the stations designated in the MATRA was increased to total 1600 at the surface waters and ground waters. Monitoring spots were condensed at the places where nitrate pollution is excess and the whole of Turkey can be monitored from these spots. Maps obtained from these monitoring spots belonging to 2005 and 2007 nitrate data are given on Figure 3 and Figure 4. With analysis of samples obtained from surface and underground water, it is seen that nitrate level is mostly lower than 40 mg L^{-1} in surface water (Fig. 3), while higher than 50 mg L^{-1} in some places in underground water (Fig. 4) (Hödl et al., 2010).

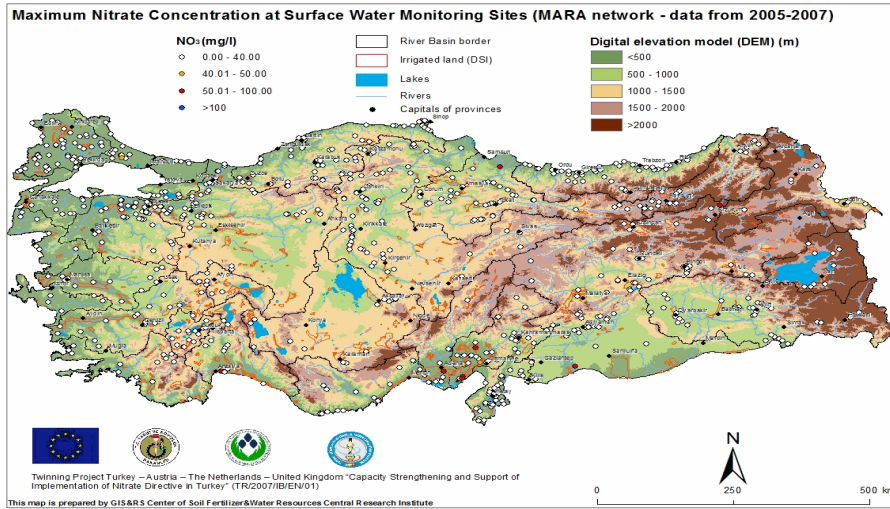


Figure 3. Maximum nitrate concentration in surface waters between 2005 and 2007

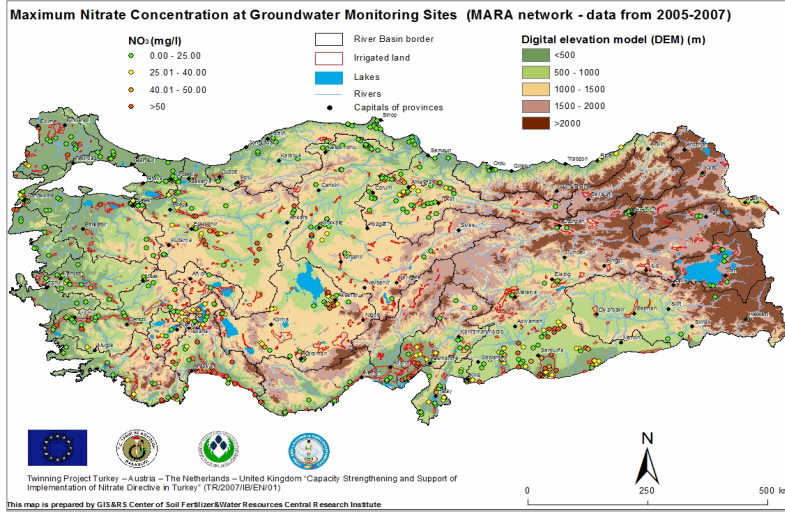


Figure 4. Maximum nitrate concentrations in groundwaters between 2005 and 2007.

The last stage regarding the implementation of the ND is the "Technical Assistance for the Implementation of the Nitrates Directive Project." Commenced in January 2010, the project shall end in December 2012. Since the results of the technical assistance project are fairly important for the finalization of the secondary legislations, a strong connection between the twinning project and the technical assistance project is available. Through the technical assistance project, it is intended to establish a network system in order to monitor the nitrate pollution resulting from the agricultural sources in the ground waters and surface waters effectively and to determine the vulnerable zones, to inform the farmers and to increase their level of awareness, and to develop monitoring software. The technical assistance project shall define and support concrete details and guides with regard to the regional and climate conditions in Turkey.

The framework drawn up by the MATRA project was empowered through the twinning project and it will be made concrete through the technical assistantship and supply projects.

5. CONCLUSIONS

In Turkey, works for the implementation of EU ND have been ongoing since 2004. The fact that Turkey has much bigger and uneven area compared to that of the EU member states shall cause that some differences will be encountered in practice and control. Moreover, influence on the waterworks management by more than one institution in Turkey might create problems in the implementation of the directives regarding water and it might cause an authorization complexity in the implementation of the ND. Authorization of a single ministry with regard to the water issue (like the Ministry of Water) might end this muddle.

Due to the fact that Turkey has diverse climate, geography and topography, diversification is observable in the agricultural products. Increase in the population of Turkey, as also experienced throughout the world, caused demand for food, increase in the agricultural intensity, and requirement for several environmental arrangements. Successful implementation of the ND might prevent the pollution of the ground waters and surface waters and regulate the agricultural activities which will give birth to a sustainable environment and agriculture.

In some provinces, nitrate pollution stemmed from agricultural activities has significant pressure on surface and underground water. It is aimed at reducing these pressures by implementing Nitrate Directive and ensuring its sustainability by improving current water quality status

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