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## **Final Thesis**

**The role of Payments for Ecosystem Services  
in the Macedonian path toward Europe:  
the case of Dojran Lake**

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## Glossary of Acronyms and Abbreviations

AA – Assessment Area

AWBs - Artificial Water Bodies

CA – Contributory Area

CAP – Common Agricultural Policy

CBA – Cost-Benefit Analysis

CBC – Cross-Border Cooperation

CIS – Common Implementation Strategy

CMCC - *Centro Euro - Mediterraneo sui Cambiamenti Climatici* (Euro-Mediterranean Centre for Climate Change)

CVM – Contingent Valuation Method

EC – European Commission

ERDF - European Regional Development Fund

ES - Ecosystem Service

EES – Environmental Ecosystem Service

EU - European Union

FAO - Food and Agricultural Organization of the United Nations

FYROM – Former Yugoslav Republic of Macedonia

GWP - Global Water Partnership

HMWBs - Heavily Modified Water Bodies

HIPERB – Hellenic Plan for the Economic Restoration of the Balkans

IWRM - Integrated Water Resource Management

IPES – International Payments for Ecosystem Services

IPA I - Instrument for Pre - accession Assistance I

IPA II - Instrument for Pre - accession Assistance II

IPA I CBC – Instrument for Pre – accession Assistance I Cross-Border Cooperation Programme

IPA II CBC – Instrument for Pre – accession Assistance II Cross-Border Cooperation Programme

IRBM – Integrated River Basin Management

GDP – Gross Domestic Product

MEA - Millennium Ecosystem Assessment

MoEPP – Ministry of Environment and Physical Planning

MRFF – Macquarie River Food and Fibre

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NSW – New South Wales

NYC – New York City

NGO – Non-Governmental Organizations

OECD - Organization for Economic Co-operation and Development

PES - Payments for Ecosystem Services

PES – Payments for Environmental Services

PoMs - Programmes of Measures

PPP - Polluter Pays Principle

RBMP - River Basin Management Plans

RENA - Regional Environmental Network for Accession

SEA – Strategic Environmental Assessment

SWOT Analysis – Strengths, Weaknesses, Opportunities and Threats Analysis

TFEU – Treaty on the Functioning of the European Union

TEU - Treaty on European Union

UK - United Kingdom

UN - United Nations

UNEP – United Nations Environment Programme

UNFCCC - United Nations Framework Convention on Climate Change

USA - United States of America

WFD – Water Framework Directive

WTA – Willingness to Accept

WTP – Willingness to Pay

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## Abstract

This thesis is developed from the 'Integrated Water Resource Management at Dojran Lake' project of the CMCC institution, with the general purpose of providing a support to the implementation of the project's goals and final objectives.

The analysis poses its basis on the current relations between the European Union and the Former Yugoslav Republic of Macedonia and on its status of candidate country. It also focuses on the Instrument for Pre - accession Assistance, granted to this new candidate member country in order to implement the European prerequisites towards its accession into Europe, from which cross-border cooperation agreements of the area in terms of environment and economical sustainability derive.

An analysis of the European Water Framework Directive follows, as a notable requirement in the environmental sector for Member States, with a digression on the current status of water management and initiatives in the Former Yugoslav Republic of Macedonia and its level of implementation in the European Directive.

This constitutes the initial international scenario for developing an analysis focused on the importance given by the Ecosystem Services and by the Payments for Ecosystem Services method, a basilar passage for understanding the most efficient way to raise awareness about environmental issues among the community, institutions and stakeholders. An analysis on how Payments for Ecosystem Services agreement could be integrated with the European Water Framework Directive is also developed.

A practical proposal of Payments for Ecosystem Services implementation is then proposed for the case study focusing on improved water quality and quantity within the lake as a final objective. This process is carried out while keeping in mind the vulnerable characteristics of the area around Dojran Lake as a prerequisite for its sustainable development and that every action has to be implemented with transboundary approach, following the European Water Framework Directive. This is followed by a Strengths Weaknesses Opportunities Threats analysis, which underlines the potential and the obstacles of its possible future implementation, and by a digression concerning the similar characteristics between the Water Framework Directive requisites.

It is concluded that the proposed Payments for Ecosystem Services mechanism is considered as a helpful tool for understanding the role of governments and institutions concerning the enhancement of cross-border cooperation. This is especially so with the purpose of safeguarding human well-being in the area on one hand and respecting such a unique environment on the other.

The proposed Payments for Ecosystem Services mechanism is contemplated as a possible instrument for supporting the process of Macedonian harmonization of the European legislation through the implementation of the European *acquis* towards the Former Yugoslav Republic of Macedonia accession into Europe. This would also provide additional support by aligning the Macedonian position to the European objectives of the European Common Agricultural policy requirements.

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## Executive Summary

The Former Yugoslav Republic of Macedonia (FYROM) is a country situated in south-eastern Europe and it was granted candidate country status for European membership in December 2005. The accession into the European Union (EU) for the FYROM started in 2008 with the adoption of the Accession Partnership, where priorities which are expected to be accomplished by the FYROM in order to grant its accession were listed. The Stabilisation and Association Process contemplates that potential and candidate countries receive funds and support through the Instrument for Pre – accession Assistance (IPA). A potential candidate country has to respect the democratic values of the EU, to fulfil the ‘Copenhagen Criteria’ and to implement the European body of common rules, the *acquis* in order to get access into Europe. Notwithstanding, Western Balkan countries wishing to join the EU face additional conditions for membership. In the IPA II Cross-Border Cooperation Programme, part of the IPA and addressed to Greece and to the FYROM, the need of boosting cooperation with bordering countries and internal issues and the support of environmental protection especially in the field of water quality are envisaged. Cross-border cooperation started with the INTERREG Programme in the area Greece-the FYROM, thus providing the basis for a transboundary cooperation.

Among the European legal requirements, the transposition and implementation of the WFD is included for what concerns the environmental sector. The European WFD has the overall aim of maintaining and improving the aquatic environment with the achievement of “good status” for all water bodies by 2015, water management based on river basins, getting the prices right and the citizens involved more closely<sup>1</sup>. It is an example of integrated water policy at a *Communitaire* level and it asks every European country to carry out several actions in order to meet the requirements and, among them, the concept of Cost Recovery for water pricing is included. The FYROM has transposed the WFD but the implementation of the WFD is still in progress, while the preparation of RBMP for Dojran Lake has not been assessed yet.

Ecosystems and the services they provide are a source for human existence. Four categories of ecosystem services (ES) can be counted: provisioning, regulating, cultural and supporting services according to the Millennium Ecosystem Assessment. Nowadays worldwide tendencies show how biodiversity is being lost: the idea of finding possibilities to provide the right incentives for encouraging the sustainable use of these ES seems necessary. Restoring and maintaining the flows of the services is found through the understanding of the Total Economic Value (TEV) of the ES, with the aim of integrating them in decision-making processes.

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<sup>1</sup> “Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, Official Journal L 327, 22/12/2000 P. 0001 – 0073, EUR-Lex, 2000. <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32000L0060>. Accessed 25 May, 10 July, 29 August and 5 September 2015.

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The Payments for Ecosystem Services (PES) method can operate in this sense as its main driver is addressing environmental issues through the delineation of a new source of income, derived from the ES beneficiaries and addressed to the ES providers in order to adopt specific environmentally friendly measures/land use practices for supporting ES. PES for watershed services contemplates as its main focus and objective the great interest of finding and implementing new mechanisms for protecting water quality and quantity, thus reflecting the overall goal of the WFD. PES systems can also create opportunities and they can be approaches that aim to transfer positive incentives to ES providers: conditionality, additionality and incentive-based criteria consist of motivation for influencing water management and decision-making processes not only nationally or locally, but also internationally. Many PES systems have been experienced around the world, as a prove of its increasing worldwide relevance and, even if only few cases can be found concerning international PES schemes, they provide a possibility of developing and implementing a PES proposal in the transboundary context of Dojran Lake.

Dojran Lake is a shared water body: the two thirds of the basin belong to Greece and the one third to the FYROM. Over the period 1989-1999 a rapid decline of the lake's water level was reported, situation that threatened its water quality and biodiversity. The lake has always been of utmost relevance for its unique fishing technique and for the fact that this has always been one of the most leading activity by providing fish to the local population especially in the Macedonian side, while tourism is the current main occupation.

The lake is part of numerous conventions and networks as it is a complex ecosystem characterized with significant and rich biodiversity and endemic flora and fauna. Bilateral cooperation concerning the lake between Greece and the FYROM takes place since 1956, but the signed agreements have not resulted in effective cooperation.

The *Centro Euro – Mediterraneo sui Cambiamenti Climatici's* (CMCC) project 'Integrated Water Resource Management at Dojran Lake' focuses its endeavours on this complex ecosystem and on its possible connection towards an economical transboundary development. The complexity of water issues and their increasing importance emerged in the last year has led to the development of integrated multi-sectorial approaches on a global scale, such as the Integrated Water Resource Management, which could be a complementary support in PES implementation.

As a matter of fact, the CMCC's project 'Integrated Water Resource Management at Dojran Lake' aims to analyse the possible integration of a PES deal as an economic tool for the natural resource management in the Dojran Lake region and it has the purpose of developing financial mechanism for PES implementation through transboundary cooperation and local participation, for creating the capacity of boosting local resilience. The process of developing a PES scheme for this area needs to be carried out while considering that every action has to be implemented with a transboundary approach, following the European WFD: the idea of integrating a PES scheme with the WFD appears in this sense feasible. The Cost Recovery Principle and PES for water services have similar objectives and PES and the PPP, even if dealing with different versions of the same idea, can cooperate. PES represents a method of integration of the WFD, aside from being a source for

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financing WFD measures.

The degradation of the water quality and quantity of Dojran Lake led to the need of a restoration action: for the purpose of improving water quality and quantity of the lake, a PES scheme requiring a transboundary action is proposed. The ES providers are identified as the farmers in the CA; the ES beneficiaries are both tourists as they benefit from landscape use and local inhabitants as they benefit from it for consumption use. The identification of the value of the service is assessed through a CVM of the WTP of tourists and of local inhabitants for the improved service. The payment is proposed on the form of environmental tax for tourists and a tax for locals on the service of drinking potable water. Transaction costs are supposed to be low and intermediaries can be the local municipality or a NGO. This mechanism has co-benefits: improvement in fish stocks quality and biodiversity and augmented number of birds, if correctly applied.

The PES scheme has also the objective of reaching a 'good status' of the lake as required by the WFD, alongside representing the major source for financing WFD measures, by supporting environmentally friendly practices towards the desired goal.

PES deals can be drawn as policy instruments for satisfying socio-ecological benefits and shared interests over time with the support of the understanding of economic characteristic of the ES and through the legitimization of diverse levels of governance. To establish the effectiveness of a policy design, the necessity of a SWOT analysis is also essential as it helps to identify the factors that may hamper or threaten the plausibility of the PES measure in the specific geographical, political and cultural context of Dojran Lake. From the SWOT analysis, some elements emerged: the threat 'Name dispute between the two countries', the opportunity 'Dojran Lake is part of the List of Wetlands of international importance' and the strength 'It aims to contribute to transboundary cooperation between the FYROM and Greece'.

The necessity of an efficient bilateral collaboration between authorities and a stakeholders participation at an early stage of the development of the PES scheme, the need of sharing information and consultation, the idea of monitoring of the correct execution of land management practices according to the PES goals and the establishment of a common 'coordinating body' for transboundary cooperation and continuous transboundary management are other aspects of utmost importance in the process of implementing the measure.

The proposed PES scheme is in line with the European Common Agricultural Policy (CAP) and it represents a possibility of implementing a European policy, because agri-environmental policies have characteristics similar to PES mechanisms. The proposed 'PES for water'/agri-environmental policy, by suggesting the enhancement of agri-tourism, can be approachable to the CAP through the assessment of different measures: among them, the promotion of the restoration and the maintenance of the farming area in the cultural landscape of Dojran Lake would generate an additional benefit and value to inhabitants and tourists. This and other measures would provide an augmented alignment of the Macedonian position to the European agricultural objectives.

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## Chapter 1

### **International relations between the Former Yugoslav Republic of Macedonia and the European Union and cross-border cooperation between Greece and the Former Yugoslav Republic of Macedonia.**

#### **i. The Former Yugoslav Republic of Macedonia's candidate status for European membership and the accession process.**

Situated in south-eastern Europe and bordered by Serbia, Kosovo, Bulgaria, Greece and Albania, the Former Yugoslav Republic of Macedonia (FYROM) is a parliamentary democracy since 1991, when its pacific separation from Republic of Yugoslavia took place.

The FYROM, along with other Western Balkans countries, was identified as a potential candidate for the European membership during the Thessaloniki European Council summit in 2003: the country formally applied for European membership in March 2004 and it was after granted candidate country status for European membership in December 2005 (European Commission, 2014).

The legal basis for any accession into the European Union (EU) can be found in Article 49 of the Treaty on European Union (TEU), whose content mainly affirms that the EU is open to all European countries<sup>2</sup>.

The adherence to the principles of Article 6(1) TEU is asked to the applicant country, as a requirement for

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<sup>2</sup> "Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union - Consolidated version of the Treaty on European Union - Protocols - Declarations annexed to the Final Act of the Intergovernmental Conference which adopted the Treaty of Lisbon, signed on 13 December 2007 - Tables of equivalences". Official Journal C 326, 26/10/2012 P. 0001 – 0390, EUR-Lex, 2012, Article 49. <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:12012E/TXT>. Accessed 10 March 2015.

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joining the EU:

“The Union recognizes the rights, freedoms and principles set out in the Charter of Fundamental Rights of the European Union of 7 December 2000, as adapted at Strasbourg, on 12 December 2007, which shall have the same legal value as the Treaties. The provisions of the Charter shall not extend in any way the competences of the Union as defined in the Treaties. The rights, freedoms and principles in the Charter shall be interpreted in accordance with the general provisions in Title VII of the Charter governing its interpretation and application and with due regard to the explanations referred to in the Charter, that set out the sources of those provisions” (Article 6(1), TUE)<sup>3</sup>.

All the Member States need to subscribe Article 6(1) TUE, which describes the famous and fundamental basis of the EU: freedom, democracy, respect for human rights and fundamental freedoms and the rule of law<sup>4</sup>. Among the conditions for the Union membership decided by the Council of the European Union (EU) with its conclusions from Copenhagen in 1993, the fulfilment of the political and economic criteria and the ability to assume the obligations from the membership are included. These key criteria for accession are defined as ‘Copenhagen Criteria’:

“Membership requires that candidate country has achieved stability of institutions guaranteeing democracy, the rule of law, human rights, respect for and protection of minorities, the existence of a functioning market economy as well as the capacity to cope with competitive pressure and market forces within the Union. Membership presupposes the candidate's ability to take on the obligations of membership including adherence to the aims of political, economic and monetary union” (Presidency Conclusions, Copenhagen European Council, 1993).

These accession criteria, as described by the article above, are the essential conditions all candidate countries must satisfy to become a Member State. They include:

- political criteria, such as stability of institutions guaranteeing democracy, the rule of law, human rights, respect for and protection of minorities;
- economic criteria, comprehensive of a functioning market economy and the capacity to cope with competition and market forces;
- administrative and institutional capacity to effectively implement the *acquis* and the ability to take on the obligations of membership;
- having created conditions for integration by adapting their administrative structures<sup>5</sup>.

The conditions for the new potential member states are based on stability of law, social justice and effective

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<sup>3</sup> “Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union”, *supra nota*, Article 6(1).

<sup>4</sup> “The Accession Process for a New Member State”, EUR-Lex, 2007.

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV:114536>. Accessed 10 March and 18 July 2015.

<sup>5</sup> “The Accession Process for a new Member State”, *supra nota*.

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market, in order to be able to face the European reality and to cope with the process of harmonization after the entrance (European Council, 1993).

When the country that has been granted the status of applicant state meets these first conditions, or 'Copenhagen criteria', the European Council stipulates when Accession Negotiations should start after an opinion of the European Commission (EC)<sup>6</sup>.

The EU operates comprehensive approval procedure that ensures that new members are admitted only when they can demonstrate they will be able to play their part fully as members. This comprehends the aspect of complying with the European standards and rules, having the consent of the European institutions and Member States and having the consent of their citizens, as expressed through approval in their national parliament or by referendum (European Commission, 2014).

The potential country has to respect the democratic values of the EU and must be committed to promoting them. Between the democratic values, which are the characteristics, ideas, beliefs and the qualities that are accepted in a society, the rule of law, free speech, separation of the powers, equality and non-discrimination, social security and protection from Corporate abuse, alongside the values included in the Charter of Fundamental rights (2000), are the basis to build a stable democratic society (European Commission, 2014). The Treaty on the EU countries contemplates the conditions and timing of the adoption and implementation of European *acquis*. The *acquis* is defined as "the body of common rights and obligations that is binding on all the European Member states" (Grabbe, 2002). This body of rights is divided into thirty-three policy fields, from transport to environment, each of which is negotiated severally (European Commission, 2014).

Among all the several rights that this body of common rules comprises, it also contemplates: the content, principles and political objectives of the Treaties, legislation adopted pursuant to the Treaties and the case law of the Court of Justice, declarations and resolutions adopted by the Union, instruments under the Common Foreign and Security Policy, international agreements concluded by the Union and those entered into by the Member States among themselves within the sphere of the Union's activities<sup>7</sup>. For example, the *acquis* includes also the principle of free movement of goods, workers and capitals, as well as right of justice, freedom and security, and sections concerning environment and economic and monetary policy<sup>8</sup>.

The EU obtains guarantees on the date of the effectiveness of the candidate measures to adopt them under the oversight of European institutions throughout the monitoring activity of the EC (European Commission, 2014). The Accession Negotiations are designed into chapters, based on the *acquis*, to help the countries comply with the *acquis* and to meet their obligations as Member States once they join the EU. The negotiations are closed as soon as the benchmarks are fulfilled and once all of them have been completed the accession process finishes, under the decision of the European Council with the assent of the European Parliament and

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<sup>6</sup> "The Accession Process for a new Member State", *supra nota*.

<sup>7</sup> "European Commission – Enlargement- Acquis", European Neighbourhood Policy and Enlargement Negotiations, European Commission, 2012.

[http://ec.europa.eu/enlargement/policy/glossary/terms/acquis\\_en.htm](http://ec.europa.eu/enlargement/policy/glossary/terms/acquis_en.htm). Accessed 15 April and 21 August 2015.

<sup>8</sup> "European Commission – Enlargement- Acquis", *supra nota*.

a positive opinion of the EC<sup>9</sup>.

At this point an Accession Treaty between the Member States and the applicant country may follow, object to ratification by all Member States and the future European country, whose status formally changes from applicant country to acceding country. The Treaty comprehends: the accession date, the results of the accessions and the areas where more transitional measures are needed in order to accomplish the conditions, the adaptation of treaties and the distribution of votes among the European institutions<sup>10</sup>.

Either way, the acceding country is asked to continue the process by covering all the remaining gaps, and it is subject to the continuous control of the EC.

## **ii. The Stabilisation and Association Process and the Instrument of Pre – accession Assistance: the EU accession process for the FYROM.**

### **ii.i The Stabilisation and Association Process and the EU accession process for the FYROM.**

Aside from this general process of accession, Western Balkan countries wishing to join the EU face additional 'special' conditions for membership, beside the 'Copenhagen Criteria'. These criteria were established in the 'Stabilisation and Association Process', launched in 1999 with the purpose of creating a free trade area between the EU and the concerned country by identifying common political and economic objectives<sup>11</sup>. It has the purpose of aligning the Western Balkan countries' legislation gradually to the European rules<sup>12</sup> and it also contemplates the development of good neighbouring relations and other instructions.

The process even encourages regional cooperation through 'Stabilisation and Association Agreements', which serve as a basis for the implementation of the accession process: the countries are involved in a progressive partnership with the purpose of stabilizing the region and establishing a free-trade area (Council of the

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<sup>9</sup> "The Accession Process for a New Member State", EUR-Lex, 2007.

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV:114536>. Accessed 10 March and 18 July 2015.

<sup>10</sup> "The Accession Process for a new Member State", *supra nota*.

<sup>11</sup> "The Accession Process for a new Member State", *supra nota*.

<sup>12</sup> "Enlargement", EUR-Lex, 2007.

[http://eur-lex.europa.eu/summary/chapter/enlargement.html?root\\_default=SUM\\_1\\_CODED%3D16&obsolete=false](http://eur-lex.europa.eu/summary/chapter/enlargement.html?root_default=SUM_1_CODED%3D16&obsolete=false). Accessed 18 July and 4 October 2015.

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European Union, 2001). It also contemplates help for the countries concerned to build their capacity to adopt and implement the European laws as well as European and international standards (Council of the European Union, 2001).

The Commission reports regularly to the Council and to the European Parliament on the progress made by the countries of the Western Balkans region towards the European integration, the implementation of the 'Copenhagen Criteria' and the conditionality of the Stabilisation and Association Process (European Commission, 2014).

The EU accession process for the FYROM started concretely on 18 February 2008 when the Council adopted the Accession Partnership for the country, updating the previous European Partnership of January 2006<sup>13</sup>, even if it was after granted candidate country status for European membership more than two years before, in December 2005 (European Commission, 2014). In the following year a visa free travel for citizens of the FYROM to the Schengen area was granted<sup>14</sup>.

Though the Stabilisation and Association Process remains the legislative basis of the Western Balkan country to follow towards its accession, the Accession Partnership established specific areas where further action is required regarding the FYROM capacity to meet the 'Copenhagen Criteria' and the obligations established by the Stabilisation and Association Process. It also established the pre-accession assistance<sup>15</sup>.

In order to define deadlines to respect for putting the partnership into effect, a national programme for the adoption of the *acquis* was created by the FYROM with the Accession Partnership. The European Council approved the introduction of the partnerships as a tool to realize the European perspective of the Western Balkan countries, while the instrument provided and still provides a financial support to the country<sup>16</sup>.

The Accession Partnership required several priorities which were expected to be accomplished by the FYROM in order to grant its accession into EU, according to its political and economic situation in 2008. These were divided into short-term priorities, to be satisfied in one or two years, and medium-term priorities, to be satisfied in three or four years. They concerned both legislation and implementation. Of particular relevance for the country's path of accession into Europe, the key priorities were focused on the consolidation of the democratization process, on the enhancement of the general business scenario by further improving the rule

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<sup>13</sup> "Council Decision of 18 February 2008 on the principles, priorities and conditions contained in the Accession Partnership with the Former Yugoslav Republic of Macedonia and repealing Decision 2006/57/EC (2008/212/EC)", Official Journal of the European Union, L 80/32, 2008.  
<http://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=CELEX:32008D0212>. Accessed 10 May and 4 October 2015.

<sup>14</sup> "Council Decision of 18 February 2008 on the principles, priorities and conditions contained in the Accession Partnership with the Former Yugoslav Republic of Macedonia and repealing Decision 2006/57/EC (2008/212/EC)", *supra nota*.

<sup>15</sup> "European Commission – Enlargement – Accession Partnership", European Neighbourhood Policy and Enlargement Negotiations, European Commission, 2012.  
[http://ec.europa.eu/enlargement/policy/glossary/terms/accession-partnership\\_en.htm](http://ec.europa.eu/enlargement/policy/glossary/terms/accession-partnership_en.htm). Accessed 16 April and 10 September 2015.

<sup>16</sup> "Council Decision of 18 February 2008 on the principles, priorities and conditions contained in the Accession Partnership with the Former Yugoslav Republic of Macedonia and repealing Decision 2006/57/EC (2008/212/EC)", Official Journal of the European Union, L 80/32, 2008.  
<http://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=CELEX:32008D0212>. Accessed 10 May and 4 October 2015.

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of law, on the reinforcement of the independence of regulatory and supervisory agencies, on the acceleration of legal procedures and on the idea of ensuring effective implementation of the law in police and anti-corruption legislation<sup>17</sup>. An accent on the development of stable legislation, effective control and protection was also notable among the short-term and long-term environmental priorities. Those specifically included the continuation of legislative alignment with the *acquis*, in particular in the fields of air quality, waste management and water quality, but they also included the significant improvement of the implementation of legislation and environmental monitoring, as well as the increase of investments in the environmental infrastructures<sup>18</sup>.

The FYROM report was issued in October 2014 by the European Commission (EC). It is of considerable interest as it provides a very detailed scenario of the current Macedonian situation on its gradual path through the harmonization process and accession into Europe.

According to this report, even if a further progress in ameliorating the ability to cope with the obligations of membership can be reported for the Macedonian country from a recent analysis, the FYROM was not granted the passage to the following step of the accession. The FYROM is still engaged in the Stabilisation and Association Process and it is expected to comply with the identified requirements under the Stabilisation and Association Agreement (European Commission, 2014).

As a matter of fact, the report underlines how, even if some recent steps have been taken as regard as international police cooperation and the country continues to sufficiently meet the political criteria, given the situation analysed through the previous EC's report, there are growing concerns about selective justice, government control over media and state institutions, increased politicization and still fragile inter-ethnic situation (European Commission, 2014). These issues lead to the conclusion that the EU accession process has not proceed as established and expected for the country. The government's failure to deliver properly on some key issues had the result of damaging the sustainability of some reforms, the backslide in certain areas (European Commission, 2014) and the fact that the Accession Negotiations have not been granted by the Council yet even if there were proposed by the EC.

Furthermore, even if the level of legislative alignment with the European rules is overall high considering to where the country is located in the accession process, the desired alignment with the *acquis* has not been implemented as established in the area of water quality, according to the Commission's analysis (European Commission, 2014). Chapter 27 regards the *acquis* for environment and it affirms that, in particular:

“The European environment policy aims to promote sustainable development and protect the environment for present and future generations. It is based on preventive action, the polluter pays principle, fighting

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<sup>17</sup> “Council Decision of 18 February 2008 on the principles, priorities and conditions contained in the Accession Partnership with the Former Yugoslav Republic of Macedonia and repealing Decision 2006/57/EC (2008/212/EC)”, *supra nota*.

<sup>18</sup> “Council Decision of 18 February 2008 on the principles, priorities and conditions contained in the Accession Partnership with the Former Yugoslav Republic of Macedonia and repealing Decision 2006/57/EC (2008/212/EC)”, *supra nota*.

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environmental damage at source, shared responsibility and the integration of environmental protection into other European policies. The *acquis* comprises over 200 major legal acts covering horizontal legislation, water and air quality, waste management, nature protection, industrial pollution control and risk management, chemicals and genetically modified organisms (GMOs), noise and forestry. Compliance with the *acquis* requires significant investment. A strong and well-equipped administration at national and local level is imperative for the application and enforcement of the environment *acquis*" (Chapter 27)<sup>19</sup>.

From the EC report many aspects of this backslide concerning the environmental sector can be outlined. For example, this backwardness is due by the fact that management structures for river basins have been set up but they are not operational still and by the lack of coordination between local competent authorities, which affects the implementation of the legislation (European Commission, 2014). This is boosted by the insufficient level of funds and the still low involvement of stakeholders of various levels in decision making (European Commission, 2014). Additional action also needs to be taken in order to set up a proper system of water pricing, always taking into account the EC's analysis (2014). The overwhelming lack of progress in the sector needs to be overcome because it keeps on hampering the essential operation of water treatment facilities (European Commission, 2014).

What is of great interest for nature protection is that alignment with the *acquis* specifically in the field of natural habitats and wild fauna and flora has been delayed in the FYROM, even if management plans for protected areas have been developed but not implemented yet (European Commission, 2014). The result that environmental protection has not been fully and sufficiently integrated into policymaking and implementation in the country is the main consequence (European Commission, 2014).

Of considerable interest is also the EC's focus on how cross-border cooperation has continued in relation to Dojran Lake in the last years (European Commission, 2014).

In the environmental scenario specifically, water management is of great interest in the Macedonian area and it requires particular attention in order to meet the criteria of the accession and for ensuring the development of the country in the short and long term. A proper, equal and correct legislation is the key for its success, accompanied by efficient water management plans for better exploiting the resources and managing the environmental impact of each action.

Again, the Council also states that legislation and procedures conforming the *acquis* are required in the area of transit, alongside technological and industrial development (Council, 2008), thus stressing the necessity of a transboundary cooperation between bordering countries in order to boost the development of cross-bordering areas.

The idea of strengthening democratic institutions and ensuring inclusive democratic process remains of a

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<sup>19</sup> "Conditions for Membership", European Neighbourhood Policy and Enlargement Negotiations, Chapter of the *acquis*, Chapter 27.  
[http://ec.europa.eu/enlargement/policy/conditions-membership/chapters-of-the-acquis/index\\_en.htm](http://ec.europa.eu/enlargement/policy/conditions-membership/chapters-of-the-acquis/index_en.htm). Accessed 15 April 2015.

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crucial importance for the country's successful accession process. The EU is in fact founded on common values and principles, contemplating the respect for fundamental rights, the respect for freedom of expression and the protection of minorities and vulnerable groups from discrimination, as mentioned.

Regional cooperation and good neighbourly relations are essential elements of the Stabilisation and Association Process as well<sup>20</sup>.

Of notable relevance is one of the greatest characteristics of the Stabilisation and Association Process: the process contains autonomous trade measures, which allow free entry into Europe for Western Balkan countries' products without customs duties or quantitative restrictions (European Commission, 2014).

This aspect is of particular importance for the FYROM, as Europe is the main trading partner of the country, according for 60% of the country's exports and 48% of imports, followed by the Western Balkan region representing 35% of the country's exports and 11% of its imports<sup>21</sup>.

Indubitably, the accession into Europe is strategic for the development of the potential new Member State and the enhancement of its internal and external growth, which can be empowered through the reinforcement of cooperative relations with the bordering countries.

## **ii.ii The Instrument for Pre – accession Assistance.**

The Stabilisation and Association Process contemplates that potential and candidate countries receive funds and support through the Instrument for Pre - accession Assistance (IPA) (European Commission, 2014).

The total pre-accession funding for IPA 2007-2013 (IPA I) specifically amounted to more than €11 billion for Western Balkan states, while the allocations of IPA I for the period 2007-2013 of around €610 million for the Macedonian territory (European Commission, 2014).

IPA I was introduced in 2006 aiming to simplify the framework for the process of channelling assistance. It mainly replaced the previous financing instruments of CARDS and PHARE Cross-Border Cooperation in the Western Balkans and it contemplated a more efficient distribution of the financial assistance through transition assistance and institution building (European Commission, 2014). It also aimed to reinforce cross-border cooperation, regional development, human resources development and rural development (European Commission, 2014).

In addition, the instrument addressed –and still addresses with the new Instrument for Pre – accession Assistance 2014-2020 (IPA II)- the compliance of beneficiary countries with the already mentioned

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<sup>20</sup> "The Accession Process for a New Member State", EUR-Lex, 2007.

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV:114536>. Accessed 10 March 2015.

<sup>21</sup> "Political & economic relations", Delegation of the European Union to the Former Yugoslav Republic of Macedonia, [http://eeas.europa.eu/delegations/the\\_former\\_yugoslav\\_republic\\_of\\_macedonia/eu\\_the\\_former\\_yugoslav\\_republic\\_of\\_macedonia/political\\_relations/index\\_en.htm](http://eeas.europa.eu/delegations/the_former_yugoslav_republic_of_macedonia/eu_the_former_yugoslav_republic_of_macedonia/political_relations/index_en.htm). Accessed 20 March 2015.

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'Copenhagen Criteria': political accession criteria, economic accession criteria and fulfilling the obligations as a future Member State of the EU (European Commission, 2014). In fact, the great importance implied in this financial instrument relies in the idea that "the funds are an investment into the future of the enlargement countries and Europe itself" (European Commission, 2014). The funds not only help the countries in the process of making political and economic reforms in order to accomplish the obligations that come with the European membership, but they also help Europe in the process of reaching its own objectives such as sustainable economic recovery, energy supply, transport, the environment and climate change (European Commission, 2014).

According to the EC's Report, the implementation of IPA I is still continuing in the FYROM, even if the Programme expired at the end of 2013 (European Commission, 2014).

The mechanism of the recent IPA II Programme is continuing the process of the previous tranche of funds, by dedicating almost €12 billion to the assistance of the Western Balkan countries with a total financial support amounting to around €664 million for the Macedonian territory (European Commission, 2014).

The current new assistance pursues the aim of increasing good governance and capacity building to align with EU laws and standards, similar to the previous programme, and supporting socio-economic development in line with the EU 2020 targets for smart, sustainable and inclusive growth (European Commission, 2014).

From the analysis of the IPA Regional Development Operational Programme in the FYROM, part of the IPA I and IPA II, the attention is driven by the Macedonian environmental sector. IPA investments mainly focus on wastewater treatment and solid waste management where the impact to the population and natural environment is the highest (European Commission, 2014). In this specific case, the final objective is the establishment of a Macedonian wastewater collection and treatment infrastructure aiming to meet the European requirements that will support the establishment of an integrated and financially self-sustainable waste management system in the FYROM (European Commission, 2014).

According to the EC, the necessity of establishing a robust and professional law enforcement and judicial bodies, independent and free from external influence is drawn as essential for the country in effectively fighting any form of organized crime and for dealing with border management, security threats, and increasing irregular migration flows<sup>22</sup>. In this sense, the EU is also helping the Western Balkans take action in the fight against organized crime and corruption with specific projects regarding international crime cases through the empowering of cross-border cooperation, such as "Strengthening the Prosecutors' Network" project<sup>23</sup>.

Always considering the need of dealing with the law enforcement, what is of notable importance is that the EU is providing support through the IPA II Programme to FYROM for what concerns the rule of law, improving a secure and reliable communication between police services through a digital radio communication system

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<sup>22</sup> "An investment in Europe, an investment in the rule of law. The Former Yugoslav Republic of Macedonia – Secure police communication". IPA (2013). DOI: 10.2794/75575. Available at: [http://ec.europa.eu/enlargement/pdf/leaflets/leaflet\\_ipa2\\_ruleoflaw\\_en.pdf](http://ec.europa.eu/enlargement/pdf/leaflets/leaflet_ipa2_ruleoflaw_en.pdf).

<sup>23</sup> "An investment in Europe, an investment in the rule of law. The Former Yugoslav Republic of Macedonia – Secure police communication", *supra nota*.

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provided to the Ministry of Interior, similar to the one used in Member States, by facilitating the exchange of information with the other European countries<sup>24</sup>.

Another example of IPA in the Western Balkans region and particularly in the FYROM regards agriculture, one of the oldest industries of the Southeast Europe, and rural development. The agricultural programme was started with the first programming IPA I period but it is continuing with the following Programme. It contemplates the reach of high environmental and animal welfare standards with the support of the farmers in using sustainable farming methods, over the emphasis put on these aspects by the European Common Agricultural Policy<sup>25</sup>. The European support consists of inspection services, control of animal diseases, animal waste disposal and an animal identification and registration system, while the production of food specialities of the region is encouraged between the farmers, in order to improve the local production and boost competitiveness in the area. This has the objective of increasing local economic opportunities and employment chances<sup>26</sup>.

Since the Macedonian separation from the Republic of Yugoslavia in 1991, the country faced a transformation process towards democracy. Its first decade of independence was deeply marked by political and economic challenges: even if the country coped with an Albanian security crisis in 2001, it concentrated its endeavours afterwards on building up and reinforcing its democratic institutions, thus trying to stabilize its economy through political and economic reforms, free trade agreements and regional integration (European Commission, 2014). In the IPA II Indicative Strategy paper for the FYROM released by the EC in 2014 a crucial issue is underlined. The point concerns the idea that the country still needs to improve external dialogue in order to keep the transformation progress towards democracy alive and it needs to reduce corruption and to establish a modern and transparent public administration (European Commission, 2014). These aspects have already been considered by IPA I but they still need to be strengthened, according to the EC.

Also inter-community relations with neighbouring countries is of outstanding relevance. As mentioned, relations with Albania remain weak even if they seem stable after the Ohrid Framework Agreement signed in 2001 as a consequence of the conflict with the ethnic Albanian groups (European Commission, 2014). Therefore, the process of reconciliation between cross-frontiers communities needs to be continued as well as disputes with transboundary countries, such as the name dispute with Greece, with the purpose of boosting cross-border cooperation (European Commission, 2014). Moreover, the IPA II Indicative Strategy paper underlines how the mentioned visa liberalization process has given the country incentives to implement reforms in the field of justice and home affairs in particular on border management. Either way, consistent

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<sup>24</sup> “An investment in Europe, an investment in agricultural and rural development. The Former Yugoslav Republic of Macedonia – Providing a stable and safe food supply”. IPA (2013). DOI: 10.2794/25979. Available at: [http://ec.europa.eu/enlargement/pdf/leaflets/leaflet\\_ipa2\\_agriculture\\_en.pdf](http://ec.europa.eu/enlargement/pdf/leaflets/leaflet_ipa2_agriculture_en.pdf).

<sup>25</sup> See: Chapter 4, Section iv;

“An investment in Europe, an investment in agricultural and rural development. The Former Yugoslav Republic of Macedonia – Providing a stable and safe food supply”. IPA (2013). DOI:10.2794/25979. Available at: [http://ec.europa.eu/enlargement/pdf/leaflets/leaflet\\_ipa2\\_agriculture\\_en.pdf](http://ec.europa.eu/enlargement/pdf/leaflets/leaflet_ipa2_agriculture_en.pdf).

<sup>26</sup> “An investment in Europe, an investment in agricultural and rural development. The Former Yugoslav Republic of Macedonia – Providing a stable and safe food supply”, *supra nota*.

efforts in this sector are still required especially in the process of intensifying reforms to achieve sustainable growth and of addressing the challenges necessary to meet the economic criteria, in order to improve competitiveness and to cope with high unemployment (European Commission, 2014).

Beyond these criteria, IPA II supports environmental protection and climate action, with the overall objective of preparing the country to the European accession and to provide help for the reform development process in the area. Its assessment should aim to lead the country to a cleaner environment and to an improved quality of life, contributing to the guarantee of sustainable growth and to “the shift to a low-carbon, climate-resilient and resource-efficient economy” (European Commission, 2014; European Commission, 2003), in line with the European Water Framework Directive requirements in the water sector.

Furthermore, in the field of water quality the EU is willing to provide support to the FYROM for the creation of river basin management plans, for improving the quality of surface and ground-water and drinking water through the IPA II programme (European Commission, 2014).

Between all the final results to be achieved through the implementation of the financial measure, environment and climate action legislation and improvement of water management in line with the European *acquis* and requirements are included.

### **iii. The evolution of cross-border cooperation between Greece and the FYROM and the impact of the IPA I Cross-Border Cooperation Programme “Greece – the FYROM 2007-2013”.**

Previously to the specific Programme adopted firstly under the initial IPA I and then under the current IPA II mechanism, cross-border cooperation in the area FYROM-Greece was started through the INTERREG II Programme during the years 1994-1999<sup>27</sup>.

This was the first major opportunity for an institutionalized cooperation between the two countries, regarding the notable chance that this transboundary region represents. As a matter of fact, the FYROM shares 262 km of its southern border with Greece, by taking into consideration land and water bodies, with the additional value represented by the aspect that the border corridor between these neighbouring countries is a key link in the

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<sup>27</sup> “Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)”, Approved revision (October 2011). CCI: 2007 CB 16 I PO 009.

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north-south corridor connecting Greece to the other Member States of EU.

The cooperation process was continued and strengthened by the following INTERREG III 2000-2006 Programme, which was developed jointly between Greece and the FYROM and it was approved at the beginning of 2002. This new programme had the aim of stimulating interregional cooperation in the EU<sup>28</sup>. It identified three priorities for cross-border cooperation, comprehending: enhancement of cross-border infrastructure, enhancement of economic development and employment, the promotion of cultural and tourist resources and new employment opportunities, the preservation of quality of life, environment and culture focusing on actions protecting and improving the natural environment and the quality of public health services<sup>29</sup>.

At the beginning of 2006 the previous programme became a Neighborhood Programme whose objectives mainly dealt with cross-border infrastructure, entrepreneurship, tourism, training and environment<sup>30</sup>.

According to some analysis, the Programme had overall enabled the two countries to come closer to each other even if some problems were still present at the end of the programming period<sup>31</sup>. Moreover, it was reported that cooperation evolved considerably at this level as the Programme contemplated bilateral meetings as well as exchange of information and decision making, with the addition that three transboundary institutions were established: the Joint Technical Secretariat, a Joint Monitoring Committee and a Joint Selection Committee<sup>32</sup>. Notwithstanding this necessity of setting up these new joint structures, their combination with relevant differences in the two national legal frameworks had the consequence of delaying the introduction of implementation techniques for the programming period 2000-2006 in the area. Even more, the assessed joint structures proved to be time consuming<sup>33</sup> but, on the other hand, the initial experience gained through them contributed to the better preparation of both countries in terms of coping with the new demands for the 2007-2013 programming period (European Commission, 2014). As a matter of fact, several expectations were foreseen between the FYROM and Greece by the new IPA after the programme. Among these, the idea that the characteristics of the new IPA that could provide a single legal basis and the joint management structures, alongside the implementation of the programme through joint cross-border projects selected through open call for proposals and led by a "lead partner" were included, with the overall objective of promoting the cross-border cooperation between the two countries (European Commission, 2014).

Overall, in the field of cross-border cooperation the European Initiative INTERREG II and III were highlighted as being positive initial cooperative experiences, thus creating the foundations for successful cooperation between the two countries<sup>34</sup>. Unfortunately, it was also ascertained that several difficulties in implementation modalities and administrative constraints limited the launch of the desired effective transboundary cooperation,

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<sup>28</sup> "Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)", *supra nota*.

<sup>29</sup> "Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)", *supra nota*.

<sup>30</sup> "Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)", *supra nota*.

<sup>31</sup> "Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)", *supra nota*.

<sup>32</sup> "Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)", *supra nota*.

<sup>33</sup> "Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)", *supra nota*.

<sup>34</sup> "Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)", *supra nota*.

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thus having the consequence of a low-profile development in terms of bilateral planning and assessment. On the other hand, this result put on the meantime an accent on the outstanding positive role played by non-governmental organizations in this process<sup>35</sup>.

The IPA Cross-Border Cooperation (CBC) Programme “Greece - the FYROM 2007-2013” is known as IPA I CBC Programme and it has been adopted under the cross-border cooperation section of the IPA I Programme. It was approved by the EC with a total budget of around €31,5 million, where €11,5 million was destined to the Macedonian territory<sup>36</sup>. This amount of money was addressed to the global objective of reinforcing and boosting the convergence in the Programme area through the promotion of sustainable local development by enhancing cross-border economic development, environmental resources and the cultural heritage of the Programme area<sup>37</sup>.

For the purpose of identifying the cross-border area for assessing the Programme between one or more Member States and one or more beneficiary countries, the eligible areas for allowing the financing process are defined as “regions along borders between the Community and the beneficiary countries”<sup>38</sup>. This identification is carried out according to Article 88 of the IPA Implementing Regulation and it is accompanied by specific considerations of potential modifications of the eligible area in order to ensure coherence and continuity to the cooperation measure between the involved countries.

Considering the Macedonian border with Greece, the IPA I CBC Programme involved the considerable region of Pelagonia and the southeast area from the side of the FYROM as well as Thessaloniki area, including also Axios/Vardar river – Dojran Lake<sup>39</sup>, thus defining the eligible area under question. The water bodies shared between the two countries are of predominant importance because they constitute an opportunity for both countries to cooperate for the preservation of the water quality and the environment in general.

Particularly, Dojran Lake represents an outstanding cross-frontiers opportunity for its recognized ecological functions and its economic, cultural, scientific and recreational value. In fact, the lake is included in the Ramsar list<sup>40</sup> as it is “part of a list of wetlands of international importance”, as defined by the Ramsar Convention for the conservation and sustainable utilization of wetland. Dojran Lake was added in 2007<sup>41</sup>.

The Priority Axes of the IPA I CBC Programme were the main content of the Programme and they contemplated several aspects. These vary from the enhancement of cross-border economic development to the facilitation of cross-border relations, aiming to the promotion of sustainable development through bilateral interventions. What needs to be specifically noticed is the fact that the two Priority Axes concerned protection

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<sup>35</sup> “Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)”, *supra nota*.

<sup>36</sup> “Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)”, Approved revision (October 2011). CCI: 2007 CB 16 I PO 009.

<sup>37</sup> “Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)”, *supra nota*.

<sup>38</sup> “Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)”, *supra nota*.

<sup>39</sup> “Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)”, *supra nota*.

<sup>40</sup> See: Chapter 4, Section iii.

<sup>41</sup> “The Ramsar Convention and its mission”, Ramsar, 2014.

<http://www.ramsar.org/about/the-ramsar-convention-and-its-mission>. Accessed 10 April 2015.

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of environmental resources<sup>42</sup>.

The geographical and economical context of the eligible area where the IPA I CBC Programme and, consequently the IPA II CBC Programme, is assessed, is currently characterized by the following particular features and elements that provide it with a significant economic and strategic relevance.

Firstly, by giving a general view to the cross-frontiers relations between Greece and the FYROM the aspect that a considerable improvement in the field of economy has been reached is of a significant importance. The perspective of the European membership for the country, associated with an intensified economic presence of Greek enterprises with a significant number of cross-border investments within the eligible areas are some of the reasons (European Commission, 2014). However, it has been reported that most of the investments made in the cross-border area are currently due to the attraction by cheap labour and they do not always present a long term aspect or they are not always associated with intention to assess themselves in the local Macedonian markets (Planet, 2014). Therefore, the economic situation of the cross-border eligible area can be characterized as being still very weak (European Commission, 2014).

Secondly, by moving the attention to the economic structure of the eligible Macedonian-Greek cross-border area, it can be ascertained several difference can be noted and reported. For example, the primary sector for the Greek area is mainly composed by farmlands and it is well developed. The Greek region is specialized in products similar with those produced in the FYROM, namely apples, beans, potatoes, vines and others, and this factor led to the decrease of exports of agricultural products from the FYROM to Greece over the last decades<sup>43</sup>. On the Macedonian side, the cross-border area includes two of the most important agricultural regions, namely the the plateau of Prespansko and the region Bitolsko. On the other hand, while the livestock-farming is not recorded as a relevant sector in Greece in the last few years, it is associated with an important increase in terms of production in the eligible area of the FYROM. The agriculture is considered an important field of employment for the programme cross-border area as the main occupation of the population currently lies in agricultural activities in both countries (European Commission, 2014).

By considering the secondary sector, while Thessalonica is the most forceful industrial location on in the entire Greek eligible area of the present Programme (European Commission, 2014) because it contributes to up to 16% of the total secondary Hellenic production, the disintegration of Yugoslavia, the loss of traditional markets and the impact of transition on the economy has implied the decline of the FYROM industry, whose leading industry was and still is the metal treatment sector in the cross-border eligible area<sup>44</sup>. The eligible area of the FYROM and Greece is also a relevant producer of energy<sup>45</sup>, characteristic hiding a crucial positive information in terms of relations and direct interactions between the two countries<sup>46</sup>, even if competitiveness and innovation

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<sup>42</sup> "Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)", Approved revision (October 2011). CCI: 2007 CB 16 I PO 009.

<sup>43</sup> "Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)", *supra nota*.

<sup>44</sup> "Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)", *supra nota*.

<sup>45</sup> "Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)", *supra nota*.

<sup>46</sup> "Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)", *supra nota*.

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need to be considerably boosted in the FYROM (European Commission, 2014).

The significance of the tertiary sector is rapidly growing in the entire cross-border programme area and particular relevance is given by tourism (Personal Communication MoEPP, 17/04/2015). While a tangible evidence of a considerable increase of touristic activities in the cross-border area cannot be reported, a humble development of alternative forms of tourism is observed, the support of which will further contribute to the economic development of the region. In general, touristic opportunities have not attracted a special attention yet and they are used in a moderate way<sup>47</sup>. These aspects underline how the need of reinforcing this sector through specific programmes is of utmost importance. As a matter of fact, the development of touristic activities represents a determinant factor in the enhancement of the area as they would provide additional value to a region of outstanding innate scenic beauty and thus create new opportunities for the local inhabitants<sup>48</sup>.

Moreover, the IPA CBC Programme assessment area is located on the Balkan region, an important crossroads for the development of the entire South-East Europe and Mediterranean geographic area. For this reason, several national and European policies are investing in the improvement and assessment of accessibility infrastructures which represent positive tendencies in the development process that are reinforced by a rising cross-border trade<sup>49</sup>. As a matter of fact, Greece and the FYROM are experiencing the development of significant trade relations. 15,5% of the exports from the FYROM is directed towards Greece and 9,1% of its imports comes from Greece<sup>50</sup>. These data show the great importance of a considerable growing market between the two countries, explaining how the necessity to boost these already positive signs of good trade relations which were indubitably enhanced by the free trade agreement between the EU countries and the FYROM<sup>51</sup> is a priority of utmost relevance.

As previously mentioned, the invaluable natural characteristics and the cultural heritage of the Programme area are also dominant components to be considered in the process of development of the cross-frontiers region. This needs to be carried out by considering not only the development of sustainable forms of tourism, but also the improvement of the quality of life of the local population. On the other hand, the border is still perceived as considerable barrier as the large socio-economic disparities between the two countries and the limited cooperation in crucial cross-border issues such as environment and health are confronting the region with essential challenges.

However, the global objective of the IPA I CBC Programme was to enhance convergence in the eligible area by promoting sustainable local development and it can be ascertained that the two countries have overall

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<sup>47</sup> "Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)", *supra nota*.

<sup>48</sup> See: Chapter 4, Section i and Section ii.

<sup>49</sup> "Guidance recommended model for IPA II cross-border cooperation programmes", following the Commission Implementing Regulation (EU) 447/2014 on the specific rules for implementing Regulation (EU) 447/2014 of 02.05.2014 of the European Parliament and the Council establishing an Instrument for Pre- accession assistance (IPA II).

<sup>50</sup> "Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013)", Approved revision (October 2011). CCI: 2007 CB 16 I PO 009.

<sup>51</sup> "An investment in Europe, an investment in agricultural and rural development. The Former Yugoslav Republic of Macedonia – Providing a stable and safe food supply". IPA (2013). DOI:10.2794/25979. Available at: [http://ec.europa.eu/enlargement/pdf/leaflets/leaflet\\_ipa2\\_agriculture\\_en.pdf](http://ec.europa.eu/enlargement/pdf/leaflets/leaflet_ipa2_agriculture_en.pdf).

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reached a positive experience in terms of fostered bilateral cooperation during the programming period<sup>52</sup>.

Greece and the FYROM have also signed a consistent number of protocols on sectors such as transport and communications, visa regime and taxes, international green cards for insurance of vehicles and implementation of custom issues (Management Authority of Community Initiative Programme Interreg II, Ministry of Economy and Finance, 2007).

Moreover, the Greek country has given rise to the Hellenic Plan for the Economic Restructuring of the Balkans (HIPERB). This specific Plan is a pledge pursuing at fostering development assistance in the Balkan countries and aiming to promote and reinforce the political, economic and social stability in both the Macedonian and the Greek territory (Management Authority of Community Initiative Programme Interreg II, Ministry of Economy and Finance, 2007). Among its main objectives, the renewal of infrastructure, the promotion of productive investments and the support of democracy and the rule of law, as well as the modernization of public administration and local self-government, accompanied by the enhancement of the welfare state, can be counted. In this framework, the HIPERB seeks in particular to not only implement large infrastructure projects but also strengthen the private initiative and co-operation between the countries (Management Authority of Community Initiative Programme Interreg II, Ministry of Economy and Finance, 2007).

This Greek national programme underlines the desire of the Hellenic country of improving cross-frontiers cooperation with the bordering Macedonian territory and of providing the Balkan countries with a possibility of support and general economic enhancement. This programme is an adjunctive chance to promote cross-border cooperation between the FYROM and Greece from a regional level, and thus it can be suggested that the Greek HIPERB can cooperate and work jointly with the European programme IPA I and II on the same purposes.

The report of the IPA I CBC Programme provides many useful information and suggestions concerning strategy development of specific bilateral or unilateral projects implemented during the programming period in conformity with the European and INTERREG specific procedures. In the eligible cross-border cooperation area the safeguard of human life and the quality of services for the protection of natural and cultural resources was upgraded. The reinforcement of cooperation among the FYROM and Greece and the assessment of new transboundary partnerships was also combined with additional value deriving from improved infrastructures and specific measures for the economic development and sustainable cross-frontier tourism initiatives<sup>53</sup>.

Increased awareness about the European funding processes, the European cross-border programme measures and the European legislation was perceived among countries-project partners during the first

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<sup>52</sup> "Greece – The Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013", Approved revision (October 2011). CCI: 2007 CB 16 I PO 009.

<sup>53</sup> "Guidance recommended model for IPA II cross-border cooperation programmes", following the Commission Implementing Regulation (EU) 447/2014 on the specific rules for implementing Regulation (EU) 447/2014 of 02.05.2014 of the European Parliament and the Council establishing an Instrument for Pre- accession assistance (IPA II).

Programme, according to the Recommended model for IPA II CBC Programme and, between them, among the FYROM<sup>54</sup>.

Either way, the implementation of the cross-border cooperation programme between the FYROM and Greece continues to be pictured as a challenging process due to many reasons, mainly political (Madzova, Davcev, Paceshkoski, n.d.). Although there is an extensive experience in implementing of infrastructural and small scale social-economic projects, through the results given by other previous programmes and INTERREG II and III and IPA I CBC Programme, the political issues related to the name of the FYROM is considered an obstacle in the process of creating long term and sustainable partnerships that can enable development and management of the bordering areas (Madzova, Davcev, Paceshkoski, n.d.)<sup>55</sup>.

#### **iv. Objectives and the Strategic Environmental Assessment of the IPA II Cross-Border Cooperation Programme “Greece – the FYROM 2014 – 2020” and interconnections with other international and European programmes and policies.**

##### **iv.i. Objectives of the IPA II Cross-Border Cooperation Programme “Greece – the FYROM 2014 – 2020”.**

The current European IPA Cross-Border Cooperation Programme “Greece - the FYROM 2014-2020” is known as IPA II CBC Programme. It is the successor financial programme of the IPA I CBC Programme and it considers a total budget of more than €45 million (Planet, 2014) for the implementation of the programme in the designed eligible area.

The programme is of outstanding relevance as it is characterized by the general purpose of:

“[...] enhancing territorial cohesion by improving living standards and employment opportunities holding respect to the environment and by using the natural resources for upgrading of the tourism product” (Planet,

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<sup>54</sup> “Guidance recommended model for IPA II cross-border cooperation programmes”, *supra nota*.

<sup>55</sup> See: Chapter 4, Section iii.

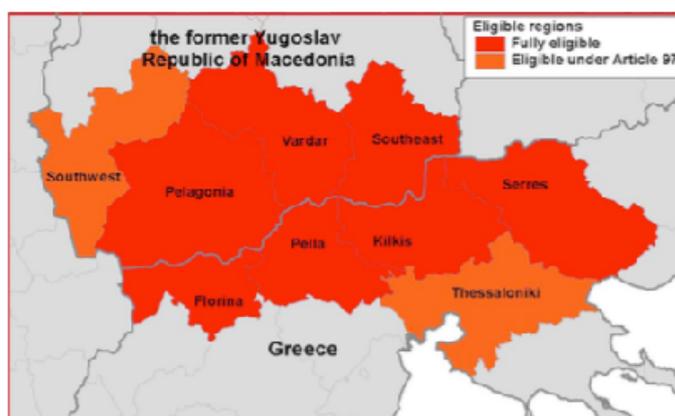
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2014).

Aside from this overall consideration, many other objectives are envisaged by this cross-frontiers programme: the promotion of good neighbourly relations, the strengthening of Union integration and the promotion of socio-economic development (Planet, 2014).

The eligible cross-border area involved in the programme comprehends the same region of the previous programme IPA I Greece- the FYROM Cross-Border Cooperation Programme 2007-2013 (Figure 1).

Figure 1 - The eligible Cross-Border areas for the IPA II Greece - the Former Yugoslav Republic of Macedonia Cross-Border Cooperation Programme 2014-2020.



Source: Planet (2014)

What specifically needs to be underlined is the IPA II CBC Programme goal of enhancing the territorial cohesion by improving living standards and employment opportunities, by holding respect to the environment and by using the natural resources for tourism through the development and support of local economy.

These aspects are some of the priorities that the current IPA II CBC Programme contemplates and they are aimed to be pursued through the assessment of different measures. These actions involve the promotion of the employment and mobility of human resources, the improvement of health, several social investments and services and the promotion and protection of natural and cultural heritage (Planet, 2014).

The IPA II CBC Programme is of utmost importance and interest as it copes with the environmental protection in terms of improved transportation, sustainable management and recycle of waste, accompanied by the purpose of sustainable management of protected areas, ecosystems and biodiversity and prevention, mitigation and management of natural disaster (Planet, 2014).

For all these reasons, it represents a significant element for the development of a possible transboundary action between the two involved bordering countries. As a matter of fact, the current cross-border programme

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stands as a key tool for the promotion of the general improvement of the attractiveness of the Greek-Macedonian cross-border area, through the enhancement and encouragement of the touristic sector and through the respect of the environment at the same time, additional fundamental aspects to be considered while developing a plausible proposal for the transboundary Dojran Lake area.

According to the Guidance recommended model for IPA II CBC Programme the environmental priorities and basic necessities in the eligible area, which need to be focused and implemented within 2020, are:

- “to halt the overexploitation of natural resources and to safeguard local biodiversity and wildlife habitats”;
- “to halt the environmental pollution and reduce the impacts of human activities on environment”;
- “to mitigate impacts and threats of climate change that affect natural ecosystems, biodiversity (such as impacts on species and wildlife habitats), and local economy (like water stress in agricultural plants, elimination of fisheries)”;
- “the protection and conservation of threatened species, habitats and ecosystems and the active involvement of citizens in environmental protection”;
- “the restoration of polluted and degraded areas and natural resources such as soil, air and water”;
- “the efficient treatment and recycling of solid waste and the effective wastewater treatment and reuse”;
- “the protection of natural resources and environment from unsustainable development and unsustainable economic activities such as forestry, mining, agriculture, livestock raising, tourism, fishing, urban expansion, industrial activities”;
- “the improvement of protection, resilience and effective management of natural disasters and the mitigation of risks and hazards related to climate change”<sup>56</sup>.

Therefore, the sustainable management of protected areas, ecosystems and biodiversity are fundamental aspects to be considered while dealing with the protection, rehabilitation and conservation of the cross-border natural heritage and the services that they provide to mankind. They also represent characteristics of crucial relevance for the Dojran watershed and for developing a plausible proposal of a specific measure implementation.

According again to the Guidance, among all the several strategic choices of the Programme many specific measures can be listed and they mainly regard the environmental protection and the sustainable management of natural resources. These measures specifically deal with the protection and restoration of threatened ecosystems, biodiversity and natural resources through the development of sustainable management or rehabilitation plans, the reduction of effects on environment through effective management, recycling and reuse of solid waste and waste waters, the promotion of innovative forms of nature based economy such as tourism, agriculture, forestry and fishing with minimum environmental impacts and within the carrying capacity of the ecosystems and the prevention and the mitigation of natural disasters<sup>57</sup>.

In addition, the Guidance underlines the outstanding relevance that the touristic sector encompasses for the

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<sup>56</sup> “Guidance recommended model for IPA II cross-border cooperation programmes”, *supra nota*.

<sup>57</sup> “Guidance recommended model for IPA II cross-border cooperation programmes”, *supra nota*.

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cross-border area under consideration, by focusing on the need of exploitation of the transboundary common natural heritage sites, such as lakes like Dojran Lake. This shared site is in fact considered as a concrete opportunity for sustainable bilateral development of tourism between Greece and the FYROM<sup>58</sup>.

What can be noted from the analysis and from the guideline provided by the described programme is that touristic facilities and their management in the transboundary area still need to be improved substantially, as already underlined by the previous programme. Access to tourist sites faces the necessity to be extended together with the development of new forms of tourism and new touristic products, with the final aim of enhancing territorial cohesion by improving living standards and employment opportunities and holding respect to the environment of the cross-border area.

Further bilateral action is still required for improving cooperation in the cross-border area in order to promote sustainable local development, environmental protection and for overcoming the critical issues of the presence of the border. A boosted cooperation is also necessary especially in the sector of water quality and management.

The IPA II CBC Programme represents a key instrument that provides a precise track of cross-border objectives to follow and to put in place for reaching the contemplated purposes in the process of development, assessment and implementation of any kind of transboundary projects.

Therefore, the described Programme stands as a concrete tool to take into account and to consider during the creation of a plausible proposal for a PES scheme in the Dojran Lake area<sup>59</sup>. It is a funding mechanism promoting environmental protection and sustainable use of resources in the cross-frontiers area where the shared lake is situated.

#### **iv.ii. The Strategic Environmental Assessment of IPA II CBC Programme and interconnections with other international and European programmes and policies.**

The evaluation of the IPA Cross-Border Cooperation Programme "Greece - the FYROM" is the general purpose of the Strategic Environmental Assessment (SEA) environmental report (Planet, 2014).

The environmental objectives contemplated in the report are taken into account having regard to a scenario of sustainable development in the eligible cross-border area and to the particular characteristics and needs of the region under study (Planet, 2014). The international and national objectives and priorities for sustainable

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<sup>58</sup> "Guidance recommended model for IPA II cross-border cooperation programmes", *supra nota*.

<sup>59</sup> See: Chapter 4.

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development and the protection of environment are also considered in the report for evaluation purposes (Planet, 2014).

The acronym SEA stands for Strategic Environmental Assessment. It indicates the “systematic and comprehensive procedure by which the environmental effects of the proposed development activities as Plans and Programmes are assessed”, through obligatory public consultation, the use of activities in order to formulate a final decision for approval and also the conduction of an environmental report, under the directions of the Directive 2001/42/EC (Planet, 2014).

The “Directive 2001/42/EC on environmental impact assessment of certain Plans and Programme”<sup>60</sup> of the European Parliament and the Council is known as SEA Directive and it is one of the document with the greatest relevance for the IPA II CBC Programme. This European Directive comprehends the high quality environmental protection through the planned resolution of environmental issues during the preparation and assessment of every Plans and Programmes and it pursues the general aim of enhancing the sustainable development<sup>61</sup>. According to the SEA Directive, the SEA environmental report is one of the Programme’s parts and the responsibility for its implementation relies on the Managing Authority of each Programme duties<sup>62</sup>.

Both Greece and the FYROM are transposing the European Directive 2001/42/EC by adopting law, criteria and *ad-hoc* strategies aiming to reach the objectives of the Directive (Planet, 2014).

More specifically and according to the Ex Ante Evaluation and the SEA of the new IPA II CBC Programme, the support of the improvement of water quality in the cross-frontiers Greek-Macedonian region could be provided by the assessment of wastewater treatment facilities and by the reduction of several pressures and impacts on environment through the correct utilization of effective treatments and the reuse of liquid and solid wastes (Planet, 2014)<sup>63</sup>.

Within the EU and beside the SEA Directive, which contributes to the general environmental impact assessment of the programme, the documents with the greatest relevance for the IPA II CBC Programme are the Europe 2020 Strategy and the Seventh Environmental Action Programme.

As a matter of fact, a specific strategy started in 2010 under the name of “Europe 2020: a strategy for smart, sustainable and inclusive growth”. The goal of promotion of a more resource-efficient, greener and more competitive economy is between its priorities of sustainable growth in order to help the EU to prosper in a more environmentally-friendly context and to foster cohesion in terms of economical, social and territorial development<sup>64</sup>.

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<sup>60</sup> “Directive 2001/42/EC on environmental impact assessment of certain Plans and Programme”, Official Journal L 197, 21/07/2001 P. 0030 – 0037, EUR-Lex, 2001.

<sup>61</sup> “Assessment of the effects of plans and programmes on the environment”, EUR-Lex, 2010. <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV:l28036>. Accessed 5 April 2015.

<sup>62</sup> “Assessment of the effects of plans and programmes on the environment”, *supra nota*.

<sup>63</sup> See: Chapter 4, Section ii and Section iii.

<sup>64</sup> “A resource-efficient Europe – Flagship initiative of the Europe 2020 Strategy”, Europe 2020, 2014. [http://ec.europa.eu/resource-efficient-europe/index\\_en.htm](http://ec.europa.eu/resource-efficient-europe/index_en.htm). Accessed 24 April 2015.

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On the other hand, the Seventh Environmental Action Programme considers priority objectives to be contemplated in the environmental policy sector in the context of the Europe 2020 Strategy. International and regional practices, aiming to turn the global economy into an inclusive green economy for what concerns sustainable development and poverty reduction, are supported by the new Seventh Environmental Action Programme, as part of the follow-up to the 2012 United Nations Conference on Sustainable Development; the Programme also deals with greenhouse gases emissions<sup>65</sup>.

At global level, the major relevant initiatives are the United Nations Conference on Sustainable Development (Rio+20) and the updated Kyoto Protocol, two other environmental projects that characterize and determine the operational context for the IPA II CBC Programme.

Rio+20 is of outstanding relevance as it copes with the concept of ensuring renewed political commitment for sustainable development as one of its main objectives: this also resulted in a precise 'political outcome document' that contains practical measures for the IPA II CBC Programme implementation<sup>66</sup>. Moreover, the necessity of achieving sustainable development by promoting sustained, inclusive and equitable economic growth was underlined again by Rio+20 (Planet, 2014). Through the Rio+20 some conference guidelines on green economy policies were also developed<sup>67</sup>.

The Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) is the other international document that provides help in the process of determination of the content of the cross-border programme among Greece and the FYROM. The UNFCCC stands for being an international environmental treaty of great relevance with the goal of preventing degenerative impacts deriving from human actions on the climate system through the assessment of obligations for developed states in terms of reduction of emissions of greenhouse gases<sup>68</sup>. As part of the Kyoto Protocol, which entered into force in 2005, many developed countries have agreed to limit their emissions of greenhouse gases over two commitment periods: the first period refers to the years 2008-2012, while the second concerns the period 2013-2020 (Planet, 2014).

All these European and international initiatives underline the European and global objective of environmental protection and sustainable development, as they set out a clear and detailed operative framework within which

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<sup>65</sup> "Decision n.1386/2013/EU of the European Parliament and of the Council of November 2013 on a General Union Environment Action Programme to 2020 'Living well, within the limits of our planet'", EUR-Lex, 2013.  
<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32013D1386>. Accessed 24 April 2015 and 19 July 2015;  
"Environment action Programme 2020", European Commission Environment, 2015.  
<http://ec.europa.eu/environment/newprg/>. Accessed 19 July 2015.

<sup>66</sup> "United Nations Conference on Sustainable Development (Rio+20)", United Nations Environment Programme, World Conservation Monitoring Centre, 2015.  
[http://old.unep-wcmc.org/united-nations-conference-on-sustainable-development-rio20\\_761.html](http://old.unep-wcmc.org/united-nations-conference-on-sustainable-development-rio20_761.html). Accessed 26 April 2015.

<sup>67</sup> "United Nations Conference on Sustainable Development Rio+20", United Nations Department of Economic and Social Affairs, Sustainable Development, Knowledge Platform, 2012.  
<https://sustainabledevelopment.un.org/rio20>. Accessed 26 April and 21 August 2015.

<sup>68</sup> "Kyoto Protocol", United Nations Framework Convention on Climate Change, 2014.  
[http://unfccc.int/kyoto\\_protocol/items/2830.php](http://unfccc.int/kyoto_protocol/items/2830.php). Accessed 26 April 2015.

every environmental projects need to be developed and assessed.

They also provide a specific scenario to be followed in order to implement a transboundary plausible proposal of the Payments for Ecosystem Service mechanism for Dojran Lake, to be added to the more local IPA II CBC Programme and to be carry out within the legal European framework proposed by the Water Framework Directive, described and discussed in the following section.

## **v. The European Water Framework Directive and status and initiatives of water management in the FYROM.**

### **v.i. The European Water Framework Directive.**

Water is a resource with a political dimension of outstanding concernment for all the deriving interests among different stakeholders, for its scarcity and as a consequence of its sharing across frontiers, aspect that emphasizes the need for cooperation and harmonization of policies in the EU (Mylopoulos and Kolokytha, 2008).

The current European 2000 Directive concern water quality and management. It is the result of a long political process in the recognition of the great importance of this natural resource and of its management across boundaries, aiming to develop shared goals and common obligations throughout all the countries of the Community at different levels.

This process of development of an European policy in the water sector initially began through the political decisions taken in a series of five Environmental Action Programmes extending over the period 1973–2000 (Chave, 2005), which were followed by the already mentioned Seventh Environmental Action Programme<sup>69</sup>.

This Environmental Action Programmes identified a number of priority issues that needed to be tackled in order to reduce water pollution and to improve the quality of natural waters in the countries of Europe, such as the control of dangerous substances, the protection of sea against pollution, the monitor of water conditions and also the development of international agreements on environmental protection measures<sup>70</sup>.

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<sup>69</sup> See: Chapter 1, Section iv.

<sup>70</sup> "Decision n. 1386/2013/EU of the European Parliament and of the Council of November 2013 on a General Union

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The Environmental Action Programme also considered that the concrete solutions to many water quality issues relied upon the efforts of more than one country acting alone where waters, rivers or the sea crossed country borders<sup>71</sup>, where endeavours were made on the base of shared interests.

Over the same period a consistent number of international conventions and protocols were developed and ratified and a more general international collaboration on protection of the marine environment was implemented. This happened through the Paris Convention, which took place in 1974, whereas two European Directives were issued in the same period as well. The Bathing Water Directive (76/160/EEC) was issued in 1975 and it sought to improve the quality of natural waters used for bathing by specifying quality limits on contaminant levels<sup>72</sup>, while the Dangerous Substances Directive (76/464/EEC) was issued in 1976 and it aimed at controlling the level of the most dangerous chemicals in the water environment by limiting the discharge of individual substances<sup>73</sup>.

Therefore, early European legislation concerning water regulation pursued the goal of dealing with primordial issues on the water quality sector, underling the great importance of the cross-bordering aspect and anticipating the future contents of the current legislation.

The water policy took a step forward with the EC in 1995 with the introduction of a new perspective on water policy. This innovation concerned the idea of considering the overall community environmental policies set out in Article 130 of the Treaty of Rome (Chave, 2005), alongside taking into account new principles coping with several diverse issues on the same topic. This Article is of utmost relevance as it contemplates not only the adoption of a high level of protection, but also the precautionary principle – the idea of adopting a precautionary approach “even in the absence of conclusive evidence of a deleterious effect caused by certain substances or activities on the water environment” (Chave, 2005) and the Polluter Pays Principle – the polluter should bear the cost of pollution<sup>74</sup>. The principle of considering costs and benefits was also contemplated in the development and assessment of cost effective management water practices (Chave, 2005).

Of notable relevance is also the aspect that the new water policy outlined the necessity of international cooperation and collaboration between bordering countries, by adopting the principle of subsidiarity, which consists of the fact that “measures that can be undertaken more effectively at member state level should not be undertaken at Community level” (Chave, 2005).

A step forward was taken in the following years. The legal progress in the water sector was as consequence of a first resolution requiring direct action to ameliorate ecological quality of surface waters in the EU in 1988

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Environment Action Programme to 2020 ‘Living well, within the limits of our planet’”, EUR-Lex, 2013.

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32013D1386>. Accessed 24 April 2015 and 19 July 2015.

<sup>71</sup> “Decision n. 1386/2013/EU of the European Parliament and of the Council of November 2013 on a General Union Environment Action Programme to 2020 ‘Living well, within the limits of our planet’”, *supra nota*.

<sup>72</sup> “Bathing Water Quality (until 2014)”, EUR-Lex, 2001.

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:l28007>. Accessed 23 August 2015.

<sup>73</sup> “Council Directive 76/464/EEC of 4 May 1976 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community”, Official Journal L 129, 18/05/1976 P. 0023 – 0029, EUR-Lex, 1976.

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31976L0464>. Accessed 23 August 2015.

<sup>74</sup> See: Chapter 3, Section iii.

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and then of a conference in 1989 (Chave, 2005). This had the impressive result of recognizing the possibility of the creation of a proposal that would deal with the ecological quality of all water bodies in Europe. The institutional action would have complemented, and not replaced, all the existing national directives in the water quality sector and it would have identified specific deadlines for the reach of particular targets concerning waters (Chave, 2005).

The vital importance of groundwater for human health and for all forms of life and ecosystems connected to it was underlined by a Council Resolution on groundwater policy in 1992, moving forward toward the 2000 Directive, whereas particular attention emerged in 1996 on the necessity of regulating the abstraction of ground-waters and on the need of monitoring freshwater quality and quantity through a proposal for an action programme (Chave, 2005). Several other official decisions and resolutions had a formative role in the development of the European current legislation, including the 1991 declaration of the Ministerial Conference on groundwater at The Hague and the results of the European Environmental Agency's state of the environment report (Mylopoulos and Kolokytha, 2008).

The final result of this historic path towards the development of a common policy was drawn with the 1997 proposal for new water directive issued by the EC, which embraced a "holistic approach to water management" (Chave, 2005). It considered both the existing and other linked legislations concerning the environment that could affect or have affected water quality and quantity (Chave, 2005).

The final version of the European Water Framework Directive (WFD) 2000/60/EC was approved by the Conciliation Committee of the Council, Parliament and EC under the principle of co-decision on 30 June 2000 and it was officially published in the Official Journal on 22 December 2000 (Mylopoulos and Kolokytha, 2008). With all its peculiarities and its specific innovative content, the Directive provided for the first time the conditions for an important reform in the European environmental legislation, as well as its management (Mylopoulos and Kolokytha, 2008). A great number of steps were, and still are, contemplated by the new water legislation and they varied from waters identification and description of their current status, to the identification of the possible sources of pollution, but also the assessment of levels of water quality alongside the implementation of focused programmes to meet these requirements within a specific deadline were included (Mylopoulos and Kolokytha, 2008).

The Directive's overall aim is to maintain and improve the aquatic environment through attention to quality issues by incorporating the control of quantity as an essential ingredient, recognizing the impact that inadequate quantity could have on the maintenance of good ecological quality (Chave, 2005).

The most important and innovative features of the Directive are:

- expanding the scope of water protection to all waters, surface waters and groundwater;
- achieving "good status" for all the European water bodies by a set deadline, which is 2015;
- water management based on river basins;
- "combined approach" of emission limit values and quality standards;
- getting the prices right;

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- getting the citizen involved more closely;
- streamlining legislation<sup>75</sup>.

The European WFD stands in this way for being a prominent example of integrated water policy at a *Communitaire* level, based on river basin management approach. Among all the objectives envisaged by the WFD, the application and implementation of basic principles of sustainable water resources management with the principles coping with effectiveness, efficiency and equity, are also included (Mylopoulos and Kolokytha, 2008).

Considering the requirements of the Directive into details, the WFD asks to carry on several actions. Each Member State is called to identify the extent and characteristics of water bodies belonging to its country, obligation consisting in a process called “characterization”, and to assess an initial risk assessment for studying the impacts on water bodies of numerous pressures (European Commission, 2003).

Even more, the WFD sets environmental objectives for the whole aquatic ecosystem, but they are therefore much broader than the objectives of the previous European Water Directives. This is because the WFD requires surface waters to “meet good ecological and chemical status by 2015” and ground-waters to “meet good chemical and quantitative status by 2015”, whereas those surface waters which are identified as Heavily Modified Water Bodies (HMWB) and Artificial Water Bodies (AWBs) must achieve “good ecological potential by 2015” (European Commission, 2003).

For the first time, the correspondence between water management and water protection is found on “a hydrogeological, geomorphological, chemical and biological point of view” (Mylopoulos and Kolokytha, 2008) and it is done on watershed integrated level, through the overcoming of boundaries. A great emphasis is put on finding a resolution over transboundary water problems jointly. The WFD foresees also an increased and always more relevant public participation in the water resource management measures (Mylopoulos and Kolokytha, 2008).

The 2002 WATECO guidance, prepared under the WFD Common Implementation Strategy (CIS), is of outstanding importance as it sets out the basis for various aspects of economic analysis to include within the WFD implementation process.

The guidance affirms that, overall, the role for economic analysis in the WFD involves several points. Among these crucial points, the economic characterization of river basin by 2004 (under Article 5), the cost-effectiveness analysis, a method of economic appraisal to be used for “identifying the best combination of methods based on the lowest cost” (European Commission, 2014) (under Article 11 and Annex III), the concept of disproportionate costs (under Article 4), through the cost-benefit analysis (CBA), which poses its basis on the idea of comparison of costs and benefits of the practice, and the concept of cost recovery and incentive

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<sup>75</sup> “Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, Official Journal L 327, 22/12/2000 P. 0001 – 0073, EUR-Lex, 2000. <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32000L0060>. Accessed 25 May, 10 July, 29 August and 5 September 2015.

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pricing (under Article 9), which consists of “putting the right price to water”<sup>76</sup> (European Commission, 2003), are included.

After the transposition to every European country national legislation has taken place, the implementation enacts with defined time frame equal for all Member States. This starts with the process of assessment of pressures and impacts and it continues with the assessment of risks, costs and benefits, the identification of objectives, the proposal of actions, the finalization of the programme of measures and the enactment of measures within and the monitor of the implementation between 2012 and 2015, with a continuous evaluation of the state of the environment (European Commission, 2003).

As a general comment deriving from the analysed evolution of the water policy in the European context towards the current Directive, what is clearly notable and worth to be re-suggested is that the Commission believes that an integrated policy on water is more than necessary and that close cooperation at all administrative levels and with the public is needed, associated with the adoption of policy provisions of preventive action, the precautionary principle and the PPP (European Commission, 2003).

Furthermore, the concept that the “causes of environmental damage should be rectified at source” has been associated to a significant relevance in the Directive. According to it, local situations have to be taken into account by utilizing different specific solutions, considering the peculiarities of different conditions throughout Member States and involving local responsibility for assessing every form of action<sup>77</sup>.

The WFD stands also for providing a powerful tool with the purpose of contributing to an increased cooperation between Member States, aside from being a legal framework envisaging the development of a common basis for the protection and sustainable use of water.

The European Law contemplates that the legal requirement of transposition of the obligations must generally take place for every Member State specifically identified by the Directive, in order to implement it (Tesauro, 2012). The WFD is addressed to all Member States and thus its transposition and implementation is required for countries wishing to join the Community.

A Directive is part of the secondary law of the EU and it is legally defined as a 'binding act'<sup>78</sup> (Article 288, Treaty on the Functioning of the European Union, TFEU). This is because it creates an obligation of result, by

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<sup>76</sup> See: Chapter 3, Section iii.

<sup>77</sup> “Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, Official Journal L 327, 22/12/2000 P. 0001 – 0073, EUR-Lex, 2000. <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32000L0060>. Accessed 25 May, 10 July, 29 August and 5 September 2015.

<sup>78</sup> “Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union - Consolidated version of the Treaty on European Union - Protocols - Declarations annexed to the Final Act of the Intergovernmental Conference which adopted the Treaty of Lisbon, signed on 13 December 2007 - Tables of equivalences”. Official Journal C 326, 26/10/2012 P. 0001 – 0390, EUR-Lex, 2012, Article 288. <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:12012E/TXT>. Accessed 20 March and 5 September 2015.

identifying a purpose that the identified Member States have to achieve according to their own capabilities by transposing it into their own legislation within a specific deadline (Tesauro, 2012). It is an instrument utilized in the process of harmonization of national legislation. It enters into force in Europe as soon as it expires, though it has not been assessed by the involved countries (Tesauro, 2012).

The numerous steps which are part of the legal transposition process vary from country to country and they depend on what is the current legislation in force, in order to enable the requirements of the Directive to be introduced within the legal national framework. Countries face also the necessity of drafting overriding law to align the existing legislation to the European one (European Commission, 2003).

The process of reviewing and revising the status of its water resources and of developing its own national strategy, associated with the measures that need to be carried out, belongs to each country's sphere of action (Mylopoulos and Kolokytha, 2008). After this process has been assessed, every measure needs to be transmitted to the EC for its scrutiny and, once transposition has taken place, practical implementation follows. The first step of identification of river basin areas can finally be assessed (European Commission, 2003).

## **v.ii. Status and initiatives of water management in the FYROM.**

Narrowing down into the FYROM's situation concerning the current water legislation, according to the Law on Organization and Work of the Public Administration<sup>79</sup>, the Ministry of Environment and Physical Planning (MoEPP) is currently in charge for the creation and implementation of the environmental policy in the FYROM and for leading all the activities in the sector of the environment (Nedanovski et al., 2012).

The Macedonian MoEPP deals with several duties, such as environmental tasks concerning the legal harmonization process, derived from the Directive, but also with the creation of national strategies and specific practical initiatives (Nedanovski et al., 2012). The Ministry is also in charge for the implementation of river basin management plans as he is the main responsible for the overall water management (Nedanovski et al., 2012).

The Macedonian country has completely transposed the WFD into the Law on Waters (Personal Communication MoEPP, 17/04/2015), secondary legislation has fully achieved the transposition of the obligations of WFD concerning river basin plan preparation but the WFD implementation has not been totally assessed yet and it is still in progress (Personal Communication MoEPP, 17/04/2015). Furthermore, the Law on Water, the National Water Strategy, the Law on Water Economies, the Law on Drinking Water Supply and the Urban Wastewater Collection and other secondary legislation have been adopted in this sector (European Environment Agency, 2015).

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<sup>79</sup> "Official Gazette of RM" No. 58/00, 44/02, 82/08, 167/10 and 51/11.

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In particular, the framework for the protection and sustainable management of water resources is provided by the 2008 national Law on Water which copes with problems concerning surface water, watercourses and lakes, whereas also underground water within an integrated policy is also regulated by the Law on Water (European Environment Agency, 2015).

Aside from national laws, some international conventions, such as the 1991 Convention on Environmental Impact Assessment in a Transboundary Context, or agreements of understanding which complement existing national legislation concerning water, can be found (European Environment Agency, 2015).

The territory of the Macedonian country includes four river basins districts and some of them have an international connotation, as they cross boundaries. Among them, the river basin of Vardar river, comprises Dojran Lake, Crn Drim, Strumica and Juzna Morava. Dojran Lake is one of the Macedonian water bodies shared with a European country.

Taking into consideration the European legislation concerning rivers and lakes that have a transboundary character in Europe, the necessity for transboundary water basin management is drawn as an aspect of significant importance in the WFD. This complex argument is regulated by articles 7 -11<sup>80</sup> of the Directive.

These articles concern the identification of all water bodies used for the abstraction of water intended for human consumption and for such future use the guarantee of the application of water treatment regime and their protection (art. 7), the monitoring of surface water status, groundwater status and protected areas (art. 8), the recovery of costs and services (art. 9), the combined approach for point and diffuse sources (art. 10) and the programme of measures (art. 11)<sup>81</sup>.

The outstanding problem that affects water bodies crossing the European borders is the effective implementation of the WFD in both countries and their transboundary water management.

On this argument, the WFD states in Article 3(3) that:

“Member States shall ensure that a river basin covering the territory of more than one Member State is assigned to an international river basin district. At the request of the Member States involved, the Commission shall act to facilitate the assigning to such international river basin districts.” (Article 3(3), WFD 2000/60/EC)<sup>82</sup>.

By ascertaining so, the Directive contemplates the assignment of a shared water body to an international river basin district with the possible intervention of the EC in the assignment process, if specifically required by the

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<sup>80</sup> "WFD – EC – Water Framework Directive – WFD – 2000/60/EC", WISE-RTD, Water Knowledge Portal, 2015.

<http://www.wise-rtd.info/en/info/ec-water-framework-directive-wfd-200060ec>. Accessed 27 April 2015 and 19 July 2015.

<sup>81</sup> "WFD – EC – Water Framework Directive – WFD – 2000/60/EC", *supra nota*;

See: Chapter 4, Section iii.

<sup>82</sup> "Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy". Official Journal L 327, 22/12/2000 P. 0001 - 0073, EUR-Lex, 2000, Article 3(3).

<http://eur-lex.europa.eu/legal-content/EN/TXT/uri=celex:32000L0060>. Accessed 25 May, 10 July, 29 August and 5 September 2015.

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Member State. The necessity of significant endeavour is included in the EC's statement in order to boost collaboration for accomplishing the WFD purposes<sup>83</sup>.

Regarding the status and initiatives of water management in the FYROM, the implementation of the WFD is still in progress and being carried out even if it was completely transposed, as mentioned (European Environment Agency, 2015; Personal Communication MoEPP, 17/04/2015).

National responsibility involves the identification of national and international River Basin Districts, the nomination of the competent authorities, the transposition of the Directive into the national legislation and the continuous report to the EC (European Environment Agency, 2015).

Moreover, between the national responsibility, the creation of CARDS 2005 project concerning the development of National Strategy for Environmental Approximation (2008) needed to be done. This is followed by the planning of documents representing the optimal route for the approximation process in order to cover the European Environment chapter of the *acquis* of the community and the identification of the costs necessary for accomplishing legal transposition and technical implementation of all environmental sectors, including water management (European Environment Agency, 2015).

Many projects have been established and carried out in the FYROM since the implementation of the WFD. For example, the Prespa Lake Watershed - Sub River Management Plan for Crn Drim River Basin District was developed in accordance with the Law on Water and the principles of integrated river basin management and it was approved by the MoEPP (United Nations Economic Commission for Europe, 2011). Furthermore, the Bregalnica River Basin Management Plan – Sub River Management plan for Vardar River Basin District, which involved the development of an institutional support and the need of fostering policy dialogue to foresee the creation of a river basin management fund to carry out an infrastructure project in the water sector, was carried out in the country (United Nations Economic Commission for Europe, 2011).

The CARDS 2003 project for the improvement of the management of transboundary water resources in the Vardar River Basin was completed in 2007 and its main objective was to provide the Macedonian responsible authorities with programme documents, designed to aid the progress of the country towards the compliance with the European WFD and ultimately lead to a boosted cross-border coordination of shared water resources with counterpart authorities in Greece (United Nations Economic Commission for Europe, 2011).

An insight of the river basins in the FYROM is provided below (Figure 2).

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<sup>83</sup> See: Chapter 4, Section iii.

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Figure 2 – River Basins in the Former Yugoslav Republic of Macedonia.



Source: Ministry of Environment and Physical Planning, 2011.

In order to accomplish the European WFD requirements and duties, the status of existing sewerage networks and wastewater treatment plants in the FYROM, as well as the need for provision of sewerage networks to collect wastewater and to build wastewater treatment plants in the territory, have been identified by the MoEPP in cooperation with local stakeholders and public utilities (Nedanovski et al., 2012).

In particular, some policies and technical priorities were taken into account by the 2006 Second National Environmental Action Plan (Nedanovski et al., 2012). Among all the priorities, some regarded various and several different aspects. Above all, water quality, such as action to finalize the legislation, the establishment of new measures concerning water resources management, the protection of water quality and the maintenance of the water levels of the three natural Macedonian lakes - Ohrid, Prespa and Dojran Lakes - in cooperation with neighboring states and the protection of the water quality of the reservoirs, especially those whose water is used for drinking water supply, recreation, sport and tourism, were considered under the Macedonian Plan (Nedanovski et al., 2012). The 2006 Environmental Action Plan outlined the great significance of different sectors in managing water resources and quality and the necessity of a transboundary action in order to succeed in the achieving of the environmental purposes of the European WFD and in the preservation of shared water bodies.

Of significant concernment for understanding the current status of water management of the FYROM is the declaration given by some experts from national statistical agencies during a working group on Environmental monitoring and Assessment (06-07 November, 2014). This regarded the introduction of advanced monitoring techniques. As a matter of fact, they declared that:

“[...] in the frame of the project “Technical assistance for strengthening the Institutional Capacities for Approximation and Implementation of Environment Legislation in the Area of Water Management”, will be developed a River Management Plan of Vardar River Basin. The River Management Plan of Vardar River

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Basin will be fully in accordance with the new Law on water and the principles of Integrated River Basin Management (IRBM). Following the provisions of the new Law on water which is fully harmonized with the European legislation and has transposed all the relevant Directives associated with the management of the water resources, the Water Framework Directive with its provisions prescribe the main principles and guidelines for overall water resources planning and management including deterioration prevention of the water bodies, promoting sustainable water use and ensuring enhanced protection and improvement of the aquatic environment” (United Nations Economic Commission for Europe, 2011).

Taking into considerations new specific parameters added for the implementation of internationally recognized reference sampling and measurement concerning chemical analysis methods, they also stated that:

“Within the above mentioned project a monitoring programme for Vardar river basin will be developed. The monitoring programme will be in fully accordance with the requirements of the Water Framework Directive (transposed in to the national Water law)” (United Nations Economic Commission for Europe, 2011).

This statement represents another additional element of the already suggested Macedonian scenario in the WFD implementation sector up to 2011. As an overall conclusion, it can be stated that transboundary water basin management on rivers and lakes in cooperation with neighbouring countries was still in preparation in 2011. This also included the Vardar River basin comprehending also Dojran Lake, even if European obligations had already been transposed in the Law on Water, as previously mentioned (Nedanovski et al, 2012).

A more updated analysis concerning the Macedonian progress towards the harmonization path in the environmental legal sector and towards the WFD implementation does not show a significant upgrade of the WFD implementation in the country. Since 2011, the preparation of river basin management plans for Dojran Lake has not been carried out and the new management cycle for the Vardar basin management plan is only planned to be assessed in the period 2021-2027. The project, conducted by the Macedonian MoEPP, will only reach an early phase of the Vardar river management plan within 2021 (Personal Communication MoEPP, 17/04/2015).

Although the power of the Macedonian MoEPP has been strengthened in the water management sector according to the report of the EC (2014), many crucial issues need to be assessed still. These problems derive from an overlapping in responsibilities and competencies between different ministries and from a lack of institutional coordination between authorities (European Commission, 2014). These factors took to delays in the action implementation, compared to the WFD deadlines (European Commission, 2014).

The country has to keep moving towards the *Communitaire* direction by beginning an appropriate implementation of the already assessed, through the initial transposition of the European Directive, but still not operational management structures for river basins, as it has already reached a proper framework for developing sustainable water management within the territory (European Commission, 2014).

The FYROM has also to cope with the fundamental necessity of additional neighbouring cooperation in

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developing and implementing measures of transboundary assessment for cross-frontiers rivers and water bodies in order to succeed in the implementation.

An overall conclusion could be proposed after the analysis of the current scenario of the Macedonian country described above.

Firstly, the FYROM should set up cooperative arrangements with neighbouring countries having experience in implementation of the WFD, aiming to achieve the WFD implementation and final goals in a faster and more effective way. These arrangements could support the country in its legal duties and obligations implementation as required by the Directive, as well as assisting it for the river basin management plans assessment (United Nations Economic Commission for Europe, 2011).

As referred in the EC's Report issued in October 2014, of particular relevance is the necessity of covering the lacks in the water monitoring system, as "preparation for infrastructure investment is lagging behind and the level of funding is insufficient to meet the current needs" (European Commission, 2014). Additional endeavours are also requested in order to carry out other legal obligations, such as the assessment of the 'polluter pays' principles and the setting up of an appropriate system for water pricing, as required by the WFD. This have to be done always by focusing on the the main objective of integrated water management<sup>84</sup>, based on the principles of sustainable development for river basins in transboundary international cooperation (European Commission, 2014).

The implementation of this sector is of utmost importance in relation to the Macedonian desire of obtaining the European membership. Since there is a lack of water basin management plan for Vardar river (and Dojran Lake), further efforts are clearly needed in achieving the aimed goals, including a cooperative action carried out with the neighbouring countries for what concerns shared water bodies management.

In this sense, the WFD could act as an effective instrument for international cooperation as it promotes and guides the management of transboundary water bodies among European and non European states (Mylopoulos and Kolokytha, 2008).

The WFD also offers an excellent tool and the formal procedure for water basin management, involving the public participation and giving an additional environmental guideline for managing transboundary water bodies and implementing common measures for the preservation of good ecological status of surface water bodies and groundwater bodies.

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<sup>84</sup> See: Chapter 3, Paragraph i.

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## **Chapter 2**

# **Ecosystem Services, Payments for Ecosystem Services and integrating the value of ecosystem services into decision-making.**

### **i. Ecosystem functions, services and Payments for Ecosystem Services.**

#### **i.i. Ecosystem functions and services.**

Biodiversity and ecosystems provide invaluable services to society. Well-functioning ecosystems are reliable sources of clean flows of water, productive soil, relatively predictable weather and many other services essential for human well-being, such as genetic resources, recreational services, flood protection, nutrient cycling and climate regulation (Millennium Ecosystem Assessment, MEA, 2005). For example, while forests supply climate regulation, erosion control and aesthetic beauty, wetlands offer protection from storms and floods and grassland supply habitat and genetic resources (MEA, 2005).

Without any doubts, ecosystem can be identified as a source for human existence as ecosystem services provide critical life support functions and benefits, contributing to human health, security, general well-being and economic growth.

Ecosystem services (ES) are defined as “the benefits that derive directly or indirectly from ecosystems” (MEA, 2005).

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Every ecosystem provides society with a wide range of services and, among these, four main categories can be counted, according to the Millennium Ecosystem Assessment analysis:

- “provisioning services” such as food, water and timber;
- “regulating services” that affect climate floods, disease, wastes and water quality;
- “cultural services” that provide recreational, aesthetic and spiritual benefits;
- “supporting services” such as soil formation, photosynthesis and nutrient cycling (MEA, 2005).

While the ecosystem can be defined as “a dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit” (UNEP, 2008), on the other hand ecosystem functions are generally referred as “the physical, chemical and biological processes or attributes that contribute to the self-maintenance of an ecosystem” (UNEP, 2008).

The self-maintenance of the ecosystem is the driver of several elements: the trapping of nutrients, the carbon cycling, the provision of wildlife habitat and many other fundamental functions. At the end of this natural cycle, the beneficial outcomes are ES and they result from ecosystem functions: this cycle is mirrored in what the ecosystem provides, such as harvesting of animals or plants, the provision of scenic views or of clean water and many others (MEA, 2005).

A more technical approach is applied by the Dictionary of Environmental Economics, defining ES as:

“the ecological functions currently perceived to support and protect human activities of production and consumption or affect the overall human wellbeing in some way” (Markandya et al., 2001).

Whichever classification is used or adopted, they all put emphasis on the value of environmental services associated with human well-being. Therefore, the idea of finding and valuing the main categories of services of an ecosystem is essential in order to implement a proper management of ecosystems and for contributing to the overall human, animal, plant and microorganism's existence.

Nowadays worldwide negative tendency shows how biodiversity is being lost and in some areas at a increasing rate: projections to 2030 appear to worsen if no efforts are put in place in this sense (Organization for Economic Co-operation and Development, OECD, 2010).

Many ecosystems and the services they provide are also under increasing pressure: as a prove of these considerations, a study of the MEA, reported by the United Nations Environment Programme (UNEP), concluded that there is evidence of an unsustainable use of more than 60% of the ecosystems in the world (UNEP, 2008).

Market failure is mainly drawn as one of the biggest cause of environmental service degradation and this failure mostly derives from the nature of ES being “externalities” or “public goods”: this represents the reason why

sub-optimal land use decisions are adopted by landowners or farmers who do not receive any incentives for conserving the ES in their normal process of land utilization (Wertz-Kanounnikoff, 2006).

Uncertainties regarding ecosystem functioning and conserving land use practices and incomplete information on environmental issues are also seen as further causes of an increasing environmental service loss (Wertz-Kanounnikoff, 2006).

Given these negative future trends, the idea of finding ways to provide the 'right' incentives for encouraging the sustainable use of these ES appears to be necessary in order to create an efficient support for restoration and for boosting a sustainable ecosystem use throughout the encouragement of both the ES beneficiaries and providers.

This idyllic scenario can be fully understood only by considering a simple but leading reason: ES have a quantifiable economic value and this value can be used to boost investment in restoration and maintenance (UNEP, 2008), so to say that ecosystem valuation represents the mechanism of expressing a value for ecosystem goods or services (Farber, et al., 2002).

While the structure and functions of ecosystems are value-neutral, their services have value to society and some of the values may be measured with money: in fact, ecosystem can be considered as a perfect link between nature and society, aside from being essential for human existence, "the reason why humans place value on ES" (Farber et al., 2002; Limburg et al., 2002).

The measure of the value of ES and goods can be identified by considering the concept of valuation in its general form, consisting in "a measure of contribution of something to a condition or objective" (Limburg et al., 2002).

Economic valuation is essentially the concept of establishing the determination of the difference something makes to the well-being (Limburg et al., 2002). All valuation schemes make assumptions about the state of the system and its behaviour when perturbed, which means when an interaction with the ecosystem is taking place (Limburg et al., 2002)<sup>85</sup>.

### **i.ii. Payments for Ecosystem Services.**

The concept of being interested in addressing specific environmental issues is the main driver of Payments for Ecosystem Services (PES)<sup>86</sup> deals.

These mechanisms are of notable relevance as they comprise a significant potential to enhance sustainable

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<sup>85</sup> See: Chapter 2, Section ii and Section iii, where a further analysis of the evaluation system is developed.

<sup>86</sup> Even if the concept remains identical, "E" in PES refers to three different meanings: 'Environmental', 'Ecological' or 'Ecosystem'. Either way in the current literature, the term 'Environmental' is the most commonly utilized, but the three terms are often used interchangeably.

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ecosystem management through the delineation of a new source of income for ES providers for adopting land management, restoration, conservation and sustainable-use activities (UNEP, 2008). Therefore, a PES scheme could be an ideal tool for supporting the important aim of halting and reducing the rate of biodiversity loss and it can provide help in boosting the goals of conservation, restoration and sustainable ecosystem management.

A clarifying definition for PES has been developed by Sven Wunder (2005), in which he identifies these payment schemes as follow.

“A payment for environmental services scheme (PES) is a *voluntary* transaction in which a *well-defined* environmental service (ES), or a form of land use likely to secure that service is bought by at least one environmental service *buyer* from a minimum of one environmental service *provider*, if and only if the provider continues to supply that service (*conditionality*)” (Wunder, 2005)<sup>87</sup>.

According to the definition provided by Wunder, five emblematic features characterize a PES system:

1. **Voluntariness**

PES is a totally voluntary negotiated deal;

2. **Clearness**

what is being bought must be well-defined and it must be clear on the mind of both the ES buyer and provider;

3. **Presence of the ES buyer(s)**

there should be a transfer of resources from at least one ES buyer;

4. **Presence of the ES provider(s)**

the transfer of resources is addressed to at least one ES provider, directly or through an intermediary;

5. **Conditionality**

the prerequisite of conditionality between service provision and payment is established from the aspect that payments by the ES buyers must be contingent on the service being provided continuously for the duration of the contract period (UNEP, 2008)<sup>88</sup>.

PES as a policy solution pursues to integrate ES into markets reflecting their social and economic values (Wunder, 2005). But while 'provisioning' services are well represented into society, markets often do not support and implement the mechanism for 'regulating', 'supporting' and 'cultural' services (Farber et al., 2002). Several markets are emerging for ES in numerous countries around the world in response to the already mentioned growing concern that over 60% of the environmental services are being degraded faster than they can recover: it is notable that formal markets now exist related to greenhouse gases (carbon), water, and even

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<sup>87</sup> quoted on CIFOR website. Available at:

[http://www.cifor.cgiar.org/pes/\\_ref/about/index.htm](http://www.cifor.cgiar.org/pes/_ref/about/index.htm). Accessed 10 April and 31 August 2015.

<sup>88</sup> See: Chapter 2, Section iii.

biodiversity (UNEP et al., 2008). In addition, particular PES mechanisms are also being forged to invest in restoration and maintenance of specific ecological systems and of services that they provide: in fact, the peculiar characteristic of these PES deals is that their focus consists on maintaining a flow of a specified ecosystem 'service' such as clean water, biodiversity habitat or carbon sequestration capabilities, in exchange for something of economic value (UNEP, 2008).

The main key-idea underneath that generates the great importance of these schemes is that the "payment causes the benefit to occur where it would not have otherwise" (UNEP, 2008), with the objective of supporting ES through a system that allows the provision of the ES under discussion in a cost-efficient way through the use of sustainable land use practices (UNEP, 2008).

Compared with other measures adopted for environmental objectives, PES schemes can deal with the additional possibility of comprehending larger earnings in cost-effectiveness, as they are voluntary, incentive-based instruments (OECD, 2010).

There is no general definition of how a PES scheme should be structured and applied and a great diversity of PES models can be found according to the scientific literature. The mechanism can also be specifically categorized on the basis of two elements among others: of the ES of interest and of the type of payment.

Three main types of market for PES can be counted and the application of these schemes, tailored to local needs and to the specific context under consideration, can be studied as a combination of the different approaches listed below.

#### **1. Public payment schemes for private land owners**

This represents a specific category of PES and it is usually associated with a situation when governments have assessed precise programmes; it also comprehends direct payments from public institutions or government addressed to landowners and managers by utilizing various methods of payments such as user fees, land purchase and land easement (UNEP, 2008).

#### **2. Formal markets with open trading between buyers and sellers, established through legislation that creates demand for a particular ES by setting a cap on the damage**

In this case, the government usually sets the initial standards and allocation of rights but ES buyers and sellers can be defined both by the legislation or voluntarily; if voluntarily, the mechanism is based on private payments as buyers are motivated to engage in the voluntary market to enhance their brands, if companies, or to anticipate new regulation in response to economic pressure or other motivations, if organizations (UNEP, 2008). This mechanism of payment moves from the use of tradable permits to credits and ES are most likely related to private goods such as groundwater extraction and air pollution (UNEP, 2008).

#### **3. Self-organized private deals in which individual beneficiaries of ES contract directly with providers of those services**

This mechanism of payment can usually be in the form of transfer payments, land purchase and cost sharing and it can involve ES related to private goods like the maintenance of watershed services (UNEP, 2008). This type is characterized by being the one with the lowest level of government intervention (UNEP, 2008).

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The participation of stakeholders in the process of developing PES schemes is generally of crucial importance for the identification of ES, which are of interest to beneficiaries. Local beneficiaries such as water users in the area, national beneficiaries as the state or business associations, or international beneficiaries such as multinational associations or organizations, can be counted among all the long category of ES beneficiaries.

As mentioned, the overall aim of PES schemes is to offer economic incentives in order to foster a more efficient and sustainable use of ES. In many situations so, PES can reflect new incentives for sustainable management of the ES (Food and Agricultural Organization of the United Nations, FAO, 2011; UNEP, 2008), especially where local inhabitants earn their living from natural resource-based activities, such as fishing and farming.

As a matter of fact, this mechanism can create opportunities as it can be designed as a tool that enables low and middle income people to earn money by restoring, conserving and managing the ecosystem in a sustainable way (FAO, 2011; UNEP, 2008). The promotion of sustainable use of the ecosystem over the long term could be enhanced by incentives in form of additional income to the regular one or increased employment opportunities in the community: this is referred as 'ripple effect', an “extra benefit that flows to other beneficiaries who are not comprised in the PES scheme” (UNEP, 2008). This effect, deriving from the assessment of a PES scheme in a precise area, can lead to an enhanced local economic development and improved natural resource productivity (UNEP, 2008).

By carefully considering the benefits that a community, group or individual sellers of ES are interested in during the design stage of a PES deal, communities can also be likely to derive additional indirect positive benefits from the 'regulating' and 'supporting' services these ecosystems deliver, as to say water purification, natural hazard buffering, flood regulation and others.

Different kind of purposes can be taken into consideration by focusing on the long or short term. The goals of improving resilience of local ecosystems and flow of ES and of developing potential for a higher productivity of a land due to ES investments could be implemented in the long-term period, whereas an increased knowledge on sustainable resource use practices, through training and technical assistance associated with a proper PES deal implementation, is an ideal view of the main objectives that PES mechanisms aim to in the short-term (UNEP, 2008). This is also associated not only with increased cash income, but also with an expanded experience of the business activities in the area (UNEP, 2008).

On the other hand, PES agreements present some risks and issues to cope with such as the fact that “they are not feasible everywhere”: where lack of transparency and institutional problems are relevant or where accesses to resources or their ownership is difficult or contended those schemes are hard to assess (UNEP, 2008).

According to the UNEP's analysis (2008), a risk assessment should be carried out in order to sharpen where these risks are relevant to a specific site and what are the situations in which PES deals are most likely to succeed, for avoiding loss of unemployment or of rights, enhanced competition for lands and minimized

benefits deriving from poorly designed PES schemes.

The development of a general PES scheme usually follows four core steps:

1. firstly, the identification of ES prospects and potential buyers, who benefit from the service, is the initial step. This comprises the aspect of defining, measuring and assessing the ES in a particular area, determining marketable value and considering whether to sell as individuals or as a group;
2. secondly, the assessment of institutional and technical capacity, through the assessment of legal, policy and land ownership context, is the second phase, where the examination of existing rules for PES markets and deals, as well as the control of available PES support services and organizations, are essential elements;
3. thirdly, structuring agreements envisaging the design of management and business plans to provide the ES, that is the focus of the PES deal, is the following phase. In this case, the reduction of transaction costs, the review of options for payment types, the establishment of the equity and fairness criteria for evaluating payment options and the selection of a contract type are the main elements that need to be assessed;
4. lastly, the development consisting in the implementation of PES deals which involves finalizing the PES management plan, verifying its delivery and its benefits and monitoring and evaluating the deal, is the final core step (UNEP, 2008).

A fundamental step in the design of every PES schemes contemplates the creation of a financial mechanism, which should consider one of the most challenging tasks in the elaboration of every PES agreement: the idea of addressing the value of the ES under consideration (Wertz-Kanounnikoff, 2006). As previously stated, the ES valuation process consists of an economic analysis and of the participatory involvement of stakeholders, alongside ES providers and beneficiaries, with the “attempt of establishing efficient and incentive-driven contributions” (Wertz-Kanounnikoff, 2006). These money-based incentives need to be acceptable to ES beneficiaries and at least sufficient for covering the cost of conservation and opportunity cost supported by the ES service supplier (Wertz-Kanounnikoff, 2006).

Another relevant objective that needs to be achieved during the development of the financial mechanism in the PES scheme is the generation of a continuous flow of financial capital into the system, in order to sustain its functions in a long term period: in this context the biggest costs to deal with encompass the developing of the system, payments to landowners and on going management costs (FAO, 2011).

PES schemes stand as a way to seek the capture of at least part of the benefits derived from environmental services, such as clean water for example, and to channel them to the ES provider, who in the case of watershed could be a landowner. Therefore, PES mechanisms provide the landowner with the proper and right incentives to maintain a healthy ecosystem through the address of funds that can be used to finance conservation projects.

## **ii. Wetlands: ecosystem functions, ecology - economy interface, economic value and distribution of benefits.**

Generally, wetlands provide a large production of ES such as recreational amenities, flood control, storm buffering, biodiversity, climate regulation and socio-cultural values (MEA, 2005).

Wetlands are usually associated with the presence of a wide fauna with several endemic species: in fact, the crucial importance of these ecosystems is found in the peculiarity that they consist of not only a support to biodiversity by giving habitat to a long list of species, such as internationally recognized migratory water birds, but they also contribute to their primary productivity (Newcome et al., 2005).

The great relevance of wetlands derives from all the goods and services they provide, which are of considerable value to society (OECD, 2010).

In the process of identification of the economic value of ecosystem several aspects come into play.

The first step is the clarification of the term 'economic value': this is referred to the statement of "how much relevance is associated on specific ecosystems by individuals" (Newcome et al., 2005). What is measured is the growth in human well-being given by the generated benefits to human populations, deriving from outputs of goods and services and resulting from ecosystems and their functions (Newcome et al., 2005; Limburg et al., 2002). The significance of ecosystems includes income generated from using ecosystem goods and services and all the other benefits provided by for human welfare such as financial, social, environmental and health benefits (Limburg et al., 2002).

The Total Ecosystem Value (TEV) is a measure deriving from individual preferences and it is expressed through the individual's purchasing behaviour: this can be associated with the Willingness To Pay (WTP) for the benefits the individuals derive from consuming that good or service, so to say the price paid in markets for such good or service, or the Willingness To Accept (WTA) a compensation for a given behaviour (Newcome et al., 2005).

As previously mentioned, the big challenge is mainly given by the fact that many ES are not traded in markets and they do not have a price, hence markets usually fail or they have to face relevant issues in order to incorporate the full economic value of an ecosystem (OECD, 2010). This emblematic problem leads to the necessity of adopting a method of economic valuation for estimating these 'non-market' or 'external' benefits of ecosystem goods and services which are not traded in markets.

Therefore, in the process of identification of the TEV of an ecosystem, direct use values, indirect use values and non-use values need to be included so that even an ES that is not traded in market can be associated to

a value. The definition of these different values and a detailed reference to the values deriving from wetlands goods and services is provided below:

- **Direct use values**

These values can be consumptive or non-consumptive as they involve human interaction and some direct contact with the ecosystem/wetland itself (Newcome et al., 2005). They usually derive from the actual use of the good or service under question<sup>89</sup>.

While wetlands goods are derived from the direct utilization of wetland flora and fauna, wetland services result from ecosystem processes which support and protect human activities: for example, direct uses include several value components in terms of goods and services comprising livestock and cultivation, fisheries, fibre for construction and handicraft production and fuel wood, but also hunting for water fowl and other wildlife, aesthetic value of wetlands and recreation (Newcome et al., 2005). In this case, the ES beneficiaries are most likely to be local inhabitants even if this category also contemplates visitors and travellers, whereas all these goods and services of direct use are usually associated with local and regional benefits, with the exception of recreation whose benefits can be global (Newcome et al., 2005).

- **Indirect use values**

These values derive from the service provided by the ecosystem and their peculiarity consists of the aspect that the indirect use values are usually perceived from “an input that helps to produce something else that people use directly”<sup>90</sup>: among them, storm buffering, flood water storage and stream flow regulation, erosion control through wetland vegetation, carbon sequestration, water flow, sediment and nutrient cycling and water quality improvements can be listed (Newcome et al., 2005). They are characterized by being all goods and services with local and regional effects, with the exception of carbon sequestration whose indirect benefits, such as climate change and mitigation, have global effects (Newcome et al., 2005).

- **Non-use values**

These values are associated with benefits given by the knowledge that the ecosystem is maintained (Newcome et al., 2005). They are of various nature and they can contemplate: the existence value -the satisfaction of knowing that ecosystems continue to exist or the so-called intrinsic value-, the bequest value -the acknowledgement that the ecosystem and their services will be passed on to descendants in order to keep the chance for them to enjoy it in the future alive- and the altruistic value -so to say the knowledge that other people can currently enjoy the goods and services that ecosystems provide- (Newcome et al., 2005).

Other non-use values are associated with cultural knowledge and traditions, which can be connected to concepts of local, regional and global benefits (Newcome et al., 2005).

- **Option-value**

Another category of not immediate association with the distinction between use values and non-use values can be mentioned in this list: it is the option-value, which refers to the concept that an individual derives

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<sup>89</sup> "Valuation of Ecosystem Services", Ecosystem Valuation, King, D.M., Mazzotta, M.J., 2000. <http://www.ecosystemvaluation.org/1-02.htm>. Accessed 1 June and 10 September 2015.

<sup>90</sup> "Valuation of Ecosystem Services", *supra nota*.

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satisfaction from the awareness “that a certain ES will be available for his/her own utilization in the future” (Newcome et al., 2005).

For the wetland ecosystem specifically, this value includes all the future direct and indirect use of the above goods and services, completed with local, regional and global benefits (Newcome et al., 2005).

**Benefits derived off-site**

In addition to the values reported above, wetland services are generally associated with benefits that are derived off-site: for example, this type of benefit can encompass the idea of improvement the water quality of a water body downstream through the nutrient cycling of a wetland, otherwise it can envisage the aspect of prevention of flooding both upstream and downstream through the storage of flood water within a specific wetland (Newcome et al., 2005).

The objective of gathering the necessary information for developing and adopting more sustainable environmental measures is carried out by expressing the economic value in terms of money of ecosystem goods and services, so that they can be compared more easily and efficiently and they can be integrated in a process of decision-making.

Therefore, in this context the development of these PES offers the potential method with which more of the economic values of the wetland can be captured: this can be assessed through the creation of markets to ensure that the “provision of ecosystem goods and services through sustainable management practices is rewarded” (Wertz-Kanounnikoff, 2006). The identification of the interested areas and the implementation of these systems with the involvement of a broad range of stakeholders at a regional and global level through the correct involvement of the direct users and local community relying on wetlands for their livelihood and interests could function as a mechanism which can allow the resolution of wetland degradation, if correctively assessed.

The concept of identification of the TEV can be applied to river or lake catchments with transboundary nature and extended across countries touched by the wetland, as for the case study of this thesis the transboundary Dojran Lake.

### **iii. Integrating the value of ecosystem services into decision-making: positive incentives and conditionality for the Payments for Ecosystem Services approach.**

Considering and measuring the value of ES for the purpose of decision-making are two difficult concepts to fully understand and to carry out in order to proceed with the efficient and proper implementation of every PES system in a designed area. Because of its wide complexity, the process of integrating the value of ES into decision-making and policies can involve various levels and factors, from local to regional but also to global.

When dealing with the issue of how to incorporate the importance of ecosystem goods and services in economic decisions, four factors need to be taken into account above all:

1. the understanding of the ecological functions that ecosystem goods and services produce between the already mentioned ecological outcomes like ecosystem goods, purification and detoxification, cycling processes, regulation and stabilization, habitat provision, regeneration and production and information or life-fulfilling (MEA, 2005);
2. the focus on the ecology and economics interface: this factor contemplates the identification of all the goods and services that are directly supplied, indirectly provided or influenced by human activities in a positive or negative way;
3. the definition and quantification, if possible, of the economic value or benefit of these goods and services, by taking into account every component of the TEV consisting in direct use values, indirect use values and non-use values;
4. the distribution of benefits of ecosystem goods and services among different beneficiary groups and among time periods as well as the identification of different stakeholders (Newcome et al., 2005).

The last factor contemplates the relevant aspect of the identification of the temporal distribution of ecosystem benefits -on a short and long term-, the spatial distribution -over a local, regional and global space-, alongside the beneficiaries (Newcome et al., 2005).

In this way, the list of factors delineated above constitutes also a clear trail to follow when assessing the pros and cons of resource-use decisions.

By referring to the third factor 'Definition and quantification of the economic value' while incorporating the concept of ecosystem goods and services into any environmental policy measures, what is of notable relevance is that all the processes of integration of the value of ES into decision-making deal with the evaluation of the ES through the assessment of the TEV.

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A widespread number of methods can be reported in order to translate economic and some socio-cultural values of ES into monetary values, according to the nature of these ecosystem goods and services.

Generally, market prices, or marginal values, are mostly applied to many ES and especially to the 'provisioning' services such as water and timber, whose value-price can be considered of easy assessment as these ES are often object of market transactions. On the other hand, an indirect way is used to express the values of other ES corresponding, for example, to 'the avoided damage cost' method for 'regulating' services, which is the idea of estimating values of ES on the basis of the "costs of avoiding damages due to lost services"<sup>91</sup>. Other possibilities are 'the hedonic pricing' or 'the travel cost' methods for some 'cultural' services such as scenic beauty (De Groot et al., 2009): the first copes with "variations in housing prices that reflect the value of local environmental attributes"<sup>92</sup>, while the second estimates use values associated with ecosystems or areas utilized for recreation, considering the economic benefits resulting from changes in environmental quality at a recreational site<sup>93</sup>.

On the other hand, the 'contingent valuation' method consisting in "measuring preferences based on questionnaires" (De Groot et al., 2009) and the 'benefit transfer' method which is "using data from comparable studies" (De Groot et al., 2009) provide other alternatives in the definition of the monetary values of the ES which cannot be inferred through other methods as they are characterized only by non-use values (De Groot et al., 2009).

Either way, the integration of the concept of ES into everyday landscape planning, management and decision making is particularly complex and it involves many issues and several crucial factors which need be analysed and taken into consideration. As decision makers have to deal with a clear and explicit demand for ES from a broad range of stakeholders, ecosystem functions and services have become an important aspect in policy making and they influence this process.

Among the wide list of different definitions of PES agreements, these peculiar types of payments can also be drawn as particular approaches that aim to transfer positive incentives to environmental service providers that are "conditional on the provision of the service" (Sommerville et al., 2009), where successful implementation is based on considerations on the additionality criterion and on variable and diverse institutional contexts.

Incentives are immense relevance in this field of study as they are usually associated with those drivers that can influence a decision maker's motivation to engage –in this case they are considered as positive incentives and the decision makers perceives them as a sort of gain- or not engage –in this case they are seen as negative incentives and the decision makers perceives them as a sort of loss- in a designed action (Sommerville et al., 2009).

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<sup>91</sup> "Damage Cost Avoided, Replacement Cost and Substitute Cost Method", Ecosystem Valuation, King, D.M., Mazzotta, M.J., 2000.

[http://www.ecosystemvaluation.org/cost\\_avoided.htm](http://www.ecosystemvaluation.org/cost_avoided.htm). Accessed 10 July 2015.

<sup>92</sup> "Hedonic Pricing Method", Ecosystem Valuation, King, D.M., Mazzotta, M.J., 2000.

[http://www.ecosystemvaluation.org/hedonic\\_pricing.htm](http://www.ecosystemvaluation.org/hedonic_pricing.htm). Accessed 10 July 2015.

<sup>93</sup> See: Chapter 4, Section i.

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Therefore, aside from being drawn as regulation or “legal enforcement influencers” (Sommerville et al., 2009), positive incentives should also be a key factor in designing PES schemes and programmes by involving a material compensation or an additional reward for individuals based on opportunity costs incurred by giving up a environmental damaging behaviour, which is negative to the service delivery, or for adopting positive measures to increase or maintain the designed ES delivery.

Conditionality is undoubtedly another crucial criterion of great relevance while considering the functioning of the PES mechanism as it defines the essence of the PES intervention associated with the characteristic of additionality.

As mentioned, conditionality refers to the chance of verifying the outcomes from the “actions undertaken to maintain the ES for which it has been paid” (Wunder, 2005). The definition of conditionality encompasses the demonstration of all the impacts of an intervention which means whether the service provider has met and respect the conditions of the agreement under consideration. This criterion is regarded as an important factor because it is considered as being “the core method for motivating service provision in a PES system” (Sommerville et al., 2009), aside from standing for the notable significance attributed to the peculiar role played by positive incentives in decision planning and policy making.

Moreover, a consideration of additionality is needed in this context in order to ensure that a specific environmental PES intervention will have a measurable impact, as it is essential for identifying interventions consequences. This criterion, of great interest among stakeholders and funders, is defined into as a 'no option' scenario: it refers to “the measurement of outcomes in relation to what would have occurred in the absence of the intervention” (Sommerville et al., 2009).

Although the decision as to whether to make incentives conditional on measurements of the ES itself or of the actions taken by providers is fundamental for those designing PES interventions, the ultimate effectiveness of the PES action and the practice are generally guided by the institutional structure.

The positive driving force that motivates decision-making processes over resource-use procedures and measures is the idea of giving positive incentives and thus it represents the fundamental and ideal basis for the PES scheme assessment, while the practical and methodological core of the agreement is linked to the idea of making these incentives conditional on the monitored provision of a given service (Sommerville et al., 2009). On the contrary, additionality is the demonstration of positive benefits additional to those that would have incurred without the PES implementation and it stands for being an aspiration for PES interventions and for the decision-making process behind and it can be identified as a driver of the scheme (Sommerville et al., 2009).

Another consideration can be carried out while considering the concept of understanding connections when developing PES schemes for watershed services and management.

This can be found in the idea that PES systems have the significant role in the process of creating a line

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between ES providers and beneficiaries through the desire of connecting watershed management to downstream impacts and, therefore, of linking interests and motivations of upstream and downstream stakeholders. In this scenario, values for watershed services have to be attached to decision-making in watershed in order to be effective (Smith et al., 2006).

From this concept, the idea of creating connections between single needs and welfare of downstream users of water resources to the practices of managers responsible for not only upstream waterways but also for land management, appears consequential if applied to watershed management. Thus, connecting economic interests of downstream fishers, irrigators, dam operators and water supply companies to decision-making by distant upstream farmers, foresters and land-use planners (Smith et al., 2006) can help providing the agreement with connotations of effectiveness and successfulness over time.

The process of recognition of the downstream benefits of watershed services, connected also with the additionality and conditionality concepts delineated above and the incentive-based mechanism, is the motivation for trying to influence decision-making and management upstream (Smith et al., 2006).

Lastly, considering the potential sources of PES finance and how finance for PES can best be mobilized given the previous scenario, the ideal way derives directly from the ES users themselves or from third-parties acting on the behalf of beneficiaries, such as governments or institutions. However, how finance for PES can best be mobilized may depend on the geographic scale of the ES benefits (OECD, 2010).

For example, two situations can ideally be delineated while dealing with financial interventions. Primarily, finances can be mobilized at a local level from the users directly if the goal is to address the local public good benefits of ES; secondarily, if the main goal is to address regional and global public good benefits, the most appropriate financial source may be via governments or institutions at a national and at an international level, respectively (OECD, 2010).

The criteria listed above for designing and implementing effective local and national PES programmes are also relevant for the establishment of International Payments for Ecosystem Services programmes (IPES).

The main difference between PES and IPES is the aspect that IPES systems are likely to involve the need for a broader and cross-border institutional capacity including the one happening at international level (Newcome et al., 2005) in terms of assessing the scheme, monitoring it, verifying it and reviewing the general process. Instead, the basilar fundamentals for a cost-effective PES scheme, such as appropriate methods for targeting ES, remain the same even at an international level.

On the other hand, while considering the best way for mobilizing international finance for water services in order to complement existing local and national PES programmes that target water benefits, it has to be kept in mind that the benefits of the ES can be at local, regional and global scales and relevant conflicting demands between stakeholders at these different levels can be found (Newcome et al., 2005). This is another significant aspect to be considered while assessing a PES scheme for watershed management at international level. Finally, while assessing a PES scheme for watershed management at international level an institutional

coordination between the involved countries and cross-border cooperation are other two relevant aspects to be considered and well assessed.

#### **iv. Payments for Ecosystem Services for biodiversity conservation and watershed services.**

Ecosystems and the biological diversity contained within them provide a wide stream of goods and services the continued delivery of which remains essential for our economic prosperity and for other aspects of our welfare, aside from helping and sustaining human life through natural ecosystems and the species that they contain.

As previously stated, the reason behind the idea of developing a PES agreement lies on the purpose of providing sustainable economic growth and ecological restoration of an area. PES are specific deals characterized by a user or beneficiary of an ES who provides payments to individuals or communities whose management decisions influence the provision of ES under consideration (FAO, 2011).

The entire literature evolved around this environmental concept starts at the very beginning from the theory that “nature has provided and always provides these services for free while consumption of ecosystem goods is favoured over conservation” (UNEP, 2008). On this wave, markets have to address their forces towards investments in the production of both ES and ecosystem goods, as increased investments in ES indubitably lead to increased production of ecosystem goods with the consequence that the cycle is completed and repeatable. PES agreements can thus play a role in this environmental process, by fuelling ecological restoration and sustainable economic growth of the area under consideration.

Generally, four types of ES are frequently and specifically reported as being subject to PES agreements. Among the long list of PES schemes that can be found, PES for biodiversity conservation, for watershed services, for carbon sequestration services, for scenic beauty -the so called eco-tourism-, but also for bundled services such as land trusts, conservation easements and many more can be counted.

Considering the environmental services subject of these payment methods, water services present the most relevant subject to PES schemes for the purpose of this analysis.

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As regard as carbon sequestration, forest ecosystems are identified as the most important providers of carbon sequestration services, even if a crucial challenge given by high transaction costs and uncertainties regarding international carbon-trading rules and long-term effectiveness can be reported from their assessment (Wertz-Kanounnikoff, 2006).

Instead, landscape or scenic beauty are provided by all natural ecosystems and the valorisation of these specific types of services can rely on various financial sources deriving from diverse beneficiaries. Either way, for the aspect that one of the major characteristics of these service is the below-cost pricing, they are likely to be based on government provision, aspect that can consist of a factor of limitation to the internalization of these services (Wertz-Kanounnikoff, 2006).

PES mechanisms for biodiversity conservation services particularly raise where “scientific evidence of biodiversity importance in ensuring reliable access to natural resources” can be found (Wertz-Kanounnikoff, 2006).

Given the reported outstanding negative trends of a continued biodiversity loss according to OECD projections to 2030<sup>94</sup>, the urgent need for a greater application of policies and of incentives to promote the conservation and sustainable use of biodiversity and ES and for a more efficient use of available finance in existing biodiversity programmes appears to be inevitable (OECD, 2010). As mentioned, PES systems can play an important role in this conservative and sustainable process for being a flexible, incentive-based mechanism, which can be focused on biodiversity conservation practices.

As for scenic beauty, biodiversity conservation services are provided by all natural ecosystems as well (Wertz-Kanounnikoff, 2006). As regard as their intangible nature, the uncertainties regarding their service provision and the fact that beneficiaries are not always clearly identifiable and quantifiable, the process of biodiversity valorisation is characterised by connotations of challenge (Wertz-Kanounnikoff, 2006). They are also often subject to high transaction costs with the result that, up to now, these ES are also less frequently internalized (Wertz-Kanounnikoff, 2006). However, while one approach in these services valorisation consists of remunerations for the conservation of an ecosystem in its original state such as sought by conservation easements, an another instrument adopted in this field consists of internalizing biodiversity conservation services through 'biodiversity offset' requirements (Wertz-Kanounnikoff, 2006). These involve land developers to compensate for the unavoidable harm to biodiversity. The last instrument constitutes a link to the Polluter Pays Principle of the WFD<sup>95</sup> implementation, hence underlining a possible integration of the PES instrument with the European Directive.

Either way, PES systems for biodiversity conservation services can aim to several purposes. For example, all the objectives of establishing biological corridors and of creating and strengthening protected areas, of replanting degraded areas with native species, of removing invasive alien species, of minimizing the need for fertilizers and pesticides, of managing biodiversity to maintain quality agricultural products and ensure pest

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<sup>94</sup> See: Chapter 2, Section i.

<sup>95</sup> See: Chapter 3, Section iii, where a further analysis of this aspect is provided.

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control, pollination, genetic resources, habitats and preserve cultural, spiritual or aesthetic areas, are included (Wertz-Kanounnikoff, 2006).

PES schemes for watershed services is another category of PES of outstanding relevance in the development for the purpose of this analysis as this category is connected to the case study of Dojran Lake<sup>96</sup>.

These particular mechanisms are reported where scientific evidence associated with water quantity and quality issues can be found, alongside where concerns are rising over future water availability or where the awareness of the necessity of growing regional and national political pressure for taking urgent action on water issues is perceived (Wertz-Kanounnikoff, 2006). This category refers also to a wide list of services such as flood control or water quality control which are related to specific natural ecosystems such as forests and freshwaters (Wertz-Kanounnikoff, 2006).

PES systems for watershed services contemplate, as the main market driver, the great interest in finding and implementing new mechanisms for protecting water quality and quantity (The World Bank, 2007). They reflect one of the nowadays biggest worldwide challenge and they stand in this way for being a mirror of the overall goal of the European WFD, a great possibility for its implementation among the Member States and the main source of finance for its measures (COWI, 2015)<sup>97</sup>.

In this case, considering the characteristics of this specific category, providers and receivers could be associated with not only landowners in the forest, agriculture or wetland sector or private agencies, but also municipalities, government agencies or farming cooperative members (The World Bank, 2007). On the other hand, intermediaries may vary from brokerages or regulators to policy-makers, investors, trade associations or also development agencies. As regard as the other side of the transaction, not only private buyers in regulated markets or government, but also private buyers in regulated markets or voluntary private buyers can be identified as the subjects who pay for the ES (The World Bank, 2007).

The many opportunities for landowners and the potential risks that can be an obstacle in the development of these schemes are similar to the ones reported in the previous section of this chapter, from increased cash income and increased knowledge of sustainable resource use practices as short-term opportunities, to improved resilience of ecosystems as a long-term chance and to potential loss of rights to harvest products and unfair outcomes to grown-up competition for land and performance risk (Newcome et al., 2005).

The key criterion that necessarily must be addressed in a general PES programme either for carbon sequestration services, for scenic beauty, for water services or others, crucially depends on the programme design and implementation of the system.

The ideal scenario, in order to have the desired final results, should contemplate a PES assessment starting from a clear definition of rights and objectives, moving then to the development of a solid monitoring system and framework reporting. This would allow not only its improvement over time, but also transparency and

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<sup>96</sup> See: Chapter 4, Section i.

<sup>97</sup> See: Chapter 3, Section iii.

disconnections from any political influences. Even more, the ideal PES implementation should be accompanied by the identification of the target ecosystem benefits and of the ES buyers and providers and by the establishment of baselines and target payments to ES that are at risk of loss, through the enhancement of their provision (OECD, 2010).

All this process should be carried out with the identification of sufficient and long-term sources of financing in order to ensure that the desired PES objectives can be pursued in the established way.

## **v. Examples of Payments for Ecosystem Services initiatives for watershed services.**

The concept of PES has emerged over the past ten years and it is expected that it will gain further relevance in the near future. This mechanism has been largely implemented across various environments as it can involve multiple and complex ecosystems as well as several services provided by them.

As a matter of fact, the literature on PES systems has grown substantially such as the number of practical experiences that have been implemented around the world. For having an example in this sense, markets concerning forest environmental services are expected to increase over the next twenty years while similar tendencies can be also expected to be reported for other environmental services (Wertz-Kanounnikoff, 2006). Given the great number of diverse ES provided by watershed and wetlands alongside the relevant amount of direct and tangible effects generated by these ES to people, a considerable list of PES versions implemented on this field could be counted. Notwithstanding, the earliest examples of PES agreements were often associated with watershed management and potable water supply, thus providing a practical experience of PES for watershed services assessment which can be of considerable relevance while developing a PES scheme for the Dojran Lake geographical and political context.

According to the the scientific literature on this sector, two of the most known examples of this peculiar form of PES are found in the cases of New York City (NYC) in the United States of America (USA) and Heredia in Costa Rica. In these two case study the mechanism adopted is quite similar.

As regard as the first case, the aspect of notable relevance is that NYC relies for its water supply on the watersheds belonging to the Catskill Mountains, situated up-north of the city, because their water quality was

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considered naturally good and almost no treatment or filtration was required to make the water potable (The World Bank, 2007)<sup>98</sup>. It was reported that the city under analysis consumed between 4 to 5 billion litres of water per day until the 1980s (The World Bank, 2007).

However, ten years later the city had to cope with a change of this condition. The modification of agricultural practices in the Catskills and other developments, such as non-point source pollution, sewage contamination and soil erosion became a threat for water quality of the watershed (The World Bank, 2007) and it led to the necessity of developing some alternatives or solutions. Among the diverse adoptable scenarios, water planners of the city figured out either the possible construction of an expensive water treatment system or the assessment of an environmental cooperation agreement between the upstream land owners and the managers in the Catskill watershed (The World Bank, 2007). The second option was chosen and the adopted mechanism contemplated a PES approach creating a market between the water utility of the NYC and the watershed managers, without involving the water consumers, but including payments for on-farm capital costs and pollution reducing agricultural measures deriving from the revenues collected from water users, who were charged an amount of money part of their water bill (The World Bank, 2007). The final cost of the PES assessment amounted to \$1.5 billion for the city, consisting in less than 20 percent of the cost of the alternative option of a water treatment system (The World Bank, 2007). The measure had the consequence of re-establishing the good quality of drinking water, avoiding the necessity of paying for the purpose of correcting an environmental issue after water quality has already been deteriorated and avoiding the need of coping with treatment costs.

Other forms of additional incentives were also drawn in the system, such as compensation of more than US \$40 million to cover the additional costs of landowners who undertook the best management practices or the assignment of additional logging permits for new areas for those who adopted low impact logging practices, while foresters with 20 ha of land or more that agree to commit to a 10-year forest management plan were entitled to an 80% reduction in local property tax (Newcome et al., 2006). Moreover, forest and land owners were given the chance to enter into 10 to 15-year contracts with the American Department of Agriculture, aiming to the removal of environmentally sensitive land from production (Newcome et al., 2006). As regard as the NYC's commitments, the city purchased development rights for sensitive lands near reservoirs, wetlands and rivers at market price (Newcome et al., 2006).

Aside from the listed benefits and additional incentives provided to the ES providers, it was reported that the so planned system helped to protect the Catskill watershed and other services it provides the area with, such as recreation and biodiversity conservation (Newcome et al., 2006), thus becoming an important reference in the assessment of the PES mechanism elsewhere. The approach was also defined as being “the most cost-effective response to the emerging of the problems in the watershed” (The World Bank, 2007).

The other outstanding example associated with watershed management was applied in Heredia, Costa Rica.

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<sup>98</sup> Case abstracted from: Pagiola, S., and Platais, G., (2007). Payment for Environmental Services: From Theory to Practice. Washington D.C., The World Bank.

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As NYC, the city was coping with similar issues concerning changes in the watershed, which were having a negative impact on the potable water supply<sup>99</sup>.

The city dealt with these problems by setting up a PES mechanism that contemplated the idea of taxing water users in order to pay farmers in the watershed to adopt improved and more sustainable conservation measures (The World Bank, 2007). For assessing this system, it was discovered that extensive dairy operations would have been the most attractive alternative use if the land was converted, allowing an estimated gross income of about 53,000 *colones* per hectare per year, a bit over US \$175 (The World Bank, 2007). Moreover, the effectiveness of an incentive-based system was demonstrated by the fact that farmers were willing to sell their conversion rights and to maintain the forest under conservation for a payment of 23,000 *colones* per hectare per year, about US \$75: in this way, this money would compensate farmers for foregone income and it would consist of an incentive for undertaking additional conservation measures (The World Bank, 2007).

Always concerning the same case, it was estimated that only a PES scheme which involved less than one US cent per cubic meter of water -2.70 *colones*-, equivalent to an increase on the water tariff of between 1 and 3 percent, would have been sufficient to collect enough funds from water consumers to pay compensation of 23,000 *colones* per hectare per year for conservation in the watershed of Heredia and for assessing the designed programme (The World Bank, 2007).

The mechanism is currently being carry out in Costa Rica.

Other interesting cases of PES scheme implementations associated with watershed management can be found in Central and South America.

For example, Ecuador is trying different and various PES approaches in numerous parts of the country and one of them is being assessed in its capital, Quito<sup>100</sup>. In effect, a PES scheme is supporting various conservation activities in the watershed to help protecting Quito's water supply through the re-allocation of current revenues of water and electric utility in order to provide resources to private landowners and to finance the protection of watersheds serving the town (The World Bank, 2007).

The small city of Yamabal, in El Salvador, reflects the classic example of a PES agreement where direct transactions play an important role in the deal. Those were established between the local municipality, that is involved in the re-charge of the aquifer supporting the local water supplies, and upstream land users, while payments were addressed to private landowners located in the recharge area of the aquifer, thus incentivizing land uses that promote boosted infiltration of water into the aquifer (The World Bank, 2007).

Another related case in Central America can be found in a supply-side PES system in Mexico, linked to the

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<sup>99</sup> Case abstracted from: Barrantes, G., Gamez, L., (2007). Programa de Pago por Servicio Ambiental Hidrico de la Empresa de Servicios Publicos de Heredia, chapter in draft manuscript edited by Gunars Platais and Stefano Pagiola, Ecomarkets: Costa Rica's experience with Payments for Environmental Services (forthcoming).

Case based also on: Castro, Edmundo, (2002): Costarrican experience in the change of hydro environmental services of the biodiversity to finance conservation and recuperation of hillside ecosystems., Mimeo.

<sup>100</sup> Case studies extracted from: Pagiola, S., Platais, G., (2007). Payment for Environmental Services: From Theory to Practice. Washington D.C., The World Bank.

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national programme called *Pagos for Servicios Ambientales Hidrológicos*, or Payment for Hydrogeological Environmental Services (The World Bank, 2007). In this case, the system aims to avoid reforestation and at helping the protection of the watershed through the efficient re-use of financial resources, whose amount is established by the government, derived from downstream water users and addressed to *ejidos*, members of an upstream traditional community of landowners (The World Bank, 2007).

Other international examples can be reported from the European and the African continent.

In the first case, the French scheme is of particular relevance in this international PES *excursus* because it copes with the private sector payment scheme and it stands as an emblematic example in the field of water management. This example belongs to Vittel, a French subsidiary of Nestlé Waters identified as “the world’s largest bottler of natural mineral water” (Smith et al., 2006). Vittel's case rotates around the aspect that its business depended on water sources situated in a heavily-farmed watershed which risked to be seriously threatened by the contamination of nutrients and pesticides (Smith et al., 2006). For this reason, Vittel figured out that the strategy of building filtration plants was less cost-effective than beginning an action including the purchase of farmland, the reforestation of sensitive infiltration zones, the financial support of farmers to undertake organic farming and the building of modern facilities building filtration plants (Smith et al., 2006). The PES scheme implemented in this case involved several stakeholders: Vittel was the ES buyer, whereas farmers and landowners were the sellers, who were addressed a compensation for reduced profitability and higher perceived risk caused by the reduced use of fertilizers (Smith et al., 2006). The government had the role of intermediary and facilitator of the deal through financial and legal aid (Smith et al., 2006). By assessing this mechanism, a high spring water quality standard was reached as a consequence of both a reduced chemical utilization and the adoption of a sustainable land-use management.

On the other hand, the following PES example from United Kingdom (UK) deals with the opposite payment scheme in watershed management: the public payment scheme. In this case, reduced runoff of nitrate into public drinking water supplies was the ES provided by the PES mechanism and it was assessed through the Nitrate Sensitive Areas scheme (Smith et al., 2006). While the purpose of this action was the reduction or stabilization of nitrate levels in the public water supplies in the area, the system was based on a voluntary compensated scheme: sellers were granted a 5-years direct payment from the British government and special funds were addressed to the farmers who were adopting conforming low nitrate agricultural practices, whose payment rates were given by the farmers' loss of income and increased costs deriving from the new measures, whereas no intermediary was found because of the public nature of the payment scheme (Smith et al., 2006).

In South Africa, a supply side PES mechanism has been established by utilizing government resources to finance the extraction of invasive alien plant species that were creating environmental damages, as it was demonstrated that they were more water using compared to other traditional native species (The World Bank, 2007).

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PES mechanisms can also be adopted in order to create incentives for improving the provision of services. This is what happens in the Murray-Darling Basin in Australia where a payment system is used to finance restoration of natural vegetation as an alternative strategy for controlling dry land salinization (Smith et al., 2006).

In effect, loss of agricultural productivity in the Australian region was demonstrated to be a consequence of salinization of soils and irrigation water, caused by pervasive land clearing for agricultural development: in this way, less water was transferred to the atmosphere due to the clearing natural vegetation process, leading to an increase in the deposit of mineral salts in the soil and surface waters (Smith et al., 2006). According to the analysts, the loss of agricultural productivity is expected to be relevant in the future as 40% of private land in New South Wales (NSW) is affected by dry land salinity, whereas 15% of irrigated land is expected to be affected by saline water (Smith et al., 2006).

The 1999 'Pilot Salinity Control Agreement' with Macquarie River Food and Fibre (MRFF), an association of farmers in the Macquarie River watershed, was launched by the government of State Forest in NSW (Smith et al., 2006). This peculiar agreement, which had the overall aim of restoring 40% of the cleared forest necessary to reverse the salinization process, assigned finances for tree planting, and it stands for being a special payment scheme as it is drawn as a cost-effective strategy for reducing salinity in the river systems: particularly, salinity credits are bought by the MRFF from State Forests and they are based on water use by restored forests in the upper watershed (Smith et al., 2006). While farmers pay US\$ 45 per hectare per year, the amount of money generated is re-addressed to environmental measures towards natural vegetation restoration, preservation and protection (Smith et al., 2006).

Even if the literature on PES agreements has grown substantially over the last few years alongside the number of practical experiences that have been implemented around the world, there are only few examples of PES schemes assessed in a transboundary ecosystem context. Therefore, these cases provide an insight of the chance to implement an efficient and effective cross-boundary mechanism by involving different countries and stakeholders belonging to diverse frontiers or social environments.

One of these cases can be found in the Danube river basin and implemented by the WWF Danube-Carpathian programme. In this example, river basin administrators were encouraged to maintain and to introduce sustainable water management practices through the WWF programme with the objective of supporting biodiversity and preserving the natural landscape in the countries of Bulgaria, Serbia, Romania and Ukraine<sup>101</sup>. The six implemented projects in Romania and Bulgaria had the overall goal of introducing economic incentives

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<sup>101</sup> Apostolova, O., 2010. "Promoting Payments for Ecosystem Services in the Danube Basin", <http://www.icpdr.org/main/publications/promoting-payments-ecosystem-services-danube-basin>. Accessed 12 August 2015.

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in order to support land managers in the Lower Danube Basin. Among these deals, one was focused on watershed protection and on improvement of the quality of the environment through public funds, by stimulating the fishpond managers to assess responsible aquaculture measures and thus contributing to biodiversity conservation and water management, on a voluntary basis<sup>102</sup>. The objective of the 3-year WWF projects (2010-2013) was to involve agriculture producers of the whole transboundary area to contribute in the creation of market 'green' agricultural products with the final purpose of transforming them into tourism products, alongside the aim of showing that these PES systems can work in large-scale international watershed<sup>103</sup>.

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<sup>102</sup> "Essential Danube region Services and Benefits", WWF – Valuing and paying for Ecosystem Services in the Danube River Basin.  
[http://d2ouvy59p0dg6k.cloudfront.net/downloads/wwf\\_brochure\\_danube\\_pes\\_case\\_studies\\_1.pdf](http://d2ouvy59p0dg6k.cloudfront.net/downloads/wwf_brochure_danube_pes_case_studies_1.pdf). Accessed 12 August 2015.

<sup>103</sup> "Essential Danube region Services and Benefits", *supra nota*.

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## Chapter 3

### **The implementation of the Payments for Ecosystem Services method: the *Centro Euro – Mediterraneo sui Cambiamenti Climatici*'s project and the case of Dojran Lake.**

The Macedonian territory is classified as a semi-arid region, even if the country is average in terms of available water resources per capita from a European comparison (European Environmental Agency, 2015). Greece is considered a semi-arid region too (European Environmental Agency, 2015).

Therefore, the proper use, protection and conservation of water resources is of utmost importance in the Macedonian-Greek region, also regarding that water resources depend mainly on precipitation (Anastasiadis et al., 2005).

As previously mentioned, the need to conserve adequate supplies of a resource for which demand is increasing continuously is also one of the drivers behind the introduction of water pricing (European Commission, 2003), one of the European WFD's most important innovations. In this sense, adequate water pricing acts as an important incentive for the sustainable use of water resources and thus it helps to achieve the environmental objectives under the WFD, by directing financial resources to the sector which needs them mostly afterwards. Member States are required to ensure that the price charged to water consumers, such as for the abstraction and distribution of fresh water and the collection and treatment of waste water, reflects the so called true costs<sup>104</sup>. Water pricing stands in this way as the best possibility to set a market for this natural resource and control the users.

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<sup>104</sup> "Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy", Official Journal L 327, 22/12/2000 P. 0001 – 0073, EUR-Lex, 2000. <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32000L0060>.

In this chapter, the delineation of the geographical context of Dojran Lake where the CMCC's project 'Integrated Water Resource Management at Dojran Lake' is inserted is developed, accompanied by a deep analysis of Article 9 of the WFD, of the Cost Recovery Principle and of the PPP in order to understand how a possible PES mechanism can be integrated with the European WFD.

### **i. Case study: Dojran Lake.**

#### **The protection of biodiversity, the enhancement of local development and the protection of the environment.**

Dojran Lake is the smallest of the three tectonic lakes in the FYROM. The other two Macedonian lakes are Ohrid Lake and Prespa Lake.

The basin of Dojran Lake is part of the Vardar catchment which is the biggest water basin in the country, covering almost 80.4 percent and including the basin of the Vardar river with its tributaries on the country up to the border with Greece (United Nations Economic Commission for Europe, 2011). The basin of Dojran Lake also belongs to the Aegean Sea basin, as part of the wider river Vardar catchment (United Nations Economic Commission for Europe, 2011).

Its international importance is primarily given by the fact that it is a water body shared by a European country –Greece- and a country wishing to join Europe –the FYROM-. 62.54% of the lake's area, which stands for approximately 26.58 km<sup>2</sup>, belongs to the FYROM and 37.46% or 15.92 km<sup>2</sup> belongs to the Greek side (RENA, 2011). The area of Dojran Lake basin is 270 km<sup>2</sup> out of which the two thirds of the basin (approximately 188,97 km<sup>2</sup>) belong to Greece and the one third of the basin (around 88,03 km<sup>2</sup>) to the Macedonian territory (Popovska and Stavric, 2000).

The total annual groundwater recharge on the Macedonian part of the catchment is estimated at 5,7 million m<sup>3</sup>, with the relevant note that the lake is fed by small streams which often dry up completely in late summer, and by several springs in the Greek side, while only one outlet is present in the area which is a channel on the southern Greek shore, which transfers water to the Axios (Vardar) River<sup>105</sup>.

When the water level is at 140 m (the relative elevation on the Greek side is 146.66 m), the 10-meter-deep

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<sup>105</sup> "Lake Dojran/Dojrani Sub Basin", Internationally Shared Surface Water Bodies in the Balkan Region, 2004. [http://www.inweb.gr/workshops2/sub\\_basins/20\\_Dojrani.html](http://www.inweb.gr/workshops2/sub_basins/20_Dojrani.html). Accessed 20 May 2015 and 21 August 2015.

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Dojran Lake covers an area of 42.5 km<sup>2</sup> and a volume of water of 289.61 million m<sup>3</sup> (RENA, 2011).

Over the period 1989 – 1999 a rapid and serious fall of the water quantity of Dojran Lake was observed, situation that threatened its natural heritage and degraded its water quality as there was also a danger of losing the lake completely (Smith and Petkovski, 2001; Matilevska, 2006). This significant decrease faced an annual mean of the water balance amounting to a deficit of 10 million m<sup>3</sup> in 2004, according to the United Nations Economic Commission for Europe (2001). The reasons behind the relevant disappearance of the water from the lake were attributed to the long-lasting dry hydrological cycle and to the consistent use of the water from wells for irrigation, especially from the Greek side (United Nations Economic Commission for Europe, 2011). In order to improve the situation, a system for abstraction of water from wells near Gevgelija was built and a pipeline system for recharging the lake with ground water was installed (United Nations Economic Commission for Europe, 2011), actions that led to the restoration of the water level in Dojran Lake over the last 15 years (Smith and Petkovski, 2001; Matilevska, 2006; Personal Communication MoEPP, 17/04/2015). Notwithstanding, environmental damages related to its water quality were left behind and were not recovered.

According to the aspect of international connotation, the water management of the lake has clearly to deal with a transboundary system of coordination and cooperation.

The bilateral cooperation between Greece and the FYROM, with regard to the conservation of Dojran Lake, is taking place since 1956: the agreement signed in that year referred to the maximum and minimum water level of Dojran Lake, but it has become ineffective after a consistent initial decrease of water level<sup>106</sup>. In the early 2000s bilateral meetings took place at a technical and government level and, although the two parts agreed on various issues such as exchange of information, integrated studies and bilateral efforts towards the establishment of a Joint Water Management Commission, these agreements have not resulted in active fully cooperation in river basin planning or management of the lake under discussion<sup>107</sup>.

As regard as the current international position of the lake, it is actually part of the Convention for protection and use of the transboundary watercourses and the international lakes since 1999, even if the convention has not been ratified by the FYROM yet, and it is part of the United Nations Espoo Convention, adopted by both countries. Although the United Nations Espoo Convention was signed in 1991, it represents still a valid framework concerning transboundary cooperation over which other directives and conventions have been developed onwards (United Nations, 1991). In fact, it clearly states at article 2:

“The Parties shall, either individually or jointly, take all appropriate and effective measures to prevent, reduce and control significant adverse transboundary environmental impact from proposed activities” (United Nations, 1991, Art. 2).

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<sup>106</sup> “Lake Dojran/Dojrani Sub Basin”, *supra nota*.

<sup>107</sup> “Lake Dojran/Dojrani Sub Basin”, *supra nota*.

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Since 1991 the Convention puts an accent to the need of transboundary cooperation as it refers to the necessity of developing specific mutual research programmes aimed at achieving a better understanding of cause-effect relationships and of their role in integrated environmental management, clearly underlining the relevance of environmental impacts and the necessity of coordination and cooperation in order to better improve a proper environmental management (United Nations, 1991).

Several levels of operations come into scene in the political context of Dojran Lake when coping with the aspect of transboundary cooperation of a shared water body.

In Greece, the authority currently in charge for the development and implementation of all programs related to the protection and management of the Greek water resources, including the implementation of the WFD and the coordination of all competent authorities dealing with the aquatic environment, is the Special Secretariat for Water<sup>108</sup>. At national level many authorities are required to deal with water issues and they are responsible of the watershed management, water quality and quantity, namely the Ministry of Environment, the Ministry of Agriculture and the Ministry of Economics, whereas the Ministry of Foreign Affairs is involved in transboundary watercourses management for what specifically concerns his responsibility<sup>109</sup>. Notwithstanding these several levels of operation, coordination between the various authorities appears to be scarce still<sup>110</sup>.

In the FYROM, the Ministry of Environment and Physical Planning (MoEPP) is responsible for the management of transboundary lakes and the implementation of the relative directives, as already mentioned (European Commission, 2014).

Dojran Lake international importance is also given by another peculiar connotation: it consists of a complex natural ecosystem characterized with significant and rich biological diversity and its arguably importance is due to the production of endemic plant and endemic species and by the fact that the lake is a "wetland and bio-corridor for numerous animal species, primarily birds" (RENA, 2011).

As regards as the incredibly rich endemic flora and fauna that can be reported in this natural ecosystem, twelve endemic faunal species and fifteen species of fish, one of which is local endemic, can be counted, while reference of the lake's endemic species in International and European biotopes/wetlands catalogues (Important Bird Area ICBP-IWRB, CORINE Biotopes) can be found, underlining again the recognized importance of the biodiversity combination of the lake at an institutional and international level (RENA, 2011). Because of its exceptional recognized natural heritage, especially in term of biodiversity, Dojran Lake has been included in the Catalogue of Wetlands (2002), in the National Emerald Network of conservation importance in Europe (2004), in the List of important plant areas in the FYROM (2004), in the Important Bird Area in the FYROM according to the criteria of Bird Life International (2010), in the Balkan Green Belt (IUCN initiative,

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<sup>108</sup> "Special Secretariat for Water", Ministry of Reconstruction of Production, Environment & Energy, 2014. <http://www.ypeka.gr/Default.aspx?tabid=246&language=en-US>. Accessed 25 July 2105.

<sup>109</sup> "Lake Dojran/Dojrani Sub Basin", Internationally Shared Surface Water Bodies in the Balkan Region, 2004. [http://www.inweb.gr/workshops2/sub\\_basins/20\\_Doirani.html](http://www.inweb.gr/workshops2/sub_basins/20_Doirani.html). Accessed 20 May 2015 and 21 August 2015.

<sup>110</sup> "Lake Dojran/Dojrani Sub Basin", *supra nota*.

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2004) and in the World Ramsar List (2007) (RENA, 2011). Doiran lake is also part of the Inventory of Greek Wetlands as Natural Resources<sup>111</sup>.

On the Greek side of the border, Dojran Lake was included in the Natura 2000 network (RENA, 2011).

The lake is also of notable significance for what concerns another characteristic, related to its importance for the local community and economy.

As a matter of fact, in the past the world scientific literature used to describe Dojran Lake as one of the most productive in the European area because it played a relevant role in providing fish to the local and regional population: fishing in the lake has always consisted in being one of the leading economic activity of the local inhabitants especially in the FYROM side, with the impressive data of the average annual catch up of 50% of the total national fish caught in the FYROM (RENA, 2011). On the other hand, tourism has been recently identified as the main current economic activity in the Macedonian part of the lake (Personal Communication MoEPP, 17/04/2015).

The lake is also well known for its peculiar and unique fishing methods, characteristics that concur in giving it an even more cultural and historical relevance and for the huge presence of endemic species (RENA, 2011; Anastasiadis et al., 2005). These aspects will definitely be fundamental in developing an adequate management of the resources of the ecosystem.

From ancient times onwards the local population has utilized the reeds in many ways: large portions of the reeds were re-utilized to manufacture special fish traps peculiar in form, design and shape, whose original Macedonian names are *mandra*, *naseka* and *funta* (RENA, 2011). The traditional fishing method was given by the technique of catching the aquatic birds, cutting their feathers and keeping them near the fish traps and then utilized as chasers to drive the fishes inside the traps (RENA, 2011). This ancient fishing method has proven its importance over the inhabitants as fish became the main food resource for the local population for year and it proved its efficiency among several decades, as a single fish trap could catch from 20,000 to 30,000 kg of fish (RENA, 2011).

However, the decrease of water level and the simultaneous deterioration of the water quality in the past years had serious ecological impacts with the consequential negative effect especially on the fish stock, as previously mentioned (RENA, 2011). This phenomenon created several damages on the local sustainability and economy.

The manifestation of negative impacts affected the rich biodiversity of the lake resulting in decrease in the production of food for the lake fauna and, consequently, in a massive drop of fish species and fish stock, thus causing a large-scale migration of numerous birds (RENA, 2011).

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<sup>111</sup> "Lake Dojran/Dojrani Sub Basin", *supra nota*.

## **ii. *Centro Euro - Mediterraneo sui Cambiamenti Climatici* and the 'Integrated Water Resource Management at Dojran Lake' project.**

A quick but precise description of the *Centro Euro - Mediterraneo sui Cambiamenti Climatici*'s mission, values and of its project in the FYROM and in the Balkan region, on which this thesis is developed, is due at this point of the analysis. This is because this work has the overall purpose of providing an additional support to the implementation of the project's goals and final objectives in the geographical and political context of Dojran Lake. For this reason, the description of the Integrated Water Resource Management approach on which the Centre's project has been set up is also provided.

### **ii.i. The Integrated Water Resource Management approach.**

In the last decades the complexity of water issues and the increasing importance of water problems, in particular those with interdisciplinary characteristics and intrinsic political content, has driven water management toward integrated approaches not only at a local but also at a global scale.

The Integrated Water Resource Management (IWRM) approach currently dominates the sector of water resource research and management and it deals with water issues whose peculiarities, such as multi-sectorial characteristics, have to be explicitly considered in order to be able to solve difficulties linked to competition among interests and stakeholders.

The Global Water Partnership (GWP) definition of IWRM is:

"Integrated Water Resource Management is a systematic process for the sustainable development, allocation and monitoring of the water resource use in the context of social, economic and environmental objectives" (GWP, 2005).

"[...] a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems" (GWP, 2005).

This cross-sectorial policy approach is based on the understanding that within the term 'water resources' several aspects are included, from an integral component of the ecosystem, to a natural resource and to a

social and economic good<sup>112</sup>.

With this definition, the IWRM policy may become a fundamental support in the implementation of PES for watershed services agreements as it contemplates water and resources management in a sustainable way, by giving particular attention to the related ecosystem. This method appears to be also complementary to a general PES mechanism in terms of policy making. In fact, the IWRM method is adopted to explore human-environment relations considering that different interests must be integrated for assessing a successful environmental policy and thus it turns out into being a track towards coordination in the field of policy making and in the processes of policy planning and assessment across basin boundaries and institutional borders in an integrated manner<sup>113</sup>.

The IWRM approach, aside from being a continuous process of balancing and making trade-offs between different goals and divergent views in an informed way, contemplates also complex coordination issues over the management of international watercourse systems (Cook and Spray, 2012).

The basic criteria to take into account when considering the achievement of the IWRM objectives are:

- economic efficiency in use, since water scarcity and increasing demand calls for the maximum possible efficiency;
- environmental and ecological sustainability in terms of preserving the ecosystems and the environment for future generations;
- equity for equality, so that fair access is secured for everyone (Mylopoulos and Kolokytha, 2008).

This approach poses its fundamentals on the four Dublin principles which consist of a fundamental tool for clarifying its main challenge: to strike a balance between the use of the resources as a basis for the livelihood of the world's increasing population and the need for protection and conservation of this resource in order to sustain its functions and characteristics (GWP Technical Advisory Committee, 2000).

The IWRM principles can be listed as follow:

1. "Water is a finite and vulnerable resource"

this statement involves the idea of a multifunctional and effective management of human activities through the empowerment of the relations of upstream-downstream users of a finite and vulnerable resource essential to sustain life, development and environment<sup>114</sup>.

2. "Participatory approach"

this principle underlines the concept that water development and management should be based on a participatory approach by involving users, planners and policy-makers, which are included in the process at all levels, and by allowing stakeholders to have an impact on decision making not only through information and

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<sup>112</sup> "What is IWRM?", Global Water Partnership, 2010.

<http://www.gwp.org/en/The-Challenge/What-is-IWRM/2010>. Accessed 10 May and 28 July 2015.

<sup>113</sup> "What is IWRM?", *supra nota*.

<sup>114</sup> "Water is finite and vulnerable resource", Global Water Partnership, 2012.

<http://www.gwp.org/en/The-Challenge/What-is-IWRM/IWRM-Principles/Water-is-finite-and-vulnerable-resource/>. Accessed 12 May 2015.

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consultation sharing, but also involving the concept of taking responsibility over a long time period<sup>115</sup>.

3. "Role of women"

this ascertainment declares that women play a central part in the management, protection and provision of water<sup>116</sup>, according to this approach.

4. "Social and economic value of water"

this IWRM principle states that water has an economic value in all its competing uses and it should be recognized as an economic good; it also implies that the goal is the full cost recovery, as required by the European WFD<sup>117</sup>.

5. "Integrating three ES"

this principle recognizes that water is a natural resource and an integral part of the ecosystem, aside from being an economic and social good; the IWRM approach is also based on the equitable and efficient management and sustainable utilization of water<sup>118</sup>.

The term 'integration' refers to specific various aspects to be considered in order to achieve a sustainable development of river basins: this includes different objectives, varying from economic efficiency to social acceptability (Mylopoulos and Kolokytha, 2008).

The term 'integration' of the IWRM approach contemplates also several factors. These not only include all water resources, "from surface water to groundwater, inland, estuaries and coastal waters in a holistic water management", but they also include water and land-related issues, as well as different types of water use from domestic and industrial to agricultural (Mylopoulos and Kolokytha, 2008). The social, economic and ecological impacts of water policies alongside important legal and political factors constitute a relevant characteristic that aim to be integrated with this holistic management approach at various spatial scales (Mylopoulos and Kolokytha, 2008).

The IWRM approach takes also fully part to the European Water Initiative. Europe believes that with this innovative method, involving strong public participation, transparency and accountability, it would be easier to reach the targets of the Millennium Development Goals and of the World Summit on Sustainable Development (United Nations General Assembly, 2014). These targets include many fields of subject from the eradication of extreme poverty and hunger to ensuring environmental sustainability by enhancing the commitment and

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<sup>115</sup> "Participatory approach", Global Water Partnership, 2012.

<http://www.gwp.org/en/The-Challenge/What-is-IWRM/IWRM-Principles/Participatory-approach/>. Accessed 12 May 2015.

<sup>116</sup> "Role of women", Global Water Partnership, 2012.

<http://www.gwp.org/en/The-Challenge/What-is-IWRM/IWRM-Principles/Role-of-women/>. Accessed 12 May 2015.

<sup>117</sup> "Social and economic value of water", Global Water Partnership, 2012.

<http://www.gwp.org/en/The-Challenge/What-is-IWRM/IWRM-Principles/Social-and-economic-value-of-water/>. Accessed 12 May 2015.

<sup>118</sup> "Integrating three ES", Global Water Partnership, 2012.

<http://www.gwp.org/en/The-Challenge/What-is-IWRM/IWRM-Principles/Integrating-three-Es/>. Accessed 12 May 2015.

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action from everyone to achieve water security both in terms of water quality and quantity, “for the Earth, its ecosystems and its human inhabitants, today and for future generations” (United Nations General Assembly, 2014).

The latter goal of ensuring environmental sustainability indicates also the need of integrating the principles of sustainable development into national and international policies and programmes and the necessity of reversing the loss of environmental resources by 2030 (United Nations General Assembly, 2014), given also the negative trends of the OECD (2010) reported previously. This goal requires the implementation of IWRM at all levels through transboundary cooperation for the protection and restoration of water-related ecosystems. It also gives a lot of emphasis to the further necessity of the reinforcement of international cooperation and capacity-building support in order to assist countries in the process of developing water and sanitation related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies (United Nations General Assembly, 2014).

In the peculiar case of shared water resources, cross-bordering efficiency can be promoted with the IWRM through the integrated river basin approach as this approach incorporates qualitative and quantitative aspects of water by developing transboundary monitoring mechanisms for controlling and assessing the different water parameters (Mylopoulos and Kolokytha, 2008). Moreover, the common water development plans through integrated designing of water projects is also enhanced by the integrated river basin approach (Mylopoulos and Kolokytha, 2008).

In addition to these considerations regarding international watercourses, several principles shape and affect the practice of sustainable transboundary water resource management and they are of notable relevance in such a complex multi-lateral sector. Among these, the principle of international water and the concept of an international 'watercourse', the principle of reasonable and equitable utilization, the obligation not to cause significant harm, the principle of exercising due diligence in the utilization of an international watercourse and the principle of notification and negotiations on planned measures and the duty to cooperate, including regular exchanges of data, can be reported (Vlachos, 1999). All these principles will be of utmost importance while coping with the development of a practical and plausible proposal of PES implementation in the geographical and political context of Dojran Lake, especially for what concerns the necessity of a cross-frontiers cooperation over the international water body under consideration<sup>119</sup>.

Beside these numerous principles, essential for developing international watercourse management measures, the great challenge is to turn theory into practice, which means that the adopted international principles need to be effectively put into actions in a transboundary manner.

In this sense, the European WFD constitutes a practical notion of integrated water management in a river basin scale (Mylopoulos and Kolokytha, 2008), giving a clear path to follow in this complex field. As a matter of fact, the Directive provides a specific legal and practical guideline in the assessment of river basin management

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<sup>119</sup> See: Chapter 4, Section iii.

plans beyond boundaries through the promotion of transboundary cooperation, by reflecting the goals of IWRM.

Aside from requiring the adoption of integrated water management while dealing with water issues, the WFD stands also for being a common legal basis that deeply connects the concept of PES mechanism between different actors at diverse levels and the IWRM theory, also from an international watercourses management point of view.

### **ii.ii. *Centro Euro – Mediterraneo sui Cambiamenti Climatici* and the ‘Integrated Water Resource Management at Dojran Lake’ project.**

The non-profit research institution *Centro Euro - Mediterraneo sui Cambiamenti Climatici* (CMCC) or Euro-Mediterranean Centre for Climate Change is operative since 2006 and it was established with the financial support of the Italian Ministry of Education, University and Research and the Italian Ministry of the Environment, Land and Sea<sup>120</sup>.

Many purposes and missions drive the numerous actions of this Centre.

Firstly, the investigation on the climate system and on its interactions with society is one of the overall goal of the Centre, with the purpose of providing reliable, rigorous and timely scientific results and of stimulating and boosting sustainable growth, protecting the environment and developing science driven climate change policies. Secondly, the CMCC incentives scientific and applied activities in the field of international climate change research<sup>121</sup>.

The idea of establishing a Centre of excellence in Italy focused on integrated study of topics related to climate change is another of the main driving purposes of the CMCC, which also constitutes an institutional point of reference of technical-scientific support for decision makers, public institutions, alongside for private and public companies at both national and international scale<sup>122</sup>.

The importance of the Centre is given by the CMCC’s expertise and approach to climate science, strengthened by its capacity to develop research projects in both national and international contexts. These are ensured by the collaboration with the best international Centres specialized in advanced and applied research on climate change. In fact, the Centre collaborates with experienced scientists, economists and technicians which all work together in order to provide full analyses of climate impacts on various systems such as agriculture,

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<sup>120</sup> “CMCC – description and Statute”, CMCC.

[ww.cmcc.it/about-cmcc-description](http://ww.cmcc.it/about-cmcc-description). Accessed 10 May and 20 August 2015.

<sup>121</sup> “Mission & Values”, CMCC.

<http://www.cmcc.it/mission>. Accessed 10 May and 20 August 2015.

<sup>122</sup> “CMCC – description and Statute”, CMCC.

[ww.cmcc.it/about-cmcc-description](http://ww.cmcc.it/about-cmcc-description). Accessed 10 May and 20 August 2015.

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ecosystems, coasts, water resources, health and economics (CMCC, 2013). CMCC also supports policymakers in setting and assessing costs, mitigation and adaptation policies. The Centre aims to inform and facilitate the dialogue between scientists, decision makers and the general public in order to support decisions and actions for the benefit of society and the environment (CMCC, 2013). It also aims to encourage a multi-disciplinary convergence for promoting new and creative ideas and for ensuring that environmental observations, analyses, predictions and services effectively meet the current -and possibly- future needs of society (CMCC, 2013).

Considering specifically the 'Integrated Water Resources Management at Dojran Lake' project on which this thesis is developed, several objectives are included and, among them, the purpose of contributing to an effective integration of environmental sustainability objectives with local, social and cultural goals in the FYROM side of the lake, of creating the capacity to boost the resilience of the general system of the area through the promotion of activities such as sustainable agricultural, tourism and others and the purpose of enhancing the connection between the international research community and local policy-makers are all belonging to the same project on the area<sup>123</sup>.

Between the main activities of the project, the desire of fostering the capacity building for stakeholders on IWRM and climate change is of great relevance alongside the analysis of the options for integration of the economic tools in the natural resource management, such as the use of PES mechanisms in the area<sup>124</sup>.

The comprehension of the main ecological and socio-economic elements that influence livelihoods and ecosystem sustainability at the Dojran Lake is also one of the pursued main outcomes, as the Centre aims to provide the framework for the development of a IWRM plan in the area accompanied by the comparative regional study on the role of PES, by its potential environmental conservation in the Balkans and by the proposals for the development and the implementation of PES schemes at Dojran Lake<sup>125</sup>. The CMCC foresees the chance to develop financial mechanisms for the implementation of PES schemes in the transboundary Dojran region, with a specific focus on the role that tourism is playing nowadays and in the near future. Moreover, this project aims to strengthen connections between local self-government authorities and relevant stakeholders of the community, as well as including the local participation in the development and reinforcement of capacities regarding the implementation of best IWRM practices and the utilization and assessment of specific instruments, such as PES agreements<sup>126</sup>.

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<sup>123</sup> "IWRM-DL – Integrated Water Resources Management at Dojran Lake – CMCC", CMCC.  
<http://www.cmcc.it/projects/cepf-integrated-water-resources-management-at-dojran-lake>. Accessed 10 May and 20 August 2015.

<sup>124</sup> "IWRM-DL – Integrated Water Resources Management at Dojran Lake – CMCC", *supra nota*.

<sup>125</sup> "IWRM-DL – Integrated Water Resources Management at Dojran Lake – CMCC", *supra nota*.

<sup>126</sup> "IWRM-DL – Integrated Water Resources Management at Dojran Lake – CMCC", *supra nota*.

### **iii. The Water Framework Directive Programme of Measures, Cost Recovery for Water Services, the Polluter Pays Principle and the Payments for Ecosystem Services method as a contributor to the requirements of the Water Framework Directive.**

An additional description and analysis of the European WFD seems to be necessary at this point of the analysis in order to develop a plausible proposal of a PES mechanism in the transboundary geographical and political context of Dojran Lake. As a matter of fact, this process needs to be carried out while keeping in mind the vulnerable characteristics of the area around Dojran Lake as a prerequisite for its sustainable development and that every action has to be implemented with transboundary approach, following the European Water Framework Directive. A further analysis of the Directive is thus provided with the purpose of understanding how the PES mechanism, that is developed in a region shared between a EU candidate country -FYROM- and a European country -Greece-, can best be integrated with the WFD shared by all Member States.

The general legitimacy of using economic instruments to address environmental issues and problems has been internationally affirmed by the 1992 Rio Declaration on Environment and Development, whose Principle 16 states that:

“National Authorities should endeavour to promote the internationalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution with due regard to the public interest without distorting trade and investments” (Principle 16, United Nations General Assembly, 1992)<sup>127</sup>.

Posing its basis on this declaration, the European WFD developed.

The European WFD is set apart from the previous Community environmental legislation in the emphasis that is placed upon its role of guideline in securing coherent and harmonized implementation of the European laws across the Member States.

Its legal framework is provided by the Common Implementation Strategy (CIS) for the WFD (European Commission, 2003). The CIS identifies a common approach that each Member States should adopt towards several technical and practical aspects of interpretation and implementation of the European Directive,

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<sup>127</sup> “Rio Declaration on Environment and Development”, Report of the United Nations Conference on Environment and Development, Principle 16, United Nations General Assembly, 1992.  
<http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm>. Accessed 13 May and 22 August 2015.

whereas a specific guideline is given on the assessment of the water services costs recovery obligations (European Commission, 2003).

The mechanism for achieving the WFD requirement of “reaching a good status for water bodies within a given timeframe” contemplates a combination of legal and economic approaches towards water management, which are also included in the CIS: among these, the Programmes of Measures (PoMs) is reported. PoMs are needed in order to secure the realization of the European WFD main requirements and they comprehend both traditional kind of legal prohibition of environmentally damaging practices alongside the use of other economic instruments (Howarth, 2009).

Between the economic instruments included in the provided legal framework, the Cost Recovery Principle in respect of water services and, consequently, the Polluter Pays Principle (PPP) can be counted. These are two fundamental elements in the overall strategy and common implementation of the European WFD across the Member States.

### **iii.i. The European Water Framework Directive and Article 9.**

Article 9 of the WFD comprehends a relevant part of the main content of the Directive, as it encompasses several innovative issues for water management.

It refers to the Recovery of Costs for Water Services Principle, by stating that<sup>128</sup>:

1. “Member States shall take account of the principle of recovery of the costs of water services, including environmental and resource costs, having regard to the economic analysis and in accordance in particular with the polluter pays principle.

Member States shall ensure by 2010:

- that water-pricing policies provide adequate incentives for users to use water resources efficiently, and thereby contribute to the environmental objectives of this Directive;
- an adequate contribution of the different water uses, disaggregated into at least industry, households and agriculture, to the recovery of the costs of water services, based on the economic analysis conducted according to Annex III and taking account of the polluter pays principle.

Member States may in so doing have regard to the social, environmental and economic effects of the recovery as well as the geographic and climatic conditions of the region or regions affected.

2. Member States shall report in the river basin management plans on the planned steps towards implementing paragraph 1 which will contribute to achieving the environmental objectives of this Directive and on the contribution made by the various water uses to the recovery of the costs of water services.

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<sup>128</sup> “Article 9 – Recovery of Costs for Water Services”, WISE-RTD, Water Knowledge Portal, 2015. <http://www.wise-rtd.info/en/info/article-9-recovery-costs-water-services>. Accessed 25 May 2015.

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3. Nothing in this Article shall prevent the funding of particular preventive or remedial measures in order to achieve the objectives of this Directive.

4. Member States shall not be in breach of this Directive if they decide in accordance with established practices not to apply the provisions of paragraph 1, second sentence, and for that purpose the relevant provisions of paragraph 2, for a given water-use activity, where this does not compromise the purposes and the achievement of the objectives of this Directive. Member States shall report the reasons for not fully applying paragraph 1, second sentence, in the river basin management plans” (Article 9, WFD 2000/60/EC).

Article 9 is of notable importance as it mostly concerns various obligations. The content of article 9(1) specifically evolves around the idea of recovery of costs for water services: this requirement regards recovery of costs for water services for all the Member States and in the term ‘costs’ it includes resource and environmental costs. The article also provides incentives for efficient water resource use in pricing policies and it deals with adequate contributions to the recovery of costs for water services by water users.

Some of the precise terms used in article 9 are of great importance throughout the European WFD and they are analysed below.

### **Water Services**

With the term ‘water services’ Article 2(38) of the Directive refers to a precise definition of services, by outlining that adequate recovery of the costs of these ‘water services’ means of those costs that are incurred in the long list of practices involved in the provision of water supplies and in the treatment of wastewater.

In fact, the article into question provides the following definition:

“Water services’ means all services which provide for households, public institutions or any economic activity:

a) abstraction, impoundment, storage treatment and distribution of surface water and groundwater;

b) waste-water collection and treatment facilities which subsequently discharge into surface water” (Article 2(38), WFD 2000/60/EC)<sup>129</sup>.

According to this precise meaning of water services, the significance appears to encircle the requirement of cost recovery to everything carried out by a body entrusted with water utility responsibilities from the source, where raw water is taken from the natural water environment, to the return of water to the environment in form of treated wastewater (Howarth, 2009).

### **Adequate incentives in water pricing**

The content of article 9(1) refers to the Member States’ necessity of ensuring adequate incentive in water

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<sup>129</sup> “Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, Official Journal L 327, 22/12/2000 P. 0001 – 0073, 2000, Article 2(38). <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32000L0060>. Accessed 25 May, 10 July, 29 August and 5 September 2015.

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pricing for water users, idea that requires specific activities that need to be undertaken for its achievement<sup>130</sup>. The concept of ensuring 'adequate incentives in water pricing' indicates that water services should be chargeable, alongside environmental and resource costs, and this is done with two objectives in mind:

1. water pricing incentives should be used to encourage effective use of water thereby reducing over-exploitation of water resources and contributing to achieving other environmental objectives (COWI, 2014);
2. water users should pay for the services they receive to make an adequate contribution to the financing of the water services taking the polluter pays principle into consideration (COWI, 2014).

Price elasticity and sensitivity of heterogeneous users to different levels of pricing is what adequate incentive is based and depend on (Howarth, 2009).

Water pricing requirements include three elements as well, that will be analysed in the following section of this chapter:

1. the Cost Recovery Principle - the amount of costs that should recovered;
2. the Polluter Pays Principle (PPP) - who should bear the payment of the incurred pollution;
3. the idea of incentive pricing - how the payment is designed.

### Water use

Through the meaning of 'water use', Article 2(39) widens the given definition of 'water service'.

The European WFD identifies 'water use' as follow:

“Water use’ means water services together with any other activity identified under Article 5 and the Annex II having a significant impact on the status of water” (Article 2(39), WFD 2000/60/EC)<sup>131</sup>.

In fact, the provided definition for 'water use' enlarges the previously given definition of 'water services', by including it in a broader circle of activities that have significant impacts on the status of waters within the Directive. By stating so, the definition limits the long list of 'water uses' to those activities that can be comprised under the review of the pressures and impacts of human practices, under article 5 and the Annex II (Howarth, 2009).

Article 5 requires to all the Member States a “review of the impact and human activity on the status of surface waters and groundwater” (Article 5(1), WFD 2000/60/EC)<sup>132</sup>, in accordance with technical specifications set

<sup>130</sup> “Article 9 – Recovery of Costs for Water Services”, WISE-RTD, Water Knowledge Portal, 2015. <http://www.wise-rtd.info/en/info/article-9-recovery-costs-water-services>. Accessed 25 May 2015.

<sup>131</sup> “Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, Official Journal L 327, 22/12/2000 P. 0001 – 0073, 2000, Article 2(39). <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32000L0060>. Accessed 25 May, 10 July, 29 August and 5 September 2015.

<sup>132</sup> “Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, *supra nota*, Article 5(1).

out in Annex II, which concern the requirement of reviews of all significant anthropogenic pressures upon surface waters and ground waters<sup>133</sup>.

For this purpose Member States are asked to gather information on these pressures with the purpose of succeeding in the process of establishing an appropriate PoMs “for each river basin district or for the portion of an international river basin district falling within its territory” (Article 5(1), WFD 2000/60/EC)<sup>134</sup>.

Similarly, the concept of 'water use' is extended in the third part of article 9(1) to those situations where payments are made for water services by taking into account the PPP. Article 9(1) also states that recovery of costs is to be from “at least the identified sectors of activity, industry, households and agriculture” (Article 9(1), WFD 2000/60/EC)<sup>135</sup>. This concept refers to the idea that an obligation emerges where an increased cost to a water service provider is given by a particular activity: this specific requirement of the Directive ensures that those engaged in the practice have to provide a corresponding contribution to meet that increased cost (Howarth, 2009).

#### **General aim of sustainable development and open-ended scope of the application**

The concept that “Member States may in so doing have regard to social, environmental and economic effects” (Article 9(1), WFD 2000/60/EC)<sup>136</sup>, as specifically indicated by the article, reflects the general purpose of sustainable development of the European WFD.

Referring this statement to Article 9(3), the concept of ensuring water-pricing policies and adequate contributions might be interpreted with a broader application as it can be read as an allowance of specific financed measures for the restoration of water that has been damaged or contaminated in the past by previous use (Howarth, 2009). This idea clearly opens the potential application of the article as “nothing shall prevent the funding of particular preventive or remedial measures in order to achieve the objectives of the Directive” (Article 9(3), WFD 2000/60/EC)<sup>137</sup>.

This is accompanied by obligations of transparency over Member States in reporting the extents in which the obligations are not “fully applied in the river basin management plan” (Article 9(4), WFD 2000/60/EC).

#### **'Environmental cost', 'Resource costs' and 'Damage'**

In addition to the several concepts delineated by article 9, the EC proposed that cost recovery water pricing policies would also need to reflect three other kinds of costs: financial costs in providing water services, environmental costs and resource costs (European Commission, 2003). Thus, taking account to the WATECO

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<sup>133</sup> “Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, *supra nota*, Annex II.

<sup>134</sup> “Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, *supra nota*, Article 5(1).

<sup>135</sup> “Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, *supra nota*, Article 9(1).

<sup>136</sup> “Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, *supra nota*, Article 9(1).

<sup>137</sup> “Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, *supra nota*, Article 9(3).

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guidance, the definitions of 'Environmental Costs' and 'Resource Costs' need to be introduced for this scope. 'Environmental Costs' constitute the “costs of damage that water uses impose on the environment and ecosystems and those who use the environment, including the various kinds of environmental and ecological damage that might result from water pollution or water use” (European Commission, 2003).

'Resource Costs' are defined as “the costs of foregone opportunities which others suffer due to the depletion of the resource beyond its natural rate of recharge or recovery” (European Commission, 2003).

The concept of 'Environmental Costs' introduces the idea of environmental and ecological damage that may occur due to a particular activity. A 'damage' is expected to rise in a situation where there is a discrepancy between some 'reference' and 'target' point or situation and hence it is a concept connected to the idea of “failure in respecting a norm or standard” (Howarth, 2009).

In the context of the European WFD, the specific natural target to adopt is the one which envisages the objective of reaching “a good environmental status by 2015”<sup>138</sup>. Therefore, if a defined water body fails to reach this goal by the established date, the environmental damage can be identified as “the difference between its actual state and the required status under the WFD”, for example (Howarth, 2009).

Moreover, according again to article 9(1), environmental and resource costs have to be taken into account in respect of the theory of Cost Recovery for Water Services for ensuring that water prices could provide adequate incentives for efficient water use, as stated. In practice, in order to implement these requirements, the total environmental and resource costs involved in providing water services need to be calculated and the extent to which these costs are internalized through existing instruments or practices by different water users needs to be reported (Howarth, 2009).

Considering that a cost is defined as 'internal' when “it is met or compensated by the one who causes it” (Howarth, 2009), an emblematic example in this sense is the assessment of the PPP: its implementation is designed as realized where all environmental and resource costs are totally compensated or where a complete internalization of costs through charges to water users can be reported (Howarth, 2009).

According to the Information Sheet on Environmental and Resource Costs published by the ECO2 drafting group in 2004, the assessment of environmental costs involves the complex procedure of assessing the environmental impacts, of valuating environmental damage and the institutional and financial assessment of the extent to which the environmental costs are internalized (ECO2, 2004).

Among the many steps of this process, placing a price on environmental damage is the most problematic aspect. Either way, two methods can be found in literature and they can be used for this purpose:

1. a 'cost-based' approach, contemplating an assessment of the costs of practices that are necessary in order to avoid environmental damage and carried out by raising “a proxy between the environmental protection costs and environmental damage costs” (Howarth, 2009);

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<sup>138</sup> “Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, *supra nota*.

2. a 'benefit-based' approach, which poses its basis on the environmental damage causing loss of welfare (Howarth, 2009). This loss is valuated through the Willingness To Pay (WTP) and the Willingness To Accept (WTA) compensation (Howarth, 2009).

### **Polluter Pays Principle (PPP)**

As mentioned above and according again to article 9 WFD, cost recovery water pricing is to be in accordance with the PPP as well as with the adequate contribution of water uses.

Taken literally the PPP can be spelt as: “a person who is responsible for pollution of the environment must pay the cost of the resulting environmental damage” (European Commission, 2003).

Given this definition, several uncertainties regarding the interpretation of the principle can be listed: among these, the two thesis of whether a payment of money can solve an environmental damage and if the allowance of restoration of an environmental damage through a normal payment is to be considered as ethically or morally valid (Howarth, 2009) can be listed.

For avoiding an interpretative misunderstanding, the action of the PPP has also been formulated with different objectives by the European Community Council. These contemplated functions are:

1. “the economic integration function”, through financial anti-pollution measures aiming to keep the competition undisturbed;
2. “the redistributive function”, through the internalization of costs of those impacts that create pollution;
3. “the preventative function”, through the requirement of meeting the costs of pollution reduction/abatement for the polluters;
4. “the restorative function”, through the re-allocation of cost of environmental restoration (Howarth, 2009).

In this context though contrasting ways of interpretation seem almost equally plausible (Howarth, 2009), with the consequence that this approach towards Cost Recovery for Water Services has given rise to the possibility that the purpose of the PPP may or may not contemplate the concepts of prevention and remediation of environmental damage, according to different analysis over the same principle. At support of this idea, the two points of view are briefly reported below.

The first interpretation can be drawn from a further analysis of the PPP made by the European Community Treaty that concluded that the principle may be characterized as follow.

1. The PPP does not contemplate the concept of prevention and remediation of environmental damage:

“Community action in environmental matters shall proceed on the basis that the costs for removing environmental pollution in cases where existing provisions have not been adherent to are in principle to be borne by the emitter. The burden of such costs is only to be imposed on the general public by way of exception. Exceptions can be

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formulated differently for the various regions” (Howarth, 2009).

This concept finds its fundamentals on the Community environmental policy, which is to be based on the precautionary principle and on the “principles that preventative action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay” (European Community Treaty, Art. 174(2)).

Two significant aspects follow logically from the European Community Treaty: the idea that the PPP's scope is limited and the thesis that preventative action is not included in its sphere of analysis (Howarth, 2009).

On the other hand, the Treaty incorporates four environmental policy principles overall: precaution, prevention, rectification at source and polluter pays. In this case only the preventative principle, on the contrary of the PPP, would admit the preventative action and, if this interpretation of the PPP is given and accepted as above, the interpretation of the cost recovery requirements under the the European WFD has to refer only to recovery of costs for past environmental damage (Howarth, 2009). As a matter of fact, the obligation of cost recovery for preventative action is not considered by the PPP, as article 9 of the WFD clearly omitted the preventative principle aspect alongside the characteristic of rectification at source (Howarth, 2009).

2. The PPP contemplates the concept of prevention and remediation of environmental damage:

The other interpretation of the PPP finds a completely opposite view from the Environmental Liability Directive (2004/35). At article 18 this Directive ascertains that:

“According to the 'polluter-pays' principle, an operator causing environmental damage or creating an imminent threat of such damage should, in principle, bear the cost of the necessary preventative or remedial measures [...]” (Article 18, 2004/35/EC)<sup>139</sup>.

By stating so, the Environmental Liability Directive deals with a contrasting interpretation of what suggested above, by clearly assimilating the PPP with the prevention principle and by finding a justification for a preventative action and for remediation into the principle under question.

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<sup>139</sup> “Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage”, Official Journal L 143, 30/04/2004 P. 0056 – 0075, 2004.  
<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32004L0035>. Accessed 27 May 2015 and 22 August 2015.

### River Basin Management Plans

The European WFD establishes also a framework for sustainable water management through the development of the economic approaches of River Basin Management Plans (RBMPs) and Programmes of Measures (PoMs), always with the objective of “preventing deterioration of the aquatic environment and of achieving good status of all water bodies by 2015” (European Commission, 2003).

The Directive prescribes that “management activities should aim to achieve the goals within geographical areas or river basin districts and these are based largely on surface water catchments, together with the boundaries of associated groundwater and coastal water bodies”<sup>140</sup>.

On this argument the Directive also states that: “As water has a truly transboundary character, its sustainable use and protection has to be carried out on the basis of the hydrological boundaries, and if necessary via cross-institutional or even international cooperation”<sup>141</sup>. This content clearly underlines the important necessity of transboundary cooperation of shared water bodies in order to succeed in the achievement of the WFD' goals for the entire water catchment, by denying political boundaries and by following its natural configuration.

For each river basin district so, a river basin planning process must be set up in both national and international contexts.

This river basin planning process includes various phases varying from the analysis, to the monitoring, the objective-setting and the identification of appropriate measures in order to maintain or improve a specific water status.

Either way, the first step is the initial RBMP to be published by 2009 (European Environment Agency, 2007). The latter action has to mirror the current status of water bodies within the river basin district and it has to indicate the measures planned for reaching the goals. Therefore, it represents the main reporting mechanism of WFD implementation not only for the Commission, but also for the general public (European Environment Agency, 2007). The RBMP process needs also to contemplate the preparation of PoMs at basin level as it aims to meet the environmental goals of the Directive in a cost-effective way. It also includes all the actions that every single Member States plan to take for that purpose.

According to the European Environment Agency (2007), the RBMP of the first (2009), second (2015) or further cycles (2021, 2027) will be more likely comprehended in this iterative process of planning, implementing and evaluating of the PoMs<sup>142</sup>, as fundamental steps for ensuring that all waters achieve a good status, as required.

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<sup>140</sup> “River basin management plans and programme of measures”, European Environment Agency, 2014.  
<http://www.eea.europa.eu/themes/water/water-management/river-basin-management-plans-and-programme-of-measures>. Accessed 20 July and 29 August 2015.

<sup>141</sup> “River basin management plans and programme of measures”, *supra nota*.

<sup>142</sup> “River basin management plans and programme of measures”, *supra nota*.

### **iii.ii. How a Payments for Ecosystem Services deal can be integrated with the Water Framework Directive.**

For the purpose of identifying how a PES agreement can be integrated in the WFD, several common characteristics are taken into account and used for developing some considerations.

Firstly, aside from the aspects outlined all through the analysis of article 9 of the WFD, such as creating an incentive for a more efficient use of water, the principle of Cost Recovery for Water Services can also be identified as somehow similar to the PES mechanism. As a matter of fact, the principle can be considered as a mechanism for producing revenue to rectify the cost of environmental damage arising from water use. In this way, this theory appears to be approachable in terms of purposes to the objectives of PES schemes for watershed services.

Secondly, the WFD concept of associating water pricing policies with a greater sustainability reflects the overall goal of PES for watershed services, thus creating a clear link between the obligations required by the Directive and the possible mechanisms that can be adopted in order to carry out its implementation. In fact, they both require each user to pay all the costs resulting from water use both in respect of its qualitative and quantitative impacts and then they both contemplate the re-address of the payments in order to rectify the impact of the water users.

Thirdly, the PPP may also be hypothetically drawn as a variant of the PES approach. In effect, the PPP of the WFD is not a normal PES scheme because of several different aspects. First of all, it deals with the creator of pollution who is charged an amount of money that is in theory linked to the magnitude of damage done to the others and, then, the beneficiaries of the unpolluted water service are not asked to help in the process of paying for the service from the WFD principle. Though the 'Beneficiary Pays' approach is adopted in a PES system and although 'Polluter Pays' and 'Beneficiary Pays' approaches are different in their contents, they can cooperate as part of a package of measures for improved environmental and water management (The World Bank, 2007)<sup>143</sup>.

In addition, the European WFD does not refer to any explicit provision for the allocation of water services costs but it gives also relevance to the necessity of an “operational practical assessment of the European Cost Recovery water pricing policy”<sup>144</sup>, integrated with other efficient measures (Howarth, 2009). The PES mechanism so, if correctly implemented, can represent a valid measure of integration of the Directive and it can cooperate towards the same scope: to ensure that “environmental, economic and social objectives are met effectively” (Article 9(1), WFD 2000/60/EC)<sup>145</sup>.

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<sup>143</sup> See: Chapter 4, Section ii.

<sup>144</sup> “Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, Official Journal L 327, 22/12/2000 P. 0001 – 0073, 2000. <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32000L0060>. Accessed 25 May, 10 July, 29 August and 5 September 2015.

<sup>145</sup> “Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework

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Taking into account the considerations above, other aspects can be analysed in order to identify how a PES scheme can be integrated with the context of the European WFD.

For this purpose, some other peculiar aspects are of notable relevance. For example, the idea that the assessment of ES could support funding applications by providing a detailed account of the benefits generated by investing in WFD measures is one of them, or the aspect that additional funds could be achieved by setting up payment schemes for users of ES (COWI, 2014).

As a matter of fact, the finance of WFD measures currently originates from different sources: public budgets, EU funds, national funds, operators' and companies' funds and taxes and user charges, including PES schemes (COWI, 2014). It appears considerable that the most direct way to improve and support the provision of funds for financing WFD measures is considered to be through PES for water services (COWI, 2014). This is because the scheme connects the provision of a specific ES (water quality for example) with the payment for the service received (an improved water quality).

As seen, the analysed article 9 of the WFD specifies the notion of 'Resource Costs' and the reference to 'Environmental Costs' which have to be taken into account in respect of Cost Recovery for Water Services for ensuring that water prices provide adequate incentives for an efficient water use<sup>146</sup>.

The adoption of a 'benefit-based' approach for placing a price on the environmental damage through the use of the WTP or WTA compensation appears to be a clear connection to the considerations above and the idea of valuing ES. The value of certain ES can be associated with the WTP for the benefits the individuals derive from consuming that good or service, so to say the price paid in markets for such good or service, or the WTA a compensation for a given behaviour (Newcome et al., 2005), as previously described<sup>147</sup>. Therefore, PES for watershed services can provide support in building a market based on benefits and adequate incentives for the sustainable and efficient use of water services as the objectives of a PES scheme may be approachable to the WFD goals, associated with the fact that PES mechanisms for watershed management may be adopted as a valid practice or as an integrative measure in order to achieve them.

The aspect of incentive pricing is about the design of the payment scheme, resulting into being another point in common with the environmental mechanism. A PES system not only contributes to meet the WFD objectives, but it also provides help in the process of providing additional services to various other ES as, for example, flood protection, ecological corridors and many others.

PES agreements can also be an effective contributor not only for coping with past environmental damages, so that for example the water quality of a specific water body can be restored, but also for assessing a preventative action for avoiding future environmental damages. This payment deal incorporates so the two different interpretations over the PPP described above, thus consisting in a perfect economic tool for the possible implementation of the WFD.

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for Community action in the field of water policy", *supra nota*, Article 9(1).

<sup>146</sup> See: previous Section.

<sup>147</sup> See: Chapter 2, Section ii.

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## **Chapter 4**

### **Meeting the Water Framework Directive's objectives in the Dojran Lake area through the implementation of the instrument of Payments for Ecosystem Services.**

#### **i. A practical and plausible proposal of Payments for Ecosystem Services scheme for ensuring water quality and quantity in Dojran Lake area.**

Dojran Lake and its surrounding area is well known for its scenic beauty, both on the Macedonian and Greek sides. As particularly mentioned above, this natural heritage became vitally threatened because the lake's water declined seriously over the period 1989 – 1999, however it has been restored over the last 15 years (Smith and Petkovski, 2001; Matilevska, 2006; Personal Communication MoEPP, 17/04/2015). Notwithstanding, the water quality faced an intense degradation, leading to the need of restoration with a transboundary implementation.

For defining a proposal definition of a PES scheme for ensuring water quality and quantity in the Dojran Lake region, the precise area object of the future planning of the environmental decisions and application must be considered. Understanding the spatial distribution for ES plays a key role in the identification of potential beneficiaries, of the institutions required to provide the service and of the transaction costs associated with the provision. The more global the service is, the higher the transaction costs usually are (Kemkes et al., 2010), thus comprehending the spatial distribution of the scheme is of core importance.

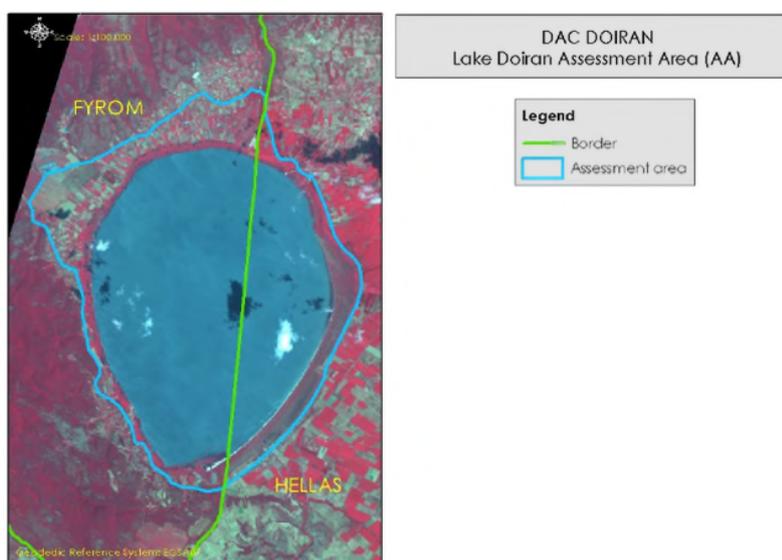
Hence, the first step in spatial assessment is the definition of the Assessment Area (AA).

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Referring to the AA identified by Anastasiadis, Seferlis and Papadimos (2005), the selected AA for Dojran Lake has been drawn based on the lake shoreline of the end of the 80's and on “permanent geomorphological and hydrological features on both sides of the national boundaries”. This means that the road next to the former shore of the lake separating the wetland area from the present agricultural land was selected as boundary of the AA on the Greek side, while in FYROM the national road to the north and then a secondary road until the boarder with Greece to the north-east were followed and drawn (Anastasiadis et al., 2005).

The figure below represents the AA of the selected area drawn in a blue line, while the green line reflects the political border between the Greek and the Macedonian countries (Figure 3).

Figure 3 – The Assessment Area at Dojran Lake.

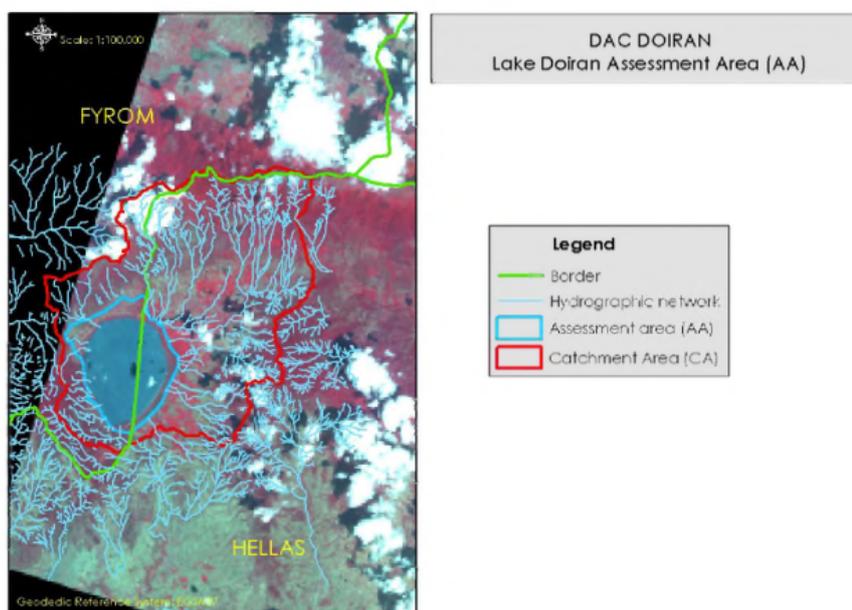


Source: Anastasiadis, Seferlis and Papadimos, (2005).

The next step in spatial assessment includes the Contributory Area (CA) delineation and map preparation. The overall goal in this phase is the identification of the area of land affecting the wetland under assessment. The CA can be described as “an area that drains directly into the AA, either through surface, subsurface flow or through groundwater flow but not through direct flooding from waterways” (Anastasiadis et al., 2005) (Figure 4).

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Figure 4 - Contributory Area and hydrographical network of Dojran Lake.



Source: Anastasiadis, Seferlis and Papadimos, (2005).

The delineation of the CA stands for being a useful process because it includes the AA into a more extended geographical context: in this way it provides the general view of the region under process. It also identifies the watershed area which conveys into Dojran Lake.

According to the CA, approximately more of the two thirds of the open water is in FYROM, whereas two thirds of the catchment area of Dojran Lake watershed belongs to the Hellenic territory. This then involves a transboundary action in order to carry out a sustainable plan for the area. The total catchment area is approximately 276 km<sup>2</sup>, whereas the lake covers approximately 40 km<sup>2</sup> or 42 km<sup>2</sup> referring to Greek or Macedonian data accordingly, with a wide floodplain on the south and east side and open water covers 12% of the CA (Anastasiadis et al., 2005). Almost three-fifths of the lake area is in the FYROM territory and the whole catchment is essentially an agricultural area, even if relevant differences concerning the catchment area between the FYROM and Greece can be reported. The Macedonian surrounding hills and the mountain ranges of Belles and Krousia are prevalently vegetated (Anastasiadis et al., 2005).

Activities in the wetland such as grazing, ploughing, waste disposal, small constructions, hunting, fishing, and recreation were recorded in order to provide information on the uses occurring or that could potentially occur in the AA (Anastasiadis et al., 2005). It was also recorded that cattle frequently graze in the AA, whereas solid waste, mainly from fisheries, are also present (Anastasiadis et al., 2005). Farmers and hunters are frequent on the lakeshore, while recreation is mainly developed in the FYROM side, which has a beach, casino, hotels and a horse farm for riding around the lake (Anastasiadis et al., 2005).

On the contrary, tourism in the Greek side is not efficiently developed: only in the beginning of the year 2000,

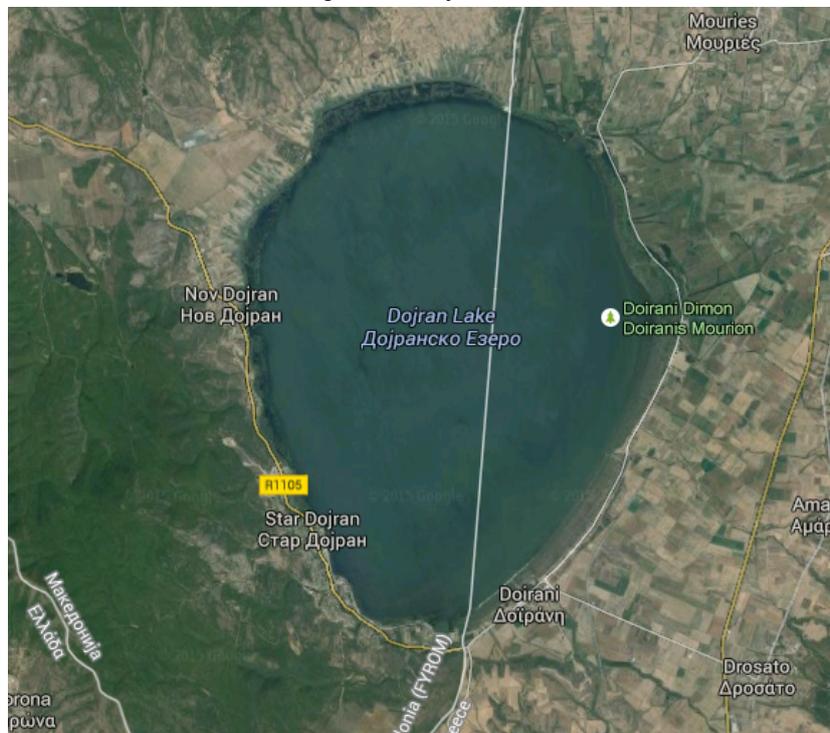
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local municipalities initiated plans to attract tourists interested in the natural values of the area (Anastasiadis et al., 2005), but the AA and CA reveal how the Greek lake's surroundings are still dominated by farms and cultivated fields. The immediate area around Dojran Lake specifically covers 700 hectares of arable land on the Macedonian side, 70% of which is privately owned; 500 hectares are vineyards, 70 hectares are grain fields and almond and olive trees cover 30 hectares each (RENA, 2011).

To support these considerations, a zoning process can be carried out involving an analysis of a topographic map from Google Earth representing Dojran Lake (Figure 5), added to a comparison with the previous AA and CA maps. This outlines and confirms that the two sides of the AA and CA appear different in terms of land use and human presence. The FYROM side reveals farms, some villages, small cities and an industrial area to the North close to the Greek boarder and only traces of forests or uncultivated lands. Recreation mainly exists solely in the FYROM side, whereas agriculture and cattle farms are the main activities on the Greek side, confirming the records reported above.

This consideration is important because the agricultural activities, fishing and recreation and all other characteristics of the area surrounding the lake, affect the wetland in both countries and they need to be carefully taken into consideration before developing a reasonable proposal of PES scheme and implementation.

Figure 5 – Dojran Lake



Source: Google maps

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Another important piece of information which could be determined at this step of the process is the origin of all the water that flows into the lake and if any exchanges of ground water can be identified and reported throughout the watershed area.

The presence of surface water can be reported by analysing and comparing the previous maps in detail, while the CA shows how a recharge of ground water is significant in the Dojran Lake watershed.

However, ground water and surface water use for both domestic and irrigation purposes in the catchment may affect the lake's water level. A simulation of the hydro-period of the lake was carried out in support of this thesis and for the purpose of adopting environmental friendly measures and agricultural practices, an expansion based on the limited available data and information.

From this analysis, it was first demonstrated that irrigation affects the lake's water level: a reduction of the irrigated area by 10%, 30% and 100% -consisting in no irrigation- led to a water level rise by 0.15 m, 0.3 m and 0.40 m respectively, compared with the normal irrigation scenario (Anastasiadis et al., 2005). The second conclusion of the study concerned the influence of environmental conditions on the lake even in the case of no irrigation in the catchment. In fact, the study reported that the water level drops following the same general trend observed in the cases of irrigated scenarios. This showed that the lake's hydro-period is mainly affected by the prevailing environmental conditions, precipitation and temperature (Anastasiadis et al., 2005). The third result referred to the constant water inflow discharge into the lake of 0.25 m/sec, representing the transportation of water from 10 wells in the area of Gjavato, near the Axios (Vardar) river which outlined how the transportation of water from an external source positively affected the lake's water level (Anastasiadis et al., 2005).

The analysis highlighted how the water level was affected both by precipitation and temperature and by irrigation, an aspect which sustains the hypothesis of effecting water quantity of the lake due to agricultural practices and thus its water quality.

Most of the cultivated areas are irrigated through the extraction of groundwater, especially on the Greek side. This action repeated over time led to the significant drop of the lake level and caused degradation of the groundwater recharge function of the lake. This in turn caused degradation of the wetland value related to water for irrigation (Anastasiadis et al., 2005), mostly due to groundwater wells. This had the consequence of decreasing water volume going into the lake, which in turn affected not only water quality and fish populations, but also other biodiversity and recreational values of the lake. With the deterioration of the wetland ecosystem, the habitat for many important migratory birds was at danger. The scenic beauty of the lake, which attracted tourists, was also degraded with the shrinking of the lake. In fact, the movement of water around or through the wetland is one of the determinants of how the lake functions, as it supports its ecological and biological characteristics.

Generally, the agricultural practices and activities of the AA but also of the CA which affect the water quality of the lake by entering the wetland is the link between the wetlands and the surrounding agricultural area.

Given the considerations above, the area that needs to be considered is the CA, which includes all the different

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bodies of water that affect the water quality of the lake (which can also depend on ground water, as seen previously). This concept leads to the necessity of a broader transboundary implementation of the PES plan, involving both the FYROM and Greece and taking into consideration everything that affects or can affect the wetland.

The proposed PES mechanism for the case study is considered as a catchment-scale scheme, as it links ES 'providers' with ES 'consumers' in the CA.

For the purpose of this study, an already implemented PES programme in China can be taken as a reference as it appears similar in terms of overall aims, purposes and ES around which it rotates. The programme was proposed by Giupponi, Gorla, Sgobbi and Markandya on "A Pilot Study on Payment for Ecological and Environmental Services in Lashihai Nature Reserve, China" published in 2009, and by the World Bank as part of the "World Bank Analytical and Advisory Assistance Program China: Addressing Water Scarcity – From Analysis to Action", published in 2007.

The programme aims to ensure an improved water quality of Lashi Lake, part of the wetland included into the Lashihai Nature Reserve in China, and in the nearby tourist town of Lijiang through the establishment of a PES scheme between farmers and tourists.

Considering the various international PES initiatives for watershed services provided and analysed above<sup>148</sup>, it is clear that the closer the connections between the beneficiary and the provider of the environmental service are, the easier it will be to establish and implement an effective PES mechanism.

Taking into account Dojran Lake's geographical situation, it may be feasible to establish a PES mechanism in the area with the addition of a transboundary implementation of the programme, considering the nature of the lake. In the meantime, this process needs to be assessed by focusing on the need of promoting inter-regional cooperation and of respecting and implementing the European WFD and *acquis*.

Wetland and lake ecosystems are known for providing diverse ES, namely provisioning, regulating, supporting and cultural services, as described by the Millennium Ecosystem Assessment (2005). For the purposes of this study, the ES comprised in the categories of regulating and provisioning services by the MEA (2005) were prioritized. Water quantity is part of the provisioning services provided by the ecosystem, while water quality is a regulating service (MEA, 2005).

Within the context of a PES scheme, many connections can be identified recognizing the dependence of socio-economic welfare of the community on ecosystem resources. In particular, understanding the interaction between the wetlands, agriculture, the tourist sector and the local inhabitants is essential.

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<sup>148</sup> See: Chapter 2, Section v.

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As previously mentioned, the agriculture practices are recognized as a source of pollution in the CA under consideration because they affect the water quality of the lake, while the tourist sector is mainly relevant in the FYROM side even though the touristic presence is slowly increasing on the Greek side (Anastasiadis et al., 2005).

As a matter of fact, agriculture is one of the most important sectors having significant environmental impacts and there is a general consensus that agricultural practices which degrade the environment must transition to become more sustainable. Typically, environmental impacts from agriculture are considered as a “function of agricultural expansion into areas of natural ecosystems and [...] the degree of agricultural intensification, in terms of level of use of fertilizers and other agricultural chemicals” (Page et al., 2015).

Dojran Lake combines the aspect of great importance of nature conservation to the increasing number of visitors. Both of these features are connected inextricably by the necessity of good water quality and as an important part of the touristic experience. This aspect is of great relevance, as it reflects the overall aim of the European WFD, context in which this PES scheme aims to be inserted and integrated.

Dojran Lake has also been recognized as a Monument of Nature since 2008<sup>149</sup>, which acknowledges its uniqueness and attractiveness for tourists. Therefore a decrease in water quality is a consequential element in the decline of touristic experience and activities, aside from being part of the list of Wetlands of International Importance<sup>150</sup>.

Furthermore, both tourists and citizens in the area may value the additional benefit of good water quality not only for consumption use, but also for landscape use.

In this study, the ES taken into consideration for the practical and plausible approach of the PES system consists of water quantity and quality for landscape services. The system focuses on the links between water quality and quantity and agricultural practices of the farmers in the CA of Dojran Lake, with the overall aim of ensuring an improved water quality and quantity at Dojran Lake (Table 1).

The scheme can also be comprised in the category of International Payments for Ecosystem Services mechanism (IPES) for its feature of international cross-frontiers assessment<sup>151</sup>.

The proposed PES mechanism is based on general assumptions of cost-effectiveness.

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<sup>149</sup> "Designated Areas", MK – NI 008, 2015.

[http://www.moepp.gov.mk/?page\\_id=4920&lang=en](http://www.moepp.gov.mk/?page_id=4920&lang=en). Accessed 11 August, 2015.

<sup>150</sup> See: Chapter 4, Section iii.

<sup>151</sup> See: Chapter 2, Section iii.

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Table 1 – PES Mechanism

PES MECHANISM	
ES	Water quality and quantity
Service providers	Farmers in the CA
Cost of provision to the service provider	It is expected that it will not be high
Service beneficiaries	Tourists and locals
Value of the service to the beneficiaries	WTP through CVM survey to tourists and locals
Service offered	Landscape; improved water quality and quantity

Source: author

The surrounding farmers are identified as the providers of the enhanced provision of the ES -the improved quality and quantity of water. On the other hand, visitors are the main beneficiaries as they benefit from landscape use, accompanied by the local inhabitants who indirectly benefit from the main service for consumption use.

The water supplies of Dojran Municipality consists mostly of Dojran Lake and to a much lesser extend of small springs, creeks and water accumulation system (RENA, 2011). The surcharge to the citizens of the AA who live mainly on the FYROM side could be applied and it would be justified.

Moreover, Dojran's water supply has recently been significantly improved by the 20 km Gjavoto-Dojran channel, which was built at the beginning of 2000, with the purpose of replenishing the lake with water in order to fix the problems of decreasing water level (RENA, 2011). Over the last few years the channel construction gave also rise to a higher water level, of 1.80 m above the absolute minimum level (RENA, 2011).

The municipality of Dojran has a population of 3456 citizens and at a national level water tariffs currently vary between 15 and 52 eurocents per m<sup>3</sup>, with an average of 30 eurocents per m<sup>3</sup> for domestic consumers<sup>152</sup>.

The identification of the value of the service can be carried out through a Contingent Valuation Method (CVM) of the Willingness To Pay (WTP) of tourists of Dojran Lake or of the local inhabitants beneficiaries of improved water quality.

The CVM survey is an analytical technique and it consists of a "survey that relies on people's responses to a hypothetical question to estimate economic values" (The World Bank, 2007). It is called 'contingent' valuation as people are directly asked to state their WTP or willingness to accept (WTA) compensation, contingent on a

<sup>152</sup> "FYR Macedonia Water Snapshot", Republic of Macedonia, Ministry of Environment and Physical Planning, 2015. <http://sos.danubis.org/eng/country-notes/macedonia-fyr/>. Accessed 11 August 2015.

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specific hypothetical scenario and description of the environmental service and it can be used to estimate both use and non-use values<sup>153</sup>. In this case, CVM was chosen because of the presence of the non-use value with the purpose of associating it to a monetary value.

The travel cost method is an alternative that can be applied in this scenario. This method estimates use values associated with ecosystems or areas utilized for recreation: it does so by considering the economic benefits resulting from changes in environmental quality at a recreational site (in the proposed study specifically) and by regarding the WTP to visit the area calculated “on the number of trips that visitors make at different travel costs”, as “time and travel cost expenses for visiting a site represent the price of access to the site”<sup>154</sup>.

In this case, the travel cost method may underestimate the value of the ES as it does not include the benefits of the local inhabitants, so the choice of CVM appears to be the most suitable for the development of the PES proposal for the case study.

The application of the CVM for the improved ES in Dojran Lake may consist of in-person interviews for the inhabitants, generally very effective but expensive for complex questions as they allow long surveys, while for tourists this application or mail and telephone surveys can be chosen. In addition to the question about the WTP for the improved water quality, the survey must specify the mechanism by which the payment will be made<sup>155</sup>.

Taking into account the specific connotation of Dojran Lake, the payment would be an environmental tax for tourists and a tax for the local inhabitants on the service of drinking clean potable water.

The PES mechanism applied in China for the Lashi lake reveals how a studied environmental tax, defined through the CVM and applied to each visitor, could be sufficient to raise enough money to pay for the agricultural extensions and for supporting other particular required practices (The World Bank, 2007). The same concept can be assumed in case of implementing the proposed PES programme to the Dojran Lake area. In this study, the environmental tax would be added to a tax on the service of drinking water applied to the local inhabitants.

Transaction costs are supposed to be low as the ES is at a regional, watershed scale (Kemkes et al., 2010) and also because reducing inputs of fertilizers and pesticides is not likely to have, as a consequence, lower yields for farmers (The World Bank, 2007).

Intermediaries can be an organization that has the capacity to manage the scheme as the local municipality or a NGO. On the other hand, a common body for the system administration and control could be set up as the scheme foresees the involvement of two countries<sup>156</sup>. This common body could have the role of providing and managing information and of controlling the monitoring system, with the final aim of compensating farmers

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<sup>153</sup> "Contingent Valuation Method", Ecosystem Valuation, King, D.M., Mazzotta, M.J., 2000.  
[http://www.ecosystemvaluation.org/contingent\\_valuation.htm](http://www.ecosystemvaluation.org/contingent_valuation.htm). Accessed 10 July 2015.

<sup>154</sup> "Travel Cost Method", Ecosystem Valuation, King, D.M., Mazzotta, M.J., 2000.  
[http://www.ecosystemvaluation.org/travel\\_cost.htm](http://www.ecosystemvaluation.org/travel_cost.htm). Accessed 10 July 2015.

<sup>155</sup> "Contingent Valuation Method", Ecosystem Valuation, King, D.M., Mazzotta, M.J., 2000.  
[http://www.ecosystemvaluation.org/contingent\\_valuation.htm](http://www.ecosystemvaluation.org/contingent_valuation.htm). Accessed 10 July 2015.

<sup>156</sup> See: Chapter 4, Section iii.

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adopting a minimum utilization of fertilizers in horticulture and viticulture and other practices. This may result in reduced water consumption in the CA of Dojran Lake and improved water quality and quantity of the lake.

It is of great relevance to note and state that the water quality of the lake is also affected by small recreational towns on the Macedonian side, Star Dojran and Nov Dojran, and by two manufacturing businesses situated on separate parts of the lake for olive oil production and steel refining (Personal Communication Ilieva L., 11/08/2015).

Therefore, an efficient and precise action to improve the water quality at the lake will require measures to both decrease the flow of pollution into the lake from agricultural areas from the Greek side alongside managing other municipal causes of pollution, which include for example wastewater and sewage. As mentioned above, solid waste and waste disposal were reported on the AA (Anastasiadis et al., 2005), thus underlining the need for focused municipal actions to ensure an improved water quality combined with a correct and responsible management of the recreation facilities such as beach, casino and hotels, beside the improved agricultural practices. All public water companies but one are owned by the Municipality of Dojran and they are responsible for the supply of water and the collection and treatment of waste water<sup>157</sup>: in this case, a direct public intervention would be required in order to fulfil the established objective.

On the other hand, the money raised through a PES mechanism implementation could be also extracted by adopting the same system but addressing it to another service provider. An environmental fee deriving from taxed tourists and locals or, even more, from private investments could be addressed to the Municipality and watershed managers in order to build a wastewater treatment plant, for ensuring the purification of polluted water and the maintenance of high water quality.

Since there is not an available river basin management plan for the FYROM, as required by the European WFD, the forecast of identifying the zone where this waste water treatment plan can be settled would allow a more efficient touristic zone development, by improving the water quality and the landscape of the water body.

Imposing the environmental service charge to tourists would not be difficult, since visitors already pay a tourist tax in the Macedonian side -the recreational area of the lake (Personal communication MoEPP, 17/04/2015). The extra fee would be applied to both Macedonian and foreign tourists, in all the identified touristic structures of the AA and also on the Greek side, if any exist or will exist.

Tourist tax currently amounts to 40 denars on the Macedonian side (61.4 denars correspond to 1 euro<sup>158</sup>). Experiences deriving from the implementation of similar schemes in other parts of the world suggest that the modest proposed increase of the tax should have no or little impacts on the visitors' number (The World Bank, 2007). Therefore, by adding an environmental surcharge to the visitor fee demand would not be negatively

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<sup>157</sup> "FYR Macedonia Water Snapshot", Republic of Macedonia, Ministry of Environment and Physical Planning, 2015. <http://sos.danubis.org/eng/country-notes/macedonia-fyr/>. Accessed 11 August 2015.

<sup>158</sup> "Macedonian Denar", OANDA, 2015. <http://www.oanda.com/currency/iso-currency-codes/MKD>. Accessed 11 August, 2015.

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affected in any substantial way. Tourism is also the main economic sector on the Macedonian side of Dojran (Personal communication MoEPP, 17/04/2015), mostly attracted by the landscape and the biodiversity present in the lake. It may be stated that visitors may be willing to pay an additional fee, aware that this money will be used for environmental purposes and for repaying all the farmers who adopt minimized utilization of fertilizers in horticulture and viticulture. This can be assessed through an informative campaign in the area addressed to all the tourists and thus stimulating the farmers in using the best practices with a reputational incentive, aside from the money-based incentive.

As a matter of fact, the water resource can actually be the origin of additional flows when its value is drawn by the link with other different values that grow its usefulness (Di Trapani et al., 2014).

The last step in the problem is the qualitative and quantitative assessment of different designs and interventions of potential PES options in terms of their impacts on the variables of interests, namely water quality and quantity of Dojran Lake and other relevant variables. These other significant variables are taken into consideration as they will be important in determining the feasibility and practical implementation of the policy intervention (Giupponi et al., 2009). A comparison between a 'Do nothing' option and an 'Implementation of the proposed PES system' option through a qualitative assessment and the identification of costs and benefits is summarized in the table below.

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Table 2 – Alternative PES options in the Dojran Lake area

	DO NOTHING	IMPLEMENTATION OF THE PROPOSED PES SYSTEM
Pressure on water quality and quantity	High pressure from the high input of fertilizers and pesticides	Less pressure from the decreased input of agricultural pollution
Income of landowners	Stable	Possibly increase
Water quality	Continued deterioration	Improvement
Expected benefits to farmers and agricultural sector	Deterioration of groundwater	Expect that use of pesticides and fertilizers is probably excessive, hence farmers would benefit from lower input costs, without losing in terms of crop yield
Expected benefits to tourism sector	Deterioration of water quality would lead to deteriorated landscape, as well as deteriorated lake's attractiveness for swimming and water sports, with a decrease of tourists	Expect an improvement in water quality and quantity, hence possible benefit to the tourism in Dojran
Other conceivable benefits	Overall progressive deterioration of the wetland and biodiversity; loss of fish stocks and traditional fishing techniques	Expect an improvement in fish stocks quality and diversity, hence local economy and traditional techniques; expect an augmented number of birds
Costs	No additional direct costs; negative externalities on tourism, flora and fauna	Transaction costs are supposed to be low; costs for the CVM implementation and the assessment of the monitoring system

Source: author, adapted from Giupponi et al., 2009

The analysis carried out in the table and related to the system leads to the consideration that the mechanism would have a series of correlated co-benefits associated with the management of the identified ES, aside from being superior in terms of expected benefits to the alternative 'Do nothing'.

In effect, the proposed PES system would have positive impacts on fishing alongside on the improved water quality and quantity of the lake. The decrease of water level and deterioration of water quality over the past years had devastating consequences on fish stocks and diversity, thus posing serious problems for the local economy who relied mainly on this sector (Anastasiadis et al., 2005).

It is clear that measures related to the preservation of a good quality water and to the growth of the water volume of Dojran Lake are fundamental in order to enhance its value. This would create other positive

consequences by triggering a circular effect, primarily by increasing the number of national and foreign visitors attracted not only by the preserved landscape, but also by the chance to benefit from visiting an area rich in biodiversity, culture and history related to fishing techniques. Tourists would in return pay an environmental tax requested through the PES programme and thus provide resources to local farmers. The latter category, by using environment-friendly practices, would ameliorate the water quality, resulting in affecting positively the flora, fauna and the biodiversity of the lake and therefore the fishing sector. A lateral effect in the implementation of this scheme would lead to the support of the local economy through an increased better quality fish stock. The augmented number of birds and the preservation and protection of flora and fauna of the AA all reconnect again to the triggering circular effect described above.

## **ii. Specific considerations on the proposed Payments for Ecosystem Services mechanism, the Water Framework Directive principles and the transboundary context implementation.**

The proposed measure of implementing a PES scheme has as an overall objective besides all the others listed above the goal of reaching a 'good status' for the water body of Dojran Lake as explicitly required by the European WFD<sup>159</sup>, by supporting the adoption of sustainable and environmentally friendly practices.

The potential PES scheme, aside from standing as the major and most common source for financing WFD measures, connecting the provision of an ES with a payment for the service received (COWI, 2014), can also be analysed focusing on other key elements and particular features.

As described, the European WFD contemplates also the PPP<sup>160</sup>. Comparing this principle to a general PES agreement, the former can be identified as a variant of the PES system and implementation. The only difference consists of the idea that in the PPP “the creator of pollution is charged an amount of money that is

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<sup>159</sup> “Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, Official Journal L 327, 22/12/2000 P. 0001 – 0073, EUR-Lex, 2000. <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32000L0060>. Accessed 25 May, 10 July, 29 August and 5 September 2015.

<sup>160</sup> See: Chapter 3, Section iii;

“Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, *supra nota*.

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theoretically linked to the magnitude of damage done to others” (The World Bank, 2007). Considering this definition, a PES agreement differs from the PPP as in this principle the polluter is charged for the damage he/she has created whereas the beneficiaries of the service are completely out of scene and they do not pay for the service. Notwithstanding, the 'Polluter Pays' the 'Beneficiary Pays' approaches can cooperate as a group of measure for improved and efficient environmental management.

On this specific aspect the Coasian approach, deriving from the Coase principle (1960), appears to be of great relevance. The Coasian theory suggests that “the optimal level of environmental pollution can be reached by an arbitrary assignment of property rights to either the polluters or the pollutees” (Hussen, 2004), as it affirms that “the assignment of property rights could be completely arbitrary and this would have no effect on the final outcome of the environmental problem under consideration” (Coase, 1960).

In the Dojran case study the PPP can work with the PES scheme implementation by analysing the PES mechanism under the PPP and considering the Coasing approach. In case that polluters or ES providers kept on polluting and creating damages to the environment they would be obliged to pay for the resulting damages instead of receiving targeted payments. This has the purpose of achieving an optimal level of environmental pollution or, referring to the WFD specifications, a good quality of the water body.

In this hypothetical scenario, the amount of money would be collected by the Macedonian and Greek Municipalities of Dojran and it would be addressed to particular environmental measures. The mechanism would become an additional approach to relieve and support governmental resources, to be added to the finances collected from the beneficiaries, but not re-distributed to the ES providers.

Furthermore and as previously analysed, the European WFD envisions the Cost Recovery Principle which concerns obligations in respect of cost recovery pricing for water services, incentives for efficient water use in pricing policies and adequate contributions by water users to the cost of the services<sup>161</sup>.

Again, a depth analysis of a general PES mechanism could track the lines for a conclusion based on incentives and thus linking the mechanism to the WFD Cost Recovery Principle. In fact, the PES scheme can be read as an amount of money standing for a recovery of costs incurred in all the activities involved in the provision and implementation of the adopted measures for the improved ES.

The Cost Recovery Principle can be proposed by establishing a mechanism that comprises the possibility of adopting an extra money-based compensation to cover the additional costs sustained by the providers of the services who utilize the best and, for this reason, the most expensive and time wasting management practices. In this sense, the Cost Recovery Principle could be read as an extension of the classical PES formula, as it boosts it by stimulating the best practices through additional money-based compensation, which would be ideally covered by the Municipality in the specific case of Dojran.

The amount of resources needed in order to implement this potential action could be hypothetically found and

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<sup>161</sup> See: Chapter 3, Section iii.;

“Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, *supra nota*.

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extracted from the European funds received for the status of potential and candidate countries contemplated by the Stabilisation and Association process through the IPA II Cross-Border Cooperation Programme "Greece - the FYROM 2014-2020"<sup>162</sup>.

As already mentioned, IPA II CBC Programme contemplates a budget of more that €45 million for promoting the socio-economic development and cooperation of the cross-border area, with the general purpose of:

“[...] enhancing territorial cohesion by improving living standards and employment opportunities holding respect to the environment and by using the natural resources for upgrading of the tourist product” (Planet, 2014).

One of the priorities listed in the IPA II CBC Programme guidance regards the fight against environmental pollution and the aim of halting it and reducing the impacts of human activities and environment, aside from promoting the local involvement of citizens in environmental protection (Planet, 2014).

The proposed measure could be clearly justified and implemented by addressing a part of those funds to the proposed mechanism in both sides of Dojran Lake. As a matter of fact, the cross-border cooperation stands out for being one of the key integration instruments adopted by the EU, which has the objective of fostering the sustainable development of both sides of the border as well (Page et al.; Madzova et al., n.d.).

The IPA II CBC Programme guidance's strategic choices involve also the promotion of sustainable and innovative forms of nature-based economical initiatives such as tourism, agriculture, forestry and fishing, contemplating only minimum environment impacts and included within the carrying capacity of the ecosystem (Planet, 2014). The clear connection between the IPA II CBC Programme strategic choices and the European WFD purposes is evident, even if the WFD concept of prevention of any deterioration of water quality and of reaching 'good status' for water bodies is broadly extended to other sectors in this case. Therefore, the proposed PES scheme, if correctly and efficiently assessed, appears again in line with the requirements of the European policies thus providing a possibility to develop a cross-border area, by following and implementing the advices of the guidance. Between the suggestions of the IPA II CBC Programme guidance the concept of improvement of touristic facilities and management, aside from the need of developing new forms of tourists and new tourism products, is also relevant and these aspects are also of particular importance when referring to the need of enhancing territorial cohesion of the area (Planet, 2014).

The proposed PES approach stands in this way for being a new environmental cross-border approach to follow, which involves the necessity of cooperation of the local and national authority. In fact, authorities are asked to support and monitor the application of the scheme, whose implementation needs to be transboundary. For this purpose, Greece and the FYROM need to develop a bilateral water monitoring system, both in terms of water quality and quantity and in terms of implementation of the PES scheme. Cooperation is of great importance for the controlling phase of the project, as the CA does not belong in a single country and

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<sup>162</sup> See: Chapter 1, Section iv.

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it needs a spread common control and a coordinated bilateral cross-frontiers action<sup>163</sup>.

The Hellenic authority, who holds the obligations for the development and implementation of all programmes related to the protection and management of the Greek water resources and the coordination of all competent authorities dealing with the aquatic environment, is the Special Secretariat for Water<sup>164</sup>. Among its main activities, the implementation of the WFD is also included<sup>165</sup>. In particular, Greece has recently established and revised a national monitoring programme for the assessment of the status of surface water and groundwater, in order to obtain a coherent and comprehensive overview of water status within each river basin<sup>166</sup>, as required by the WFD.

On the other side of the lake, the Macedonian MoEPP is in charge for creating and implementing the environmental policy in the FYROM and for dealing with the legal harmonization process: the MoEPP is the figure responsible for the overall water management including the river basin management (European Commission, 2014). As analysed previously<sup>167</sup>, the FYROM has completely transposed the European WFD and it has also identified some basilar priorities regarding water quality for transboundary water bodies (Nedanovski et al., 2012). Notwithstanding, Dojran Lake has not been associated with a RBMP yet and transboundary water basin management in cooperation with bordering countries is still in preparation (European Commission, 2014; Personal Communication MoEPP, 17/04/2015). For this reason, the Macedonian MoEPP should twin arrangements with the Greek Special Secretariat for Water, in order to begin a proper implementation of the already set up, but not still operative, management structures for river basins, and thus having support from a country who has some experience in dealing with the Directive. Collaboration is essential not only in order to monitor the correct functioning of the PES mechanism, but also for implementing a water management based on river basin -in this case study of Vardar river-, as required by the WFD.

Transboundary cooperation is also required for what concerns the CVM assessment: a coordinated bilateral action needs to be efficiently sought for getting the correct payment. Difficulties could be found while assessing the CVM and the ES price<sup>168</sup>, as the the application of the CVM for the improved ES in Dojran Lake consists of in-person interviews which are generally very effective but expensive for complex questions in the meantime, as they allow long surveys<sup>169</sup>. Cooperation is also requested for adopting the same environmental tax and for assessing the tax on the service of drinking water to the whole CA area, whereas a collaborative operation is needed then for the distribution of payments to the providers of the service.

In this sense every ES providers whose practices affect the water quality and quantity of the lake has to be

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<sup>163</sup> See: SWOT Analysis, Chapter 4, Section iii.

<sup>164</sup> "Special Secretariat for Water", Ministry of Reconstruction of Production, Environment & Energy, 2014.  
<http://www.ypeka.gr/Default.aspx?tabid=246&language=en-US>. Accessed 25 July 2105.

<sup>165</sup> "Special Secretariat for Water", *supra nota*.

<sup>166</sup> "Monitoring", Ministry of Reconstruction of Production, Environment & Energy, 2014.

<http://www.ypeka.gr/Default.aspx?tabid=249&locale=en-US&language=el-GR>. Accessed 25 July 2015.

<sup>167</sup> See: Chapter 1, Section v.

<sup>168</sup> See: SWOT Analysis, Chapter 4, Section iii.

<sup>169</sup> See: Chapter 4, Section i;

"Contingent Valuation Method", Ecosystem Valuation, King, D.M., Mazzotta, M.J., 2000.  
[http://www.ecosystemvaluation.org/contingent\\_valuation.htm](http://www.ecosystemvaluation.org/contingent_valuation.htm). Accessed 10 July 2015.

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controlled in both countries and every improvement in water quality has to be systematically reported by the authorities of both countries. Therefore, a good communication and multi-level understanding is required for those purposes, both locally and nationally, for obtaining the desired results. The Greek and Macedonian public bodies had already developed marginal capacity in bilateral planning and implementation in the field of cross-border cooperation during the INTERREG III programme, expired in 2006<sup>170</sup>, but they clearly need to overcome administrative constraints and internal problems for obtaining a more efficient and effective coordination and for boosting the already reached results (Management Authority of Community Initiative Programme Interreg II, Ministry of Economy and Finance, 2013).

The proposed PES mechanism could provide everyone with a new opportunity to become actively involved in the process of modelling the management of the Vardar river basin district –of the Dojran Lake water body, in particular- as contemplated by the WFD<sup>171</sup>. Local inhabitants, tourists, farmers and local and national authorities are all connected towards the same goal of improving water quality and quantity of Dojran Lake and thus contributing to an improved landscape and touristic experience. The idea of increasing the awareness of the water pollution problem between the local inhabitants of the CA is an additional fundamental step to integrate in this process<sup>172</sup>.

Another consideration could arise from the analysis carried out above. As mentioned, competent authorities should figure out the possibility of installing a wastewater treatment plant. This could solve many environmental problems, considering that its installation costs could be covered by an amount of money collected in the same way of the previous PES mechanism, but addressed elsewhere. A new PES scheme would be provided in this way, having both the Greek Special Secretariat for Water and the Macedonian MoEPP as providers for the improved service and tourists and the local inhabitants as beneficiaries. In this way, the potential PES scheme would be another diverse source for financing a WFD measures, connecting the provision of a specific ES with a payment for the service received.

Furthermore, the installation of the wastewater treatment plant is also contemplated from a European level of action by the IPA Regional Development Operational Programme in the FYROM<sup>173</sup>. In this case, investments focused on wastewater treatment and solid waste management with the final aim of establishing a wastewater collection and a treatment infrastructure in order to meet the European requirements are necessarily required (European Commission, 2014). Therefore, beside the resources raised through the potential PES scheme other financial sources could be re-addressed from the funds provided by the Programme and they could be hypothetically adopted for the installation of the wastewater treatment plant.

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<sup>170</sup> See: Chapter 1, Section iii.

<sup>171</sup> See: Chapter 3, Section iii;

“Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, Official Journal L 327, 22/12/2000 P. 0001 – 0073, EUR-Lex, 2000.

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32000L0060>. Accessed 25 May, 10 July, 29 August and 5 September 2015.

<sup>172</sup> See: SWOT Analysis, Chapter 4, Section iii.

<sup>173</sup> See: Chapter 1, Section ii.

### **iii. The SWOT analysis of the proposed mechanism and the potential of its future implementation: the role of the FYROM institutions in implementing the Payments for Ecosystem Services deal as one of the components for the country path towards accession into Europe.**

The desire of predicting the possible effects of land use decisions on ES and on human well-being has recently emerged in literature as a crucial necessity while dealing with spatial planning.

As regard as the future provisions of specific ES are affected by the assessment of diverse land-use zoning policies (Geneletti, 2013), decision-making processes envisage an important role in determining the final results on biodiversity, on the environment and on the anthropogenic existence.

The concept of measurement and valuation of ES is becoming an increasingly important factor in decision and policy making, from a local to a global or international scale (Page et al., 2015). For this reason, PES agreements require a detailed evaluation to ensure that intended outcomes are realized, thus involving a precise attention through every steps of their assessment processes. As a matter of fact, PES can incentive environmentally friendly land management decisions that sustain the provision of the ES by paying landowners or land managers for ES that society enjoys, as analysed previously<sup>174</sup>.

The FYROM, is a country with great potentials in alternative tourism. This territory is currently facing the consistent opportunity of developing the bordering regions through the assessment of small-scale measures for cultural, historical, religious and other forms of tourism. Therefore, it could experience positive impacts on sustainable development (Page et al., 2015) by exploiting the IPA II CBC Programme financial resources.

In the proposed PES mechanism, landscape is one of the improved services offered through the implementation of the scheme. This service mirrors the representation of a geographical space shaped by anthropogenic, cultural and traditional factors and also by human capital. The integration of all these different variables in a dynamic scenario where the proposed PES system is applied and where other local transboundary measures are implemented by seeking and requiring the cooperation of national authorities, local inhabitants and stakeholders, can aim to successfully contribute to the creation of additional value for the Dojran Lake area.

A considerable key-aspect for succeeding in this process is represented by the creation of a cross-frontiers network and synergies between local stakeholders. These can be authorities at different levels, public administration, agro farmers and local inhabitants. Connections with and between the environmental national authorities in both transboundary countries are also needed. The intervention of the public operator can also

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<sup>174</sup> See: Chapter 2, Section iii.

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be performed by means of guarantee of the correct implementation of the PES mechanism.

Since there is no literature referring to the application of PES agreements in the FYROM territory, ideally no legal precedents can be found to obstruct the implementation of the proposed system. In this case, the legal framework would be given by the contractual relationship between all the actors, established through the scheme, which needs to be in accordance with local requirements and with the European *acquis* and the connected obligations.

Giving a glance to the CA described and reported above<sup>175</sup>, it may be argued that the PES mechanism could be hypothetically applied only in Greece as more of the two thirds of the CA of the watershed belongs to the Hellenic territory. This would result in avoiding every issues concerning transboundary cooperation and implementation and it would turn in this way into being more feasible in terms of time and of ease of assessment. Notwithstanding, what needs to be underlined again is the impossibility of developing a mechanism similar to the one described above for the reason that the ES providers can be found only in Greece -one of the two involved countries-, while tourists, the ES beneficiaries, are prevalently recorded in the Macedonian recreational side of the CA. Therefore, the need of an efficient transboundary cooperation in order to implement the proposed cross-border mechanism appears inevitable.

PES can best be drawn as a policy instrument for satisfying socio-ecological benefits over time with the support of a particular attention to all the economic characteristics of the designed watershed goods and services and through the legitimization of every different levels of governance.

As a matter of fact, regarding that PES asks for some specific behaviour to be adopted by individual upstream service providers, two levels of interventions can be included in this process. Its assessment foresees the collective level of governance, whereas its legitimization is suited to the higher level of governance (Kolinjivadi et al., 2014). Therefore, the required communication between the higher and the collective spheres has to be founded on a shared understanding that the articulation of different policy solutions and their implementation affects not only the watershed, but also the well-being on a broader scale.

The existence of a shared understanding of the importance of the designed ES, water quality for the case study, and the existence of local and transboundary rules are some of the additional several conditions which incentivize co-operative management in emphasizing the non-rival characteristics of benefits deriving from natural resource management.

The path for an effective management of watershed goods and services follows also the analysis of the configuration of 'rivalry' and 'excludability' of the good or service under question. The ES involved in the proposed PES scheme specifically reflects the characteristics of 'excludability' and 'non-rivalry', aside from being 'congestible'.

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<sup>175</sup> See: Chapter 4, Section i.

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The concept of 'rivalry' refers to the fact that "the consumption of a service reduces the quantity or quality available to others either spatially or temporally" (Brown et al., 2007). This concept can be associated with the amount of fish collected from a water body, which can exclude the right of someone else of accessing any fish caught. The ease with which an ES provision becomes excludable depends on several factors. This process can also vary from the geographic scale to which the benefit accrues, to the numbers of actors impacting and utilizing the natural resources, alongside to the degree that the designed land-use activity can be directly associated with clearly identifiable patterns of ecological degradation (Escobar et al., 2013). Referring to the case study of Dojran Lake, sources of agricultural pollution released into the water body into question by identifiable land-users/providers can be directly attributed to reductions in water quality.

On the other hand, the term 'excludability' refers to "the set of institutions required to divide and manage groups of individuals in relation to their capacity to provide or prevent others from utilizing a good of service" (Kemkes et al., 2010). Cultural or aesthetic values linked to watersheds are non-rival goods which does not diminish even if they are affected by infinite consumption of different actors.

Other definitions need to be outlined for better situating the proposed PES mechanism as an effective policy tool for satisfying socio-ecological benefits over time in both involved countries.

Considering the characteristics of rivalry and excludability, the ES can be classified into private, public, toll or club and open access service. Toll or club goods have collective benefits that increase largely to regions and individuals and they are defined as "non-rival but excludable" (Kolinjivadi et al., 2014) (lower right corner of Table 3). In fact, toll or club goods include ES associated with specific actions of particular individuals through identifiable land-use practices (Kolinjivadi et al., 2014) and thus they can be connected to the upstream ES providers/farmers in the Dojran Lake case. The challenge associated with those services concerns the concept that they usually provide disproportionate benefits to a high number of users and they may necessitate the introduction of specialized incentives (Kolinjivadi et al., 2014) in order to be managed. This could be the environmental tax proposed in the case study to be addressed to the farmers implementing the PES mechanism.

On the other hand, "the quality of some non-rival goods can be affected by the number of people using the good or service at one time" (Kemkes, et al., 2010), the reason why they are considered to be 'congestible'.

This characteristic puts an accent on the necessity of regulating the number of tourists in Dojran Lake area. If too high the situation would turn into being uncontrolled, diminishing the quality of the touristic experience in the lake as a consequence of an unmanageable over-crowded eco-touristic site. In effect, in case tourism develops in an unsustainable way, this can also lead to not only non-reversible changes of the landscape but also degradation and loss of biodiversity and water quality. Problems related to waste, water supplies and sewage management and, more broadly, increased pollution could also be consequences.

The awareness that the exceptional landscape and naturalistic values of this region are 'not granted and eternal' is a driving factor in the process of a policy and decision making. The maintenance of these values necessitates a careful spatial planning, contemplating the wise and sustainable use of these natural resources and their protection (UNEP, 2010).

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Table 3 - Framework for watershed goods and services

Geographic Scale			
RIVALRY			PERSPECTIVE OF WELL-BEING
	GLOBAL ( <i>less tangible</i> )	LOCAL ( <i>more tangible</i> )	
HIGH	OPEN -ACCESS	PRIVATE PROPERTY	INDIVIDUAL
	COMMON-POOL GOOD: Flexible water resources (required permissions) <i>e.g. ocean fisheries</i>	PRIVATE GOOD: Market-driven transactions between individuals <i>e.g. timber</i>	
LOW	PUBLIC PROPERTY	COMMON PROPERTY	COLLECTIVE
	PUBLIC GOOD: Ecosystem benefits from regional to global scales <i>e.g. supporting services from biodiversity</i>	TOLL OR CLUB GOOD: regional ecosystem benefits attributable to land-use behaviour <i>e.g. water purification and aesthetic beauty</i>	
HARDER		EASIER	
EXCLUDABILITY			

Source: author, adapted from Kolinjivadi, Adamowski and Kosoy, 2014

These considerations have an important implication for understanding if the proposed PES system can be considered as an appropriate intervention. They are also relevant while considering the ideal governance path and level of intervention needed for maximizing the likelihood that its implementation will succeed both in terms of ecosystem safeguard, protection of the area and well-being boosting.

According to the size of the watershed basin, the smaller it is the higher is the chance that the provision of its services can be drawn as excludable (Kolinjivadi et al., 2014), thus requiring a combination of shared norms, practices and monitoring system between the two countries.

The peculiar aspects of excludability and non-rivalry of the ES under consideration are also most likely to give a valid support to incentive-based agreements for improving watershed services and enhancing well-being (Kolinjivadi et al., 2014). Therefore, this concept supports the thesis of potential feasibility of the proposed PES agreement in the Dojran area.

In addition, while the marginal value of a non-rival good is defined as the “sum of the WTP of all individuals” (Kemkes et al., 2010), the marginal cost of use for a non-rival ES is zero (Kemkes et al., 2010).

In the proposed PES mechanism so, the use of CVM is the correct method of identification of the value for the ES as it requires the analysis of the WTP of the beneficiaries for the improved water quality.

### **iii.i. The SWOT analysis.**

Aside from these general considerations, for the purpose of establishing the effectiveness of a policy design there is also need for accounting for all the factors that may hamper or facilitate the correct implementation of such measure and that could detect its potential in both countries involved over time.

Therefore, a PES-based Strengths Weaknesses Opportunity Threats (SWOT) analysis is strategic at this point in order to identify internal and external factors which could support or threaten the effectiveness and plausibility of the proposed PES scheme at Dojran Lake.

Nhjb management strategies and decisions as it picks up the various internal factors of strengths and weaknesses and the external factors of opportunities and threats (Scolozzi et al., 2014).

More specifically and considering factors of strengths of internal origin as defined in Business Management, these are described as “characteristics of the project that give it an advantage over others”, while weaknesses consist of “characteristics that are a disadvantage to the project as compared to the others” (Scolozzi et al., 2014). For what concerns the external factors, always as defined in Business Management, opportunities are “elements that the project could exploit to its advantage”, whereas threats are referred as “elements in the environment that could cause trouble for the project” (Scolozzi et al., 2014) (Table 4).

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Table 4 – Definition of SWOT factors in Business Management.

SWOT FACTORS		
Factors of internal origin	STRENGTHS	Characteristics of the project that give it an advantage over others.
	WEAKNESSES	Characteristics that are a disadvantage to the project as compared to the others.
Factors of external origin	OPPORTUNITIES	Elements that the project could exploit to its advantage.
	THREATS	Elements in the environment that could cause trouble for the project

Source: author

By picking up the factors of the project management of the area, this method can be adapted from the Business Management sector to the environmental planning perspective, thus it can be applied in support of decisions related to the proposed PES mechanism at Dojran Lake (Table 5).

In fact, the idea of integrating the concept of PES with a SWOT analysis can contribute to the robustness and effectiveness of the strategy of the project and its implementation over time.

The analysis design can be useful for defining management interventions and decision-making at diverse levels of governance and it can be helped through the identification of all the variables involved in the process, from local or regional to international areas (Scolozzi et al., 2014).

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Table 5 – SWOT analysis of the proposed PES mechanism.

SWOT ANALYSIS		
Factors of internal origin	Strengths	Improvement of life quality of the Dojran Lake area
		Reinforcement of the local awareness on the area's economical and environmental potential
		Great importance of the touristic and agricultural sector in the FYROM and Greece
		Landowners' and locals' direct collaboration and involvement in the management of the resource
		It accords to the European requirements in terms of environmental protection and biodiversity safeguard
		It aims to the same WFD goals of reaching a 'good status' of water
		It aims to contribute to transboundary cooperation between the FYROM and Greece
	Weaknesses	Transboundary implementation
		Can have difficulties in assessing the CVM and the ES price
		Can have additional costs for the share of information between the two countries
Factors of external origin	Opportunities	High presence of ES in the AA
		Increasing number of visitors in the AA over the last years
		Visitor tax already present
		WFD already transposed in the FYROM
		Dojran Lake is part of List of Wetlands of International Importance
	Uncertainty due to lack of recorded	

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	Threats	data for the FYROM
		Lack of a transboundary monitoring system of water quality and quantity in the CA
		Name dispute between the two countries
		Lack of river basin management plan in the FYROM

Source: author

From the SWOT analysis identified on the basis of the proposed PES mechanism for Dojran Lake several crucial issues can be pointed out, all concerning the transboundary implementation of the system in the political, geographical and cultural context of the FYROM and Greece.

While all the identified factors of internal origin and opportunities have already been analysed or described in the previous chapter and sections as well as some of the threats, as relevant in the development of the PES scheme, some further considerations need to be deeply reported concerning some aspects underlined by the SWOT analysis carried out from the proposed PES system.

Between these, the threat 'Name dispute between the two countries' and the opportunity 'Dojran Lake is part of the List of Wetlands of international importance' are some of the elements that necessitate additional explanations, alongside the strength 'It aims to contribute to transboundary cooperation between the FYROM and Greece'.

### Name dispute

According to the EC's Report released in October 2014, it remains essential for the FYROM that decisive steps are taken towards solving the 'name dispute' with the bordering Greece. The reason underneath this ongoing cross-frontiers issue relies of the fact that while the country prefers to be identified with its constitutional name 'Republic of Macedonia', Europe recognizes this territory with another name, the so called 'provisional reference'<sup>176</sup>. This was firstly chosen by the United Nations (UN) in 1993 and it has to be adopted until the dispute is resolved: 'The Former Yugoslav Republic of Macedonia' (European Commission, 2014).

The name dispute began in 1994 when the dictator in charge of Yugoslavia, Marshal Joseph Tito, gave rise to the Yugoslavia's southern republic under the name of 'People's Republic of Macedonia', which turned into 'Socialist Republic of Macedonia' in 1963<sup>177</sup>. However, the term 'Macedonia' was already the name of one of Greece's northern provinces at the time<sup>178</sup>, the reason at the basis of the ongoing cross-frontiers disagreement.

<sup>176</sup> "History of the FYROM's dispute", Themis Macedonia, 2015.  
<http://www.greece.org/themis/macedonia/historengl.htm>. Accessed 02 August 2015.

<sup>177</sup> "History of the FYROM's dispute", *supra nota*.

<sup>178</sup> "History of the FYROM's dispute", *supra nota*.

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The adoption of the name 'Republic of Macedonia' was pictured as "historically inaccurate" from the Greek government, because the issue would have inevitably created territorial disputes between Skopje and a region of Northern Greece called Macedonia. In response to this name-use, Athens blocked the Macedonian membership of both NATO and the EU membership until the dispute is resolved<sup>179</sup>.

Since 2008, resolution of the naming conflict has been added to the official preconditions in order to gain access to the EU accession negotiations, as good neighbourly relations are considered a necessary condition for the European membership<sup>180</sup>. Therefore, resolute action is required in this sense as the failure to reach a compromise is having a direct impact on the country's European aspirations and it may also affect the effectiveness of future cross-border coordination. Notwithstanding, economic and trade relations appear to be untouched by this dispute and they are continuing normally between the FYROM and Greece (European Commission, 2014). A positive tendency of growth of bilateral trade relations was also reported in the last few years (European Commission, 2014).

#### **Dojran Lake is part of the List of Wetlands of international importance**

Dojran Lake is part of the List of Wetlands of International Importance since 2007<sup>181</sup>, as a wetland of international significance within its territory.

The intergovernmental treaty 'Convention on Wetlands of International Importance Especially as Waterfowl Habitat', called the Ramsar Convention, gives the "framework for national action and international cooperation for the conservation and wise use of wetlands and their resources" (Ramsar Convention, 1971).

The Ramsar Convention defines wetlands as:

"[...] areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is a static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters" (Article 1(1), Ramsar Convention, 1971).

"Wetlands [...] may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six meters at low tide lying within the wetlands, especially where these have importance as waterfowl habitat" (Article 2(1), Ramsar Convention, 1971).

Several pillars founded the Ramsar Convention. The twin pillars of conservation and wise use are the first two pillars, while the need to implement the first two pillars through local and national actions and international cooperation is considered as the third pillar (Lee, 2015). The pillar of wise use specifically identifies the possibility of utilization of a specific wetland for anthropogenic benefits in a way that does not disturb the maintenance of the natural characteristics of the ecosystem under question (Lee, 2015; Farrier and Tucker,

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<sup>179</sup> "Should Macedonia join the European Union?", Debating Europe, 2013.  
<http://www.debatingeurope.eu/2013/04/22/should-macedonia-join-the-european-union/#.Vb8x5bcnUzw>. Accessed 02 August 2015.

<sup>180</sup> "Macedonia name solution before EU talks", BalkanInsight, 2008.  
<http://www.balkaninsight.com/en/article/macedonia-name-solution-before-eu-talks>. Accessed 02 August 2015.

<sup>181</sup> See: Chapter 1, Section iii and Chapter 3, Section i.

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2000).

The Ramsar Convention is also of utmost significance as it plays a primary and complementary role in addressing active help to transboundary endeavours in term of coordinated actions, by proving a legal framework of cooperation to a shared watershed (Papayannis, 2004). This aspect represents the reason why this characteristic of Dojran Lake of being part of the Ramsar List has been added to the 'Opportunities' section of the SWOT analysis.

Under the Convention, the Dojran Lake wetland must be sustainably managed so that “[...] an adequate planning process aimed at ensuring wetland conservation and wise use [...]” (Article 3, Ramsar Convention, 1971) can be assessed. Contracting parties, in this case Greece and the FYROM, are also “[...] encouraged to conduct research, to exchange data and publications on wetlands and their flora and fauna” (Article 4(3), Ramsar Convention, 1971).

The management of wetlands shall also be “[...] based on regular consultations between contracting parties regarding the convention's implementation, to coordinate and support present and future policies and regulations concerning the conservation of wetlands” (Article 5(1), Ramsar Convention, 1971).

All the procedural requirements of the Convention provide a stable foundation on which cooperation regarding the management of transboundary water bodies could be raised and maintained, representing a clear path on which an increased cooperation and decision-making between the Hellenic and Macedonian countries could be developed and sustained (Lee, 2015). The Ramsar Convention stands also for its key role in providing a diplomatic opportunity for collaboration on the joint environmental management between Greece and the FYROM by considering the inseparability of water resources and wetlands, which creates a strong foundation for effective transboundary water cooperation (Lee, 2015).

Even more, the legal platform for neighbouring interaction given by the Ramsar Convention but also enhanced by the European WFD for the case study of Dojran Lake facilitates the development of *ad-hoc* sustainable practices and it put emphasis on the implementation of those measures through a joint management and an aware environmental collaboration of national authorities and locals. As a matter of fact, the Ramsar Convention contemplates an overreaching duty on states to consult with one another on the water systems shared by contracting parties, in order to enhance cooperation over international waters (Lee, 2015). By considering this concept, the Convention can be linked to the European environmental requirements and to the WFD, because it provides a similar framework to work on in order to manage, protect, sustain and re-lance a transboundary area of international importance.

Ultimately, one of the most important aspect of the convention is the purpose of flattering cross-frontiers disputes as well as developing peace-making actions between contracting parties, by sharing transboundary water bodies through the instrument of collaborative management of the natural resources (Lee, 2015). Therefore, it turns out into being of great relevance in the chance of blurring the Greek tension over the FYROM name.

**It aims to contribute to transboundary cooperation between the FYROM and Greece**

The vast literature concerning transboundary environmental policies has outlined how successful collaboration is based on mutual interests. The sustainment of human well-being and the protection of nature provides a suitable framework for transboundary conservation endeavours through the ES concept where benefit sharing, sharing assets and similar problems can represent as an incentive for collaborative work (Papayannis, 2004). In this sense, PES can be envisioned as a form of a special social contract of best practice for watershed management, contemplating agreements upon bilateral interests, benefits and on well-being enhancing activities (Tacconi, 2012). Therefore, the application of every PES system will be effective and sustainable to the extent to which PES strengthens the will to solve environmental problems by acting cooperatively for a shared purpose, rather than considering the focus on “individual utility as the primary motivation of cooperation” (Kolinjivadi et al., 2014).

Although the ongoing PES project implemented between Bulgaria and Romania under the WWF Danube-Carpathian programme 2010-2013<sup>182</sup> can be taken as an interesting reference in the context of transboundary PES systems, it has not explicitly demonstrated the assessment of effective collaboration between the two countries yet. Notwithstanding, several relevant aspects that are underlined throughout the WWF project may reflect some of the issues analysed also by the UNEP organisation under the 'Feasibility study on establishing a transboundary protected area Sharr/Šar Planina – Korab – Dešat/Deshat' project (2010).

The outlined questions all refer to transboundary management in the Balkan region. For these reasons, they can be utilized as points of reference for the identification of essential elements that need to be developed in order to succeed in the implementation of the proposed transboundary PES scheme in the political and geographical context of the FYROM and Greece.

- **Necessity of an efficient bilateral collaboration between authorities and stakeholders participation at an early stage of the development of the PES scheme.**

While collaboration is defined as “two or more organizational actors with shared interests and/or collective responsibility working together to pursue complex goals” (Kark et al., 2015), it can be pointed out that collaboration in conservation activities can potentially boost the preservation of ecosystems, species and transboundary natural resources. Furthermore, when two parts share not only natural resources but they also have one or more interests in common, they also agree on the assessment of the same practices for common purposes and they have social, economic and similar features. This collaborative process results even easier and more feasible, as it all helps building more efficient collaborative decisions and plans.

According to all the possible scenarios for the development of a further bilateral cooperation between the FYROM and Greece on the basis of the already experienced INTERREG II and III and IPA CBC Programmes,

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<sup>182</sup> See: Chapter 2, Section v.

the chance of boosting cross-border economic development appears to be high. This consideration is carried out by considering the priorities of the various programmes analysed previously and the ongoing approximation of the FYROM national legislation on nature protection to the EU legislation and standards. This aspect also leads to the thesis of a possible facilitation on the adoption of the use of the same methodological approaches between the two countries (UNEP, 2010).

The cooperative activities would additionally require consultations with relevant stakeholders, such as local municipalities, service administrations and landowners, alongside actions regarding launching public awareness campaigns at a CA level. This would also require the development of information and promotional materials targeted at different audiences and professional groups and, therefore, intensive exchange of information, scientific data, methodological experience and consultations between authorities and scientific institutions of the Macedonian and Greek countries are indispensable (UNEP, 210). This process becomes even more challenging due to the lack of updated recorded data, especially in the FYROM side, or of common databases available for the whole transboundary region, two aspects to be assessed with relevant urgency.

- **Sharing of information and consultation.**

The vast literature regarding transboundary water courses explains how the major problems encountered in this sector concern cooperation of neighbour countries in relation to lack of information exchange. This deficiency leads to the consequence of not setting the basilar conditions for the future development of shared water management measures in a river basin scale (Mylopoulos and Kolokytha, 2008).

As a matter of fact, by focusing on cooperation between Greece and the FYROM firstly, internal water problems on the Greek part of the transboundary watershed are additional factors that impede an efficient integrated approach, followed by the administrative and institutional issues regarding the FYROM side (Mylopoulos and Kolokytha, 2008). As mentioned above, insufficient data and lack of monitoring systems have created and still create significant problems in the evaluation of current water conditions in river basins and also in Dojran Lake catchment area (Mylopoulos and Kolokytha, 2008).

In effect, the mutual collaboration can help dealing with transboundary threats by involving the integration of different types of knowledge through the share of expertise and the idea of enabling the process of collection of more data to inform decisions. On the other hand, the gradual loss of ecosystem is usually a consequence of delays in action and in the implementation of bilateral actions and measures (Kark et al., 2015).

Delays, especially for the case study of Dojran Lake, could be due to the lack of available and recorded data for the region under consideration. The collecting process will take time and it will involve the need of willing of the two countries to share information across borders. The information sharing process could also lead to additional costs, resulting from the transboundary costs of collaboration and to the extra time required.

Either way, the shared mechanism has the positive advantage of growing economic efficiency, cultural exchange and interaction between the Greek and the Macedonian country.

This concept could also be extended to the positive effect of increased education of a wide range of people, actors of the PES system. These could be implemented in the process also with the aim of improving

sustainability and assisting the development of the Dojran Lake area, by supporting a policy that envisages them directly as the main characters. In fact, the transboundary mechanism involves them from the beginning of the planning process in both sides of the CA.

- **Monitoring of the correct execution of land management practices according to the PES objectives proposed through the system.**

Monitoring of the correct execution of land management practices is one of the most important aspect of the on-going actuation and implementation of the PES scheme, as it appears fundamental in order to carry out the agreed objectives over a long period of time.

As well as the cooperative characteristic, a mutual monitoring system is essential in both involved countries. The controlling process would allow the recognition of negative gaps and critical issues in the implementation and, eventually, a re-adjustment of encountered lacks in the system.

This process would also protect the respect of stakeholders responsibilities at all levels, required by the agreed proposed project.

- **Establishment of a common 'coordinating body' for transboundary cooperation and continuous transboundary management.**

The transboundary cooperation would be largely benefited and facilitated by the establishment and the designation of a special common 'coordinating body' for transboundary cooperation in the Dojran Lake region. This sort of official forum of consultation between Greece and the FYROM, with specific range of competencies, would allow fair and balanced decision-making processes between partners and stakeholders, operational modalities and supervising tasks towards the implementation of the proposed project.

It has to be emphasized that transboundary cooperation can not be developed only until the project deadline, as this PES deadline would become the cooperation end too and thus the continuity of the project operation would be threatened (UNEP, 2010). Providing a stable and long lasting source of cooperation is indispensable. This can operate and be ideally successful only with a continuous transboundary management as, as previously seen, its main actors -ES providers and beneficiaries- are physically separated by the borders of the two involved countries.

Furthermore, in the process of establishing an effective transboundary cooperation concerning water management between the FYROM and Greek, particular relevance is also given by Article 3(39) of the European WFD. The article deals with the necessity of the assignment of an international river basin district to the international river basin shared between a European country and one non-European state<sup>183</sup>.

In fact, at Article 3(3), the WFD affirms that:

“Member States shall ensure that a river basin covering the territory of more than one Member State is

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<sup>183</sup> See: Chapter 1, Section v.

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assigned to an international river basin district. At the request of the Member States involved, the Commission shall act to facilitate the assigning to such international river basin districts.” (Article 3(3), WFD 2000/60/EC)<sup>184</sup>.

The Directive contemplates so the assignment of an international river basin district. The necessity of significant endeavour is also clearly drawn in the Commission's ascertainment, in order to boost cross-frontiers collaboration for accomplishing the WFD purposes. This *Communitaire* obligation in the transboundary water management sector constitutes in this way an additional requirement in the field of cross-border cooperation between the two countries.

This international river basin district could be hypothetically assessed as a basis for the development of the common 'coordinating body' for the PES implementation and for the monitoring process needed for every actions of water management. This has to be assessed always considering that the PES system necessities to be carried out in conformity with the WFD's obligations.

Moreover, this aspect would constitute an essential adjunctive characteristic of integration between the Directive and the proposed PES agreement.

Long-term coordination and cooperation, bilateral share of information and harmonization project management practices are some of the major additional values deriving from the establishment of a cross-border PES mechanism and its efficient implementation.

#### **iv. The link between the proposed Payments for Ecosystem Services mechanism and the European Common Agricultural Policy.**

The proposed PES scheme may be a significant contribution towards other decisions and policy or making processes. For example, this can be done by providing additional incentives to help achieve policies implementation, such as helping meeting the targets of the European WFD or of the European Common

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<sup>184</sup> “Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”. Official Journal L 327, 22/12/2000 P. 0001 - 0073, EUR-Lex, 2000. Article 3(3).  
<http://eur-lex.europa.eu/legal-content/EN/TXT/uri=celex:32000L0060>. Accessed 25 May, 10 July, 29 August and 5 September 2015.

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Agricultural Policy. Otherwise it could also provide numerous contributions in reaching specific objectives by helping meeting goals of not only European programmes but also national programmes and thus focusing on the improvement of water quality. In addition, monitoring data required for PES scheme may also be considered useful in evaluating different decision and policy making processes (The World Bank, 2007).

Between the ongoing reforms within the EU, PES can play an important role in particular in the agri-environmental schemes in the Common Agricultural Policy (CAP) reform (COWI, 2014).

This European farm policy was launched in 1952. It is a common measure for all the European Member States and it is a partnership between agriculture and society and between Europe and its farmers, as “farmers are recognized essential elements of the European economy and society” (European Commission, 2014).

Among the several purposes served by the CAP, a support to farmers in producing sufficient quantities of food for the EU, the warranty that food is safe through traceability and other methods, the protection of farmers from excessive price volatility and from market crisis, a support to farmers through direct investments in their properties and the making and maintenance of jobs in the food industry, are included<sup>185</sup>. Moreover, the protection of the environment and animal welfare alongside the sustain of different rural communities, characterized by diverse economies, are also envisaged by the reform<sup>186</sup>.

The great importance of the European CAP is given by the fact that it addresses even more challenges such as climate change and sustainable development of natural resources by looking after the countryside across the EU and keeping the rural economy alive (European Commission, 2013).

For succeeding in this purpose, several conditions that enable landowners to fulfil their many functions in society are contemplated by the reform. In effect, farmers manage their lands and they supply not only public or ensure the good care and maintenance of soils between the most significant activities, but they also usually assure landscapes and the ecosystem biodiversity (European Commission, 2013). Notwithstanding, they do not receive any compensations for their practices from the market (European Commission, 2013). This is the moment where the EU and the CAP enter into scene by recognizing their work and providing them an income support. This is a real form of remuneration of farmers for the work in terms of landscape conservation and preservation (Trevisan, 2000), as a “real service to society” (European Commission, 2013).

The path of the FYROM towards the European accession could be simplified in the agricultural sector by anticipating and assessing the CAP purposes, already present and operating in Greece, as many proposed measures and mechanism appear to be in line with the European agricultural goals and perspective. The idea of assessing environmentally friendly practices and sustainable procedures, such as the proposed PES

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<sup>185</sup> "Agriculture", European Union, 2014.

[http://europa.eu/pol/agr/index\\_en.htm](http://europa.eu/pol/agr/index_en.htm), Accessed 30 July 2015;

“The common agricultural policy (CAP) and agriculture in Europe – Frequently asked questions”, European Commission Press Release Database, 2013.

[http://europa.eu/rapid/press-release\\_MEMO-13-631\\_en.htm](http://europa.eu/rapid/press-release_MEMO-13-631_en.htm). Accessed 30 July 2015.

<sup>186</sup> "Agriculture", *supra nota*.

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scheme, and the visitor management plan, design and establishment of environmental interpretation facilities in Dojran Lake mentioned above, are some of them.

It can be also recognized that a significant part of the greening of the CAP has characteristics similar to a PES agreement (COWI, 2014). As a matter of fact, in the agricultural sectors many categories of interventions aiming to protect the delivery of ES can be found: among these, agri-environmental policies and PES scheme can be listed. According to the OECD definition, agri-environmental schemes are considered as “payments that include implicit transfers, such as tax and interest concessions, to farmers to address environmental problems and/or provide ES” (OECD, 2010).

Several differences and associations between the agri-environmental and the PES schemes can be reported and analysed. Firstly, the main distinction between the two measures is that while ES are targeted by PES agreements, agri-environmental measures are usually more focused on targeting specific farming practices (Ottaviani, 2011). This has the consequence that this difference is closer when the specific case of protection of the ES can be successfully provided through farming measures (Ottaviani, 2011). Secondly, the former scheme can have a broader and more generic vision and it can be less tailored to local conditions and needs than PES systems, becoming in this way significant when the necessity for protection or restoration of a specific ES is not identifiable by the governments (Ottaviani, 2011). On the contrary, PES deals are perceived more as a proceedings of negotiation between different levels of stakeholders, who are directly involved in the process of provision of the ES (Ottaviani, 2011).

Another different aspect can be listed between agri-environmental schemes and PES deals. In effect, the adhesion of landowners and farmers to PES schemes is generally voluntary under the EU legislation: the implementation of agri-environmental measures is obligatory for the European countries instead, whereas it remains voluntary by farmers (Tarek, 2010). Therefore, Europe and the Member States governments can be considered as they were acting as intermediaries between the other actors (Tarek, 2010). Another peculiar characteristic that differs the two schemes needs to be noted: in agri-environmental practices the renewal of the contractual agreement is often connected to other peculiar aspects and these programmes, for the fact that they are based on public funds, they are particularly subject to budget cost (Ottaviani, 2011).

Even if some PES systems in agriculture can be found in literature, PES agreements are new to this sector. This is because agricultural measures can be considered as a critical factor in conveying services or disservices, with the additional issue that stakeholders may be facing divergent economic and social interests while providing the service they are paid for (Fao, 2010).

Given these considerations and focusing on the proposed PES scheme for Dojran area, this mechanism may be normally classified as PES for water from a first general analysis, as it copes with the improvement of water quality and quantity of Dojran Lake. On the other hand, agricultural activities are a crucial aspect not only as an important driving factor in the establishment of the system, but also as a key role in the restoration of the watershed services. In this way, they provide the proposed PES scheme a deep connotation of agri-

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environmental policy.

Aside from envisaging the improvement of water quality and quantity, the proposed PES scheme could find a narrower link to the CAP by suggesting the conservation of traditional agricultural activities in the Greek area. An example in this sense can be found in what happens in the Greek Amfissa: a PES scheme supported by the European CAP rewards farmers to preserve a region of 6 000 hectares in the region, where 150-year-old olive trees are grown (Ottaviani, 2011; Vakrou, 2010).

Agri-tourism would become a potential touristic factor that would boost not only stakeholders' cooperation but also touristic attraction in the area by ameliorating peculiar traditional features to the landscape of Dojran area, region which has already been appreciated at an international level for its historical and cultural characteristics, as already mentioned above. Such a PES scheme would also emphasize the cultural characteristic of the landscape by promoting the maintenance and restoration of the farming area in the cultural scenic landscape of Dojran, thus generating an additional benefit for tourists and the local population.

The possibility of linking this Greek agri-tourism aspect to the Macedonian part, where the recreation side can be found through, again, an efficient collaboration between the two countries appears essential in order to implement this action and to connect the two sides of the CA through the correct use of the innate high value scenic landscape.

The European policy also recognizes the essential importance of environmentally sustainable farming, which promotes the use of natural resources prudently and knowingly not only for the quality of food and production but also for the quality of life over a long term period (European Commission, 2013).

This incentives-based policy appears to reflect again the overall purposes of the general PES scheme. The thesis of boosting the local self-sustain and economy and of increasing the competitiveness of Dojran Lake area in both the Macedonian and Greek side through the promotion of local products and activities seems to be in line with the CAP as well.

In this case it can be hypothetically stated that, even if the CA in the Macedonian side presents a residual presence of agricultural lands, this factor could be exploited and boosted through another measure and thus create additional value. Connecting a Macedonian unique local product to its geographical origin, as "produced entirely within a defined geographical area, using recognized skills and ingredients from that area", such as what happens for the Greek *feta*, would be an important step for an augmented alignment and harmonization with the European current laws in the agricultural sector. This needs also be carried out by following the European organic production standards or hygiene rules in terms of farming practices<sup>187</sup>. By doing so, this process would also accost the Macedonian position with the already implemented Greek practices. Therefore, approaching the two transboundary economies of the Dojran Lake area by following common standards and by assuring an increased shared competitiveness on the long term would be facilitated.

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<sup>187</sup> "The common agricultural policy (CAP) and agriculture in Europe – Frequently asked questions", European Commission Press Release Database, 2013.  
[http://europa.eu/rapid/press-release\\_MEMO-13-631\\_en.htm](http://europa.eu/rapid/press-release_MEMO-13-631_en.htm). Accessed 30 July 2015.

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Traditional products characteristic for the Dojran region specifically are pomegranate, grapes, figs, almonds and wheat, while it has been reported that some of them are already used in traditional artisanal products of high interest upon tourists (Personal Communication Ilieva L., 11/08/2015).

On this note, also the EC's Report (2014) recently underlined how preparations in the sector of organic farming and quality policy in the FYROM are already being developed. At the end of 2013, a 2013-2020 national plan for organic food was adopted by the FYROM, whereas provisions were introduced to financially support farmers who had agreed to utilize organic production schemes (European Commission, 2014).

These considerations put an accent on the progress made by the country not only in the area of agriculture and rural development but also in the sector of integrated administration and control system. In fact, the country recently adopted a land parcel identification system to be used for monitoring national area-based direct payments (European Commission, 2014). Notwithstanding, even if further actions are necessary for the process of increasing competitiveness, this monitoring system could be adopted as a basis for developing an effective shared cross-border monitoring action for the proposed PES scheme. This would be essential in order to control the correct implementation of the various passages of the transactions between farmers or service providers, beneficiaries and between countries.

The agricultural programme inserted in the IPA I and IPA II Programmes contemplates also the financial support of Macedonian farmers in adopting sustainable farming methods for achieving high environmental and animal welfare standards over the emphasis put by the CAP<sup>188</sup>. The support consists of inspection services and the reinforcement of production of food and specialities of the region in order to boost the competitiveness of the area on the wave of investing in the future of the country<sup>189</sup>. The funds help the FYROM in the process of accomplishing in its European requirements and obligations that come with the European membership, they also sustain Europe to achieve its own objectives (European Commission, 2014), namely environmental protection and sustainable economic recovery in this case.

Moreover, local authorities could adopt political forces and resources from the IPA II Programme for exploiting another variable of PES success, for example. These includes the introduction and promotion of new skills and the reintroduction of old ones, in terms of production of local goods, artisans, food, wine and accommodations.

As a matter of fact, this could represent an additional key factor for the development of the Dojran Lake area. As mentioned, the lake is famous for being "a complex natural ecosystem characterized with significant and rich biological diversity" (RENA, 2011)<sup>190</sup>: e.g., the unique fishing methods of the lake gives it cultural and historical relevance and these resources can be exploited as a new touristic attraction for the area.

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<sup>188</sup> "An investment in Europe, an investment in agricultural and rural development. The Former Yugoslav Republic of Macedonia – Providing a stable and safe food supply". IPA (2013). DOI: 10.2794/25979. Available at: [http://ec.europa.eu/enlargement/pdf/leaflets/leaflet\\_ipa2\\_agriculture\\_en.pdf](http://ec.europa.eu/enlargement/pdf/leaflets/leaflet_ipa2_agriculture_en.pdf).

See: Chapter 1, Section ii and Section iv.

<sup>189</sup> "An investment in Europe, an investment in agricultural and rural development. The Former Yugoslav Republic of Macedonia – Providing a stable and safe food supply", *supra nota*.

<sup>190</sup> See: Chapter 3, Section i.

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This political decision could be assessed jointly by the Macedonian and the Greek countries and, by doing so, it could complete the “Visitor management plan, design and establishment of environmental interpretation facilities in Dojran Lake”, part of the proposed restoration measures of the area (Anastasiadis et al., 2005).

Among the several objectives of the latter measure the promotion of the biological, recreational, educational and aesthetic value of the lake, as well as the increase of economic benefits for the local inhabitants through the establishment of the supportive fundamentals for sustainable tourism in Dojran Lake, are envisaged (Anastasiadis et al., 2005). According to the rationale of the “Visitor management plan, design and establishment of environmental interpretation facilities in Dojran Lake” measure, almost no benefits for the inhabitants can be recorded as a resultant of the growing numbers of tourists in the area (Anastasiadis et al., 2005). Only a basilar touristic service is also being currently provided, so that visitors have the only opportunity of going to tavernas in the very close surrounding area (Anastasiadis et al., 2005).

This specific plan needs again to be assessed by both countries for ensuring the conservation of the lake by including the proposed PES mechanism, by enhancing the quality of life of the local community and by boosting and promoting the local products and touristic services.

The proposed PES mechanism appears in this way to be inter-connected to this measure alongside the fact that it refers to the same beneficiaries and it can efficiently raise resources and re-address them with the aim of ensuring an improvement of the water quality. By doing so, an improvement of the landscape by providing a better touristic service and by implementing a sustainable management of the cross-border area could be an objective that could be hoped and reached.

It can be concluded that the identified and analysed measures, combined with the correct implementation of the PES mechanism, would provide help in the process of alignment of the Macedonian position to the objectives of the European agricultural policy. They do so by ensuring the protection of the biodiversity of the area and by contributing to the process of convergence of transposition and harmonization of common rules shared by all the European Member States in a single, but transboundary, market.

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## Conclusions

The concept of ES is becoming always more associated with the ecosystem approach as regard as the protection of international watercourses, even if the concept of eco-compensation, comprised in every PES agreement, has not been highly developed in the practice of international law yet. Notwithstanding, this field of study is increasing relevantly over the last years (McIntyre, 2015; Benjamin, 2013), demonstrating its current consistent worldwide interest.

According also to the great importance that ecosystems represent for human well-being, the invaluable services they provide to society and the relevant loss of biodiversity reported by numerous analysis (OECD, 2010), the idea of finding a way to attribute the 'right incentive' for encouraging the sustainable use of these ES is of remarkable consideration and interest among institutions, organizations and stakeholders.

In this sense, PES agreements can help addressing those environmental issues through the integration of ES into markets by reflecting their social and economic values.

By delineating a new source of income for the ES providers, who are asked to adopt specific environmentally friendly behaviours, PES can become an ideal tool for supporting the important aim of halting the rate of biodiversity loss and for supporting the achievement of objectives of sustainable ecosystem management. In this sense, these mechanisms can be considered as efficient incentives, if correctly implemented, for the sustainable management of the ES. They can also be drawn as substantial contributor to the possible creation of opportunities in terms of improved life quality and natural resource productivity, increased employment and enhanced local economic development (UNEP, 2008).

Several international examples have shown how PES can be implemented in the context of watershed management and preservation and for the purpose of improving the water quality of a specific watershed.

Only few emblematic cases of PES schemes assessed in a transboundary scenario have been found or have been reported in literature. Either way, they constitute an insight to the chance of implementing an efficient cross-frontier mechanism involving different countries and actors in the Macedonian-Greek political and geographical context.

The case study of Dojran Lake refers to a watercourse of global significance as it is a complex ecosystem (RENA, 2011). Its internationally recognized relevance is proved by the fact that it is part of numerous conventions and of the Ramsar List. It can be ascertained that the lake derives its cross-frontiers interest and attention from different institutions and organizations not only from its peculiar characteristics in terms of endemic species and scenic beauty, but also because it is a water body shared by a European Member State -Greece- and a bordering country wishing to join the EU - the FYROM-.

The latter was granted candidate country status for European membership in 2005 and it is currently focusing

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its endeavours on the process of harmonization and legal transposition of the European *acquis* in order to gain its accession. Europe is currently investing in the Balkan countries and in the FYROM through the IPA II Programme. This has the aim of providing financial support for preparing the country to the European accession and to the required reform development process in the area (European Commission, 2014). Among the several sectors considered by the Programme, the field of sustainable management of protected areas, ecosystems and biodiversity is included as a fundamental step for the protection and conservation of the Macedonian cross-border natural heritage, therefore also including the region of Dojran Lake.

The analysis has outlined how the implementation of the proposed PES agreement could support the alinement of the FYROM to the European environmental *acquis* required for its accession into the Community. As a matter of fact, the proposed PES mechanism has the overall purpose of improving water quality and quantity of the lake by providing a specific amount of money to ES providers –farmers-, collected through an environmental and consumption use tax from visitors and local inhabitants measured through the CVM, with the purpose of supporting the utilization of low-impacts agricultural practices.

The proposed PES agreement reflects also new incentives in the Dojran Lake context for sustainable management of the ES, as local inhabitants earn their living from natural resource based activities, namely farming and fishing.

Ideally, the aspects of excludability and non-rivalry of the ES taken into account in the PES scheme give a valid support to the assessment of an incentive-based mechanism for improving watershed services and enhancing human well-being (Kolinjivadi et al., 2014), thus demonstrating the possibility of implementing a successful PES scheme in the Dojran Lake region.

Several aspects of the PES scheme are of notable relevance in the process.

Firstly, the system can be structured on the basis of the WFD by theoretically reading the payment scheme as a 'Beneficiary Pays' variant of the PPP and as a variant of the Cost Recovery Principle, even if the FYROM has already only transposed the WFD and a river basin management plan for Dojran Lake has not been assessed yet. In this way, the proposed deal reveals itself for being integrated with the European WFD.

Secondly, the proposed PES agreement and the WFD share the same purpose of reaching a good water quality of a specific water body. The proposed PES for a watershed service provides an incentive for a more efficient use of water, as required by Article 9 WFD, thus representing a valid measure of integration of the WFD (Howarth, 2009). It also represents a direct source of finance for its measures (COWI, 2015) by connecting the provision of the ES with payments for the service received –improved water quality-.

The proposed PES system not only supports the FYROM on the process of meeting the WFD obligations, but it also supports the provision of other additional benefits. It is expected that the implementation of the mechanism would lead to an increased improvement in fish stock quality and diversity. It is also expected that it would lead to the promotion of local economy, of traditional techniques and to an augmented number of birds in the region.

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The last report of the EC on the Macedonian progress towards the accession into the Community was issued in October 2014 and it underlines the country's necessity of assessing a better management of the environmental resources which has to be carried out in a joint way with the bordering Greece, by reinforcing the relations with this country.

Approachable ideas were also outlined from the SWOT analysis created on the basis of the proposed PES scheme. The SWOT analysis has been developed in order to establish the effectiveness of the strategy of the project over time. It has identified different levels of interventions and several actions that need to be assessed for contributing not only to the feasibility of the system, but also to the enhancement of cross-border cooperation between the two countries. In fact, the various aspects outlined in the analysis derive from the current Macedonian and Greek situation in terms of international relations and cooperation, institutional capacity and level of laws harmonization.

The need of strengthening democratic institutions and of ensuring an inclusive democratic process remains of crucial importance for the country's successful accession process, as the EU is founded on common values and principles which contemplate the respect for fundamental rights, the respect for freedom of expression and the protection of minorities and vulnerable groups from discrimination, above all.

Regional cooperation and good neighbourly relations are essential elements required for the Western Balkan country by the Stabilisation and Association Process as well and they are also highlighted by the final SWOT analysis. Transboundary cooperation is not only asked for an effective implementation of the proposed PES deal, but also as a requirement to be respected and assessed for succeeding in the country's path towards accession into Europe.

Due to its transboundary aspect, the proposed funding mechanism requires a specific boosted process of information sharing and stakeholders collaboration at different levels. It also asks for the establishment of an efficient monitoring technique which needs to be carried out in a transboundary manner by thus intensifying, if correctly assessed, the process of international relations already began and currently in place with the European IPA II CBC Programme.

Furthermore, by accompanying the PES scheme to the IWRM approach, on which the CMCC's project is developed, the chance of implementing a successful environmental policy regarding ecosystem sustainability at Dojran Lake can be higher. In fact, the IWRM method is a track towards coordination in the field of policy making and in the processes of policy planning and assessment across basin boundaries and institutional borders in an integrated manner<sup>191</sup>. The approach can be a helpful instrument in this context as it contemplates complex coordination issues over the management of international watercourse systems (Cook and Spray, 2012).

The proposed PES schemes can also draw some possible additional benefits from its implementation. Above all, a better ecosystem management between the involved states is included, accompanied by the

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<sup>191</sup> "What is IWRM?", Global Water Partnership, 2010.  
<http://www.gwp.org/en/The-Challenge/What-is-IWRM/>. Accessed 10 May and 28 July 2015.

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achievement of an improved water quality and quantity of Dojran Lake through cost-sharing as a consequence from a joint action and efficient collaboration, by avoiding in this way the possible scenario of inefficient duplicate development or implementation of separated measures in the transboundary area between the co-riparian states.

The proposed PES scheme is also of utmost importance as it contributes at achieving national policies implementation and at meeting specific targets focused on water quality, biodiversity and agriculture especially at a European level.

The possibility of reading the PES scheme as an agri-environmental policy and not only as a 'PES for water' is given by the great importance that agricultural activities represent for the restoration of the watershed services, by providing a potentiality in the establishment of agri-tourism practices. The maintenance and restoration of the farming area in the cultural landscape of Dojran Lake would generate additional value and benefits for tourists and local inhabitants. The thesis of boosting the local economy and of increasing the competitiveness of the transboundary area through the promotion of local products and activities through the PES scheme and other programmes seems to be in line with the European CAP. Therefore, this concept provides a clear possibility of enhanced harmonization and alignment of the Macedonian position to the European agricultural policy.

The profound changing of the ecosystem benefits concept developed over the last few decades and identified by the MEA (2005) has lead to the thesis that bordering states consider the maintenance of a shared watercourses' ecological integrity as a key aim and justification of several joint decision-making processes and implemented arrangements, such as a PES scheme.

As a conclusion it can be stated that the process of recognition of the downstream benefits of watershed services, connected with the additionality and conditionality criteria and an incentive-based approach, is the motivation for trying to influence decision-making and management upstream. Therefore, the recognition of benefits that has been proposed through the PES mechanism developed for Dojran Lake and the possible assessment of this system in a cross-frontiers scenario can provide the involved countries not only with an improved ES, but also with an improved and successful cooperation between Greece and the FYROM, if correctly implemented.

The possibility of entering into these PES arrangements offers an unprecedented opportunity to the Macedonian country and the Greek territory to achieve a mutually beneficial and ecological cooperation as never experienced before.

Its practical assessment constitutes also the chance to a further alignment with the European *acquis* in the Macedonian process of harmonization required for its accession into the Community, though some current concerns and unresolved political issues would be left behind.

This possibility would clearly provide support in order to start the Accession Negotiations and to take a further step in the accession path.

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## Bibliography

- An investment in Europe, an investment in agricultural and rural development. The Former Yugoslav Republic of Macedonia – Providing a stable and safe food supply. IPA (2013). DOI: 10.2794/25979. Available at: [http://ec.europa.eu/enlargement/pdf/leaflets/leaflet\\_ipa2\\_agriculture\\_en.pdf](http://ec.europa.eu/enlargement/pdf/leaflets/leaflet_ipa2_agriculture_en.pdf).
- An investment in Europe, an investment in the rule of law. The Former Yugoslav Republic of Macedonia – Secure police communication. IPA (2013). DOI: 10.2794/75575. Available at: [http://ec.europa.eu/enlargement/pdf/leaflets/leaflet\\_ipa2\\_ruleoflaw\\_en.pdf](http://ec.europa.eu/enlargement/pdf/leaflets/leaflet_ipa2_ruleoflaw_en.pdf).
- Anastasiadis, E.T., Seferlis, M., Papadimos, D., (2005). Lake Doiran - Functional analysis and proposed restoration measures. Greek Biotope/Wetland Centre (EKBY), Society for the Investigation and Conservation of Biodiversity and the Sustainable Development of Natural Ecosystems (BIOECO). Themi, p. 72.
- Ass. Prof. Madzova, V., Ass. Davcev, L., Ass. Paceshkoski, V., (n.d.). The impact of cross border cooperation on sustainable development of the bordering areas (case study of Republic of Macedonia), 1-8.
- Brown, T.C., Bergstrom, J.C., Loomis, J.B. (2007). Defining, valuing, and providing ecosystem goods and services. *Natural Resources Journal*, 47 (2). 329-376.
- Chave Peter A., (2005). The EU Water Framework Directive, An introduction.
- Centro Euro - Mediterraneo sui Cambiamenti Climatici, T. (2013). Leading Climate Science into the XXI Century.
- Coase, R. (1960). The Problem of Social Cost, *Journal of Law and Economics*, 3: 1-44.
- Common M., Stagl S., (2009). *Ecological Economics, An introduction*. Cambridge University Press.
- Cook, B. R., Spray, C. J., (2012). Ecosystem services and integrated water resource management: Different paths to the same end? *Journal of Environmental Management*, 109, 93–100, DOI: 10.1016/j.jenvman.2012.05.016.
- Council of the European Union, (2001). Stabilisation and Association Agreement between the European Communities and their Member States, of the one part, and the Former Yugoslav Republic of Macedonia, of the other part, Inter-institutional File: 2001/0049 ACV. (March).
- COWI A/S, (2014). Support Policy Development for Integration of Ecosystem Service Assessment into WFD and FD Implementation, Resource Document, (September), 1-146.
- De Groot, R. S., Alkemade, R., Braat, L., Hein, L., Willmen, L., (2009). Challenges in integrating the concept of ecosystem services and values in landscape planning, management and decision making. *Ecological Complexity*, 7(3), 260-272, DOI: 10.1016/j.ecocom.2009.10.006.
- Di Trapani, M. A., Squatrito, R., Foderà, M., Testa, R., Tudisca, S., Sgroi, F. (2014). Payment for

The role of Payments for Ecosystem Services in the Macedonian path toward Europe:  
the case of Dojran Lake

Environmental Services for the sustainable development of the territory, 10(5), 480–488,  
DOI: 10.3844/ajessp.2014.480.488.

Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. Official Journal L 327, 22/12/2000 P. 0001 - 0073, EUR-Lex, 2000. Available at:  
<http://eur-lex.europa.eu/legal-content/EN/TXT/uri=celex:32000L0060>.

Escobar, M.M., Hollaender, R., Weffer, C.P. (2013). Institutional durability of payments for watershed services: lessons from two case studies from Columbia and Germany. *Ecosystem Service*. 6, 46-53.

European Commission, (2003). Common Implementation Strategy for the Water Framework Directive (2000/60/EC), Economics and the environment. Available at:  
<http://ec.europa.eu/environment/water/water-framework/objectives/pdf/strategy2.pdf>.

European Commission, (2010). Europe 2020: A Strategy for smart, sustainable and inclusive growth. Available at:

<http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20%20Europe%202020%20-%20EN%20version.pdf>.

European Commission, (2013). Agriculture: A partnership between Europe and farmers, 16,  
DOI: 10.2775/45239.

European Commission, (2014). Instrument for Pre - Accession Assistance (IPA II), Indicative Strategy Paper for the Former Yugoslav Republic of Macedonia (2014-2020). Adopted on 19/08/2014. Available at:  
[http://ec.europa.eu/enlargement/pdf/key\\_documents/2014/20140919-csp-former-yugoslav-republic-of-macedonia.pdf](http://ec.europa.eu/enlargement/pdf/key_documents/2014/20140919-csp-former-yugoslav-republic-of-macedonia.pdf).

European Commission, (2014). The Former Yugoslav Republic of Macedonia Progress Report, (October). Available at:  
[http://ec.europa.eu/enlargement/pdf/key\\_documents/2014/20141008-the-former-yugoslav-republic-of-macedonia-progress-report\\_en.pdf](http://ec.europa.eu/enlargement/pdf/key_documents/2014/20141008-the-former-yugoslav-republic-of-macedonia-progress-report_en.pdf)

European Council. (1993). European Council in Copenhagen - Conclusions of the Presidency. Presidency, (June).

European Environment Agency, (2015). The Former Yugoslav Republic of Macedonia.

European Environment Agency, (2007). River Basin Management Plans and Programmes of Measure. Available at:  
<http://www.eea.europa.eu/themes/water/water-management/river-basin-management-plans-and-programme-of-measures>.

European Parliament, the Council, DIRECTIVE 2004/35/CE of 30 April 2004 on the environmental liability with regard to the prevention and remedying of environmental damage, Official Journal of the European Union. Available at:  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:143:0056:0075:en:PDF>.

ECO2 Drafting Group Common Implementation Strategy, Working Group 2, (2004). Assessment on

The role of Payments for Ecosystem Services in the Macedonian path toward Europe:  
the case of Dojran Lake

- Environmental and Resource Costs in the Water Framework Directive, (June). Available at:  
<http://www.waterframeworkdirective.wdd.moa.gov.cy/docs/OtherCISDocuments/Economics/ECOResourceCosts.pdf>
- European Policy Institute, (2012). The use of EU funds in Macedonia Efficiency. Efficiency, impact and absorption capacity и. Collection of studies. Working version. (November). Available at:  
[http://epi.org.mk/docs/use\\_of\\_eu\\_funds\\_in\\_the\\_republic\\_of\\_macedonia.pdf](http://epi.org.mk/docs/use_of_eu_funds_in_the_republic_of_macedonia.pdf)
- Farber, S. C., Costanza, R., Wilson, M. A. (2002). Economic and ecological concepts for valuing ecosystem services. *Ecological Economics*, 41(3), 375–392. DOI:10.1016/S0921-8009(02)00088-5.
- Food and Agricultural Organization of the United Nations, (2011). Payments for Ecosystem Services and Food Security, 1 – 300. Available at:  
<http://www.fao.org/docrep/014/i2100e/i2100e.PDF>.
- Food and Agricultural Organization of the United Nations, (2010). Relevance of OECD agri-environmental measures for remuneration of positive externalities/payments for environmental services, (September), 1-18. Available at:  
<http://www.fao.org/docrep/013/al921e/al921e00.pdf>.
- Geneletti, D. (2013). Assessing the impact of alternative land-use zoning policies on future ecosystem services, 40, 25–35.
- Giupponi, C., Bojovic, D., Ilieva, L. (2014). Payments for ecosystem services; existing practices in the Balkan region, Deliverable to Project #63842 – Integrated Water Resource Management at Dojran Lake, Macedonia, CMCC, (December).
- Giupponi, C., Gorla A., Sgobbi A., Markandya A., (2009). A Pilot Study on Payment for Ecological and Environmental Services in Lashihai Nature Reserve, China. In: P. Kumar and R. Muradian (eds.), *Payment for Ecosystem Services*. Oxford University Press, Oxford (UK). 129-159.
- Global Water Partnership Technical Advisory Committee (TAC), (2000). *Integrated Water Resources Management*. Water Science and Technology (Vol. 62). DOI:10.2166/wst.2010.262.
- Greece – the Former Yugoslav Republic of Macedonia IPA Cross-Border Programme (2007-2013), Approved revision (October 2011). CCI: 2007 CB 16 I PO 009.
- Grabbe, H. (2002). European Union Conditionality and the *Acquis Communautaire*. *International Political Science Review*, 23(3), 249–268, DOI: 10.1177/0192512102023003003
- Guidance recommended model for IPA II cross-border cooperation programmes, following the Commission Implementing Regulation (EU) 447/2014 on the specific rules for implementing Regulation (EU) 447/2014 of 02.05.2014 of the European Parliament and the Council establishing an Instrument for Pre-accession assistance (IPA II).
- Howarth, W. (2009). Pre-submission Draft, Cost Recovery for Water Services and the Polluter Pays Principle, (December 2000), 1–24.
- Hussen, A. M. (2004). *Principles of Environmental Economics: Economics, Ecology and Public Policy*. Retrieved from:

The role of Payments for Ecosystem Services in the Macedonian path toward Europe:  
the case of Dojran Lake

<http://books.google.com/books?id=fgYgfaTh6KMC&pgis=1>.

- Kemkes, R. J., Farley, J., Koliba, C. J. (2010). Determining when payments are an effective policy approach to ecosystem service provision. *Ecological Economics*, 69(11), 2069–2074, DOI: 10.1016/j.ecolecon.2009.11.032.
- Kolinjivadi, V., Adamowski, J., Kosoy, N. (2014). Recasting payments for ecosystem services (PES) in water resource management: A novel institutional approach. *Ecosystem Services*, 10, 144–154. DOI: 10.1016/j.ecoser.2014.08.008.
- Lee, J. (2015). The governance of wetland ecosystems and the promotion of transboundary water cooperation – opportunities presented by the Ramsar Convention, *Water International*, 40:1, 33–47, DOI: 10.1080/02508060.2014.989681.
- Limburg, K.E., O'Neill, R.V., Costanza, R., Farber, S. (2002). Complex systems and valuation. *Ecological Economics*, 41(3), 409–420. DOI:10.1016/S0921-8009(02)00090-3.
- Management Authority of Community Initiative Programme Interreg II, Ministry of Economy and Finance, (2007). Strategic Environmental Assessment (SEA), IPA Cross-Border Cooperation Programme Greece–the Former Yugoslav Republic of Macedonia 2007-2013, Objective 3 “European Territorial Co-operation”, (October). Available at:  
[http://ipacbc-mk-gr.net/wp-content/uploads/2013/09/Strategic-Environmental-Assessment-Oct-2007\\_en.pdf](http://ipacbc-mk-gr.net/wp-content/uploads/2013/09/Strategic-Environmental-Assessment-Oct-2007_en.pdf).
- Markandya, A., Prelet R., Mason, P., Taylor, T. (2001). *Dictionary of Environmental Economics*, Earthscan Publications, London and Sterling.
- Matilevska, M., (2012). Results from the project "Saving of the Dojran Lake" (in Macedonian). Available at:  
<http://eprints.ugd.edu.mk/3202/1/Matlievska-Dojran-April-2012.pdf>.
- McIntyre, O., (2015). Benefit-sharing and upstream/downstream cooperation for ecological protection of transboundary waters: opportunities for China as an upstream state, *Water International*, 40:1, 48-70, DOI: 10.1080/02508060.2014.990350.
- Millennium Ecosystem Assessment, (2005). *Ecosystems and Human Well-being: Synthesis*. Ecosystems (Vol. 5), DOI: 10.1196/annals.1439.003.
- Mylopoulos, Y. A., Kolokytha, E. G. (2008). Integrated water management in shared water resources: The EU Water Framework Directive implementation in Greece. *Physics and Chemistry of the Earth*, 33(5), 347–353, DOI: 10.1016/j.pce.2008.02.031.
- Nedanovski, P., Blinkov, D., Matlievska, M. (2012). Enforcement and Compliance of Environmental Legislation, (June), 1–13.
- Newcome, J., Provins, A., Johns, H., Ozdemiroglu, E., Ghazoul, J., Burgess, D., Turner, K. (2005). The Economic, Social and Ecological Value of Ecosystem Services: A Literature Review. *Eftec*, (January), 1–42.
- Organisation for Economic Co-operation and Development. (2010). *Paying for Biodiversity, Enhancing the cost-effectiveness of payments for ecosystem services*, (October), 1–4.

The role of Payments for Ecosystem Services in the Macedonian path toward Europe:  
the case of Dojran Lake

- Ottaviani, D. (2011). The role of PES in agriculture. Payments for Ecosystem Services and Food Security. Food and Agriculture Organization of the United Nations, Rome, Italy. PDF available at: <http://www.fao.org/docrep/014/i2100e/i2100e01.pdf>.
- Page, G., Ridoutt, B., Creeper, D., Bellotti, B. (2015). Land Use Policy A framework for assessing local PES proposals. *Land Use Policy*, 43, 37–41, DOI: 10.1016/j.landusepol.2014.10.023.
- Papayannis, T. (2004). Shared catchments and wetlands – increasing transboundary cooperation, (December), 1–21.
- Planet. (2014). 3<sup>rd</sup> Deliverable Final Report of the Strategic Environmental Assessment of the IPA II Cross - Border Cooperation Programme “Greece - the Former Yugoslav Republic of Macedonia 2014-2020”. “Expert - Consultant for the elaboration of the Ex Ante Evaluation and the Strategic Environmental Assessment of the new IPA II Cross – Border Cooperation Programme “Greece - the Former Yugoslav Republic of Macedonia 2014 – 2020” (September).
- Popovska, C., Stavric, V., (2000). Transboundary river and lake basins in the Republic of Macedonia, *Water Management*, i, 1–8.
- Ramsar Convention, (1971). Convention on Wetlands of international importance especially as waterfowl habitat, (adopted 2 February 1971, entered into force 21 December 1975), United Nations Treaty Series, 996, 245.
- Regional Environmental Network for Accession (RENA). (2011), Workshop Report, Activity 3.1 Nature Protection, Nature Training Module 2, Nature Management and Strengthening the Local Economy, Dojran Lake (FYR of Macedonia and Greece), The European Union's Instrument for Pre - Accession Assistance (IPA), (September), 6-8.
- Republic of Macedonia, State Statistical Office, (2014). Tourism in the Republic of Macedonia 2010-2014, Statistical Review: Transport, tourism and other services, (May). PDF available at: <http://www.stat.gov.mk/Publikacii/8.4.15.01.pdf>
- Scolozzi, R., Schirpke, U., Morri, E., Amato, D. D., Santolini, R. (2014). Ecosystem services-based SWOT analysis of protected areas for conservation strategies, *Journal of Environmental Management*, <http://de.doi.org/10.1016/j.jenvman.2014.05.040>.
- Smith, M., de Groot, D., Perrot-Maître, D., Bergkamp, G. (2006). Pay-Establishing payments for watershed services. Gland, Switzerland: IUCN.
- Smith, R.D., Petkovski, S. (2001). Comparative Chemical Analysis of the Waters of Lake Dojran and Gjavato Well No.1, Society for the Investigation and Conservation of Biodiversity and the Sustainable Development of Natural Ecosystems – BIOECO.
- Sommerville, M.M., Jones, J.P.G., Milner-Gulland, E.J., (2009). A Revised Conceptual Framework for Payments for Environmental Services, *Insight. Ecology and Society*, 14(2), 34.
- Tarek, A. (2010). Overview on the agri-environmental policy in Europe as a system for payment for environmental services. PDF available at: [http://www.scribd.com/tarek\\_amin](http://www.scribd.com/tarek_amin).

The role of Payments for Ecosystem Services in the Macedonian path toward Europe:  
the case of Dojran Lake

- Tacconi, L. (2012). Redefining payments for environmental services. *Ecological Economics*, 73(August), 29–36, DOI: 10.1016/j.ecolecon.2011.09.028.
- Tesauro, G., (2012). Diritto dell'Unione Europea, VII edizione, CEDAM.
- The World Bank, (2007). Promoting Market-oriented Ecological Compensation Mechanisms: Payment for Ecosystem Services in China. World Bank Analytical and Advisory Assistance Program China: Addressing Water Scarcity – from Analysis to Action Policy Note.
- Trevisan, G., (2000). Economia e Politica dell'agricoltura., Cafoscarina, Venezia.
- United Nations Economic Commission for Europe. (2011), Second Environmental Performance Review, The Former Yugoslav Republic of Macedonia.
- United Nations Environment Programme, Forest Trends, The Katoomba Group, (2008). Payments for Ecosystem Services. Getting Started, A Primer. Retrieved from:  
[papers2://publication/uuid/600F2EF4-98CE-43B6-B378-FF08D094334F](http://papers2://publication/uuid/600F2EF4-98CE-43B6-B378-FF08D094334F).
- United Nations Environment Programme Vienna – ISCC, (2010). Feasibility study on establishing a transboundary protected area Sharr/Šar Planina – Korab – Dešat/Deshat.
- United Nations General Assembly, (2014). Report of the Open Working Group of the General Assembly on Sustainable Development Goals. A /68/970, 59106 (August).
- Vlachos, E., (1999). Practicing hydrodiplomacy in the 21<sup>st</sup> century. Water Resources Update (111), Colorado State University, 76-82.
- Wertz-Kanounnikoff, S., (2006). Payments for environmental services – A solution for biodiversity conservation?, 1–16.

## Sitography

"Agriculture", European Union, 2014.

[http://europa.eu/pol/agr/index\\_en.htm](http://europa.eu/pol/agr/index_en.htm), Accessed 30 July 2015;

"A resource-efficient Europe – Flagship initiative of the Europe 2020 Strategy", Europe 2020, 2014.

[http://ec.europa.eu/resource-efficient-europe/index\\_en.htm](http://ec.europa.eu/resource-efficient-europe/index_en.htm). Accessed 24 April 2015.

Apostolova, O., 2010. "Promoting Payments for Ecosystem Services in the Danube Basin".

<http://www.icpdr.org/main/publications/promoting-payments-ecosystem-services-danube-basin>. Accessed 12 August 2015.

"Article 9 – Recovery of Costs for Water Services", 2012.

<http://www.wise-rtd.info/en/info/article-9-recovery-costs-water-services>. Accessed 25 May 2015.

"Assessment of the effects of plans and programmes on the environment", EUR-Lex, 2010.

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV:l28036>. Accessed 5 April 2015.

"Bathing Water Quality (until 2014)", EUR-Lex, 2001.

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:l28007>. Accessed 23 August 2015.

"CMCC – description and Statute", CMCC.

[www.cmcc.it/about-cmcc-description](http://www.cmcc.it/about-cmcc-description). Accessed 10 May and 20 August 2015.

"Conditions for Membership", European Neighbourhood Policy and Enlargement Negotiations, Chapter of the *acquis*, Chapter 27. Available at:

[http://ec.europa.eu/enlargement/policy/conditions-membership/chapters-of-the-acquis/index\\_en.htm](http://ec.europa.eu/enlargement/policy/conditions-membership/chapters-of-the-acquis/index_en.htm). Accessed 15 April 2015.

"Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union - Consolidated version of the Treaty on European Union - Protocols - Declarations annexed to the Final Act of the Intergovernmental Conference which adopted the Treaty of Lisbon, signed on 13 December 2007 - Tables of equivalences". Official Journal C 326, 26/10/2012 P. 0001 – 0390, Article 6(1), EUR-Lex.

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:12012M/TXT>. Accessed 10 March 2015.

"Contingent Valuation Method", Ecosystem Valuation, King, D.M., Mazzotta, M.J., 2000.

[http://www.ecosystemvaluation.org/contingent\\_valuation.htm](http://www.ecosystemvaluation.org/contingent_valuation.htm). Accessed 10 July 2015.

"Council Decision of 18 February 2008 on the principles, priorities and conditions contained in the Accession Partnership with the Former Yugoslav Republic of Macedonia and repealing Decision 2006/57/EC (2008/212/EC)", Official Journal of the European Union, L 80/32, 2008.

<http://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=CELEX:32008D0212>. Accessed 10 May and 4 October

The role of Payments for Ecosystem Services in the Macedonian path toward Europe:  
the case of Dojran Lake

2015.

“Council Directive 76/464/EEC of 4 May 1976 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community”, Official Journal L 129, 18/05/1976 P. 0023 – 0029, EUR-Lex, 1976.

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31976L0464>. Accessed 23 August 2015.

“Damage Cost Avoided, Replacement Cost and Substitute Cost Method”, Ecosystem Valuation, King, D.M., Mazzotta, M.J., 2000.

[http://www.ecosystemvaluation.org/cost\\_avoided.htm](http://www.ecosystemvaluation.org/cost_avoided.htm). Accessed 10 July 2015.

“Decision n. 1386/2013/EU of the European Parliament and of the Council of November 2013 on a General Union Environment Action Programme to 2020 ‘Living well, within the limits of our planet’”, EUR-Lex, 2013.

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32013D1386>. Accessed 24 April 2015 and 19 July 2015.

“Designated Areas”, MK – NI 008, 2015.

[http://www.moepp.gov.mk/?page\\_id=4920&lang=en](http://www.moepp.gov.mk/?page_id=4920&lang=en). Accessed 11 August, 2015.

“Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy”, Official Journal L 327, 22/12/2000 P. 0001 – 0073, EUR-Lex, 2000.

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32000L0060>. Accessed 25 May, 10 July, 29 August and 5 September 2015.

“Directive 2001/42/EC on environmental impact assessment of certain Plans and Programme”, Official Journal L 197, 21/07/2001 P. 0030 – 0037, EUR-Lex, 2001.

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32001L0042>. Accessed 5 April 2015.

“Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage”, Official Journal L 143, 30/04/2004 P. 0056 – 0075, 2004.

<http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32004L0035>. Accessed 27 May 2015 and 22 August 2015.

“Enlargement”, EUR-Lex, 2007.

[http://eur-lex.europa.eu/summary/chapter/enlargement.html?root\\_default=SUM\\_1\\_CODED%3D16&obsolete=false](http://eur-lex.europa.eu/summary/chapter/enlargement.html?root_default=SUM_1_CODED%3D16&obsolete=false). Accessed 18 July and 4 October 2015.

“Environment action Programme 2020”, 2015.

<http://ec.europa.eu/environment/newprg/>. Accessed 19 July 2015.

“Essential Danube region Services and Benefits”, WWF – Valuing and paying for Ecosystem Services in the Danube River Basin. Available at:

[http://d2ouvy59p0dg6k.cloudfront.net/downloads/wwf\\_brochure\\_danube\\_pes\\_case\\_studies\\_1.pdf](http://d2ouvy59p0dg6k.cloudfront.net/downloads/wwf_brochure_danube_pes_case_studies_1.pdf). Accessed 12 August 2015.

The role of Payments for Ecosystem Services in the Macedonian path toward Europe:  
the case of Dojran Lake

- "European Commission – Enlargement – Accession Partnership", European Neighbourhood Policy and Enlargement Negotiations, European Commission, 2012.  
[http://ec.europa.eu/enlargement/policy/glossary/terms/accession-partnership\\_en.htm](http://ec.europa.eu/enlargement/policy/glossary/terms/accession-partnership_en.htm). Accessed 16 April and 10 September 2015.
- "European Commission – Enlargement- Acquis", European Neighbourhood Policy and Enlargement Negotiations, 2012.  
[http://ec.europa.eu/enlargement/policy/glossary/terms/acquis\\_en.htm](http://ec.europa.eu/enlargement/policy/glossary/terms/acquis_en.htm). Accessed 15 April and 21 August 2015.
- "FYR Macedonia Water Snapshot", Republic of Macedonia, Ministry of Environment and Physical Planning, 2015.  
<http://sos.danubis.org/eng/country-notes/macedonia-fyr/>. Accessed 11 August 2015.
- "Hedonic Pricing Method", Ecosystem Valuation, King, D.M., Mazzotta, M.J., 2000.  
[http://www.ecosystemvaluation.org/hedonic\\_pricing.htm](http://www.ecosystemvaluation.org/hedonic_pricing.htm). Accessed 10 July 2015.
- "History of the FYROM's dispute", Themis Macedonia, 2015.  
<http://www.greece.org/themis/macedonia/historengl.htm>. Accessed 02 August 2015.
- "Integrating three ES", Global Water Partnership, 2012.  
<http://www.gwp.org/en/The-Challenge/What-is-IWRM/IWRM-Principles/Integrating-three-Es/>. Accessed 12 May 2015.
- "IWRM Principles", Global Water Partnership, 2012.  
<http://www.gwp.org/en/The-Challenge/What-is-IWRM/IWRM-Principles/>. Accessed 12 May and 18 September 2015.
- "IWRM-DL – Integrated Water Resources Management at Dojran Lake – CMCC", CMCC.  
<http://www.cmcc.it/projects/cepf-integrated-water-resources-management-at-dojran-lake>. Accessed 10 May and 20 August 2015.
- "Kyoto Protocol", United Nations Framework Convention on Climate Change, 2014.  
[http://unfccc.int/kyoto\\_protocol/items/2830.php](http://unfccc.int/kyoto_protocol/items/2830.php). Accessed 26 April 2015.
- "Lake Dojran/Dojrani Sub Basin", Internationally Shared Surface Water Bodies in the Balkan Region, 2004.  
[http://www.inweb.gr/workshops2/sub\\_basins/20\\_Dojrani.html](http://www.inweb.gr/workshops2/sub_basins/20_Dojrani.html). Accessed 20 May 2015 and 21 August 2015.
- "Macedonia name solution before EU talks", BalkanInsight, 2008.  
<http://www.balkaninsight.com/en/article/macedonia-name-solution-before-eu-talks>. Accessed 02 August 2015.
- "Macedonian Denar", OANDA, 2015.  
<http://www.oanda.com/currency/iso-currency-codes/MKD>. Accessed 11 August, 2015.
- "Mission & Values", CMCC.  
<http://www.cmcc.it/mission>. Accessed 10 May and 20 August 2015.
- "Monitoring", Ministry of Reconstruction of Production, Environment & Energy, 2014.

The role of Payments for Ecosystem Services in the Macedonian path toward Europe:  
the case of Dojran Lake

- <http://www.ypeka.gr/Default.aspx?tabid=249&locale=en-US&language=el-GR>. Accessed 25 July 2015.
- “Participatory approach”, Global Water Partnership, 2012.  
<http://www.gwp.org/en/The-Challenge/What-is-IWRM/IWRM-Principles/Participatory-approach/>.  
Accessed 12 May 2015.
- “Political & economic relations”, Delegation of the European Union to the Former Yugoslav Republic of Macedonia.  
[http://eeas.europa.eu/delegations/the\\_former\\_yugoslav\\_republic\\_of\\_macedonia/eu\\_the\\_former\\_yugoslav\\_republic\\_of\\_macedonia/political\\_relations/index\\_en.htm](http://eeas.europa.eu/delegations/the_former_yugoslav_republic_of_macedonia/eu_the_former_yugoslav_republic_of_macedonia/political_relations/index_en.htm). Accessed 20 March 2015.
- “Rio Declaration on Environment and Development”, Report of the United Nations Conference on Environment and Development, 1992.  
<http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm>. Accessed 13 May and 22 August 2015.
- “River basin management plans and programme of measures”, European Environment Agency, 2014.  
<http://www.eea.europa.eu/themes/water/water-management/river-basin-management-plans-and-programme-of-measures>. Accessed 20 July and 29 August 2015.
- “Role of women”, Global Water Partnership, 2012.  
<http://www.gwp.org/en/The-Challenge/What-is-IWRM/IWRM-Principles/Role-of-women/>. Accessed 12 May 2015.
- “Should Macedonia join the European Union?”, Debating Europe, 2013.  
<http://www.debatingeurope.eu/2013/04/22/should-macedonia-join-the-european-union/#.Vb8x5bcnUzw>.  
Accessed 02 August 2015.
- “Social and economic value of water”, Global Water Partnership, 2012.  
<http://www.gwp.org/en/The-Challenge/What-is-IWRM/IWRM-Principles/Social-and-economic-value-of-water/>. Accessed 12 May 2015.
- “Special Secretariat for Water”, Ministry of Reconstruction of Production, Environment & Energy, 2014.  
<http://www.ypeka.gr/Default.aspx?tabid=246&language=en-US>. Accessed 25 July 2015.
- “The Accession Process for a new Member State”, EUR-Lex, 2007.  
<http://eur-lex.europa.eu/legal-content/EN/TXT/uri=URISERV:114536>. Accessed 10 March 2015 and 18 July 2015.
- “The common agricultural policy (CAP) and agriculture in Europe – Frequently asked questions”, European Commission Press Release Database, 2013.  
[http://europa.eu/rapid/press-release\\_MEMO-13-631\\_en.htm](http://europa.eu/rapid/press-release_MEMO-13-631_en.htm). Accessed 30 July 2015.
- “The Ramsar Convention and its mission”, Ramsar, 2014.  
<http://www.ramsar.org/about/the-ramsar-convention-and-its-mission>. Accessed 10 April 2015.
- “Travel Cost Method”, Ecosystem Valuation, King, D.M., Mazzotta, M.J., 2000.  
[http://www.ecosystemvaluation.org/travel\\_cost.htm](http://www.ecosystemvaluation.org/travel_cost.htm). Accessed 10 July 2015.
- “United Nations Conference on Sustainable Development (Rio+20)”, United Nations Environment

The role of Payments for Ecosystem Services in the Macedonian path toward Europe:  
the case of Dojran Lake

Programme, World Conservation Monitoring Centre, 2015.

[http://old.unep-wcmc.org/united-nations-conference-on-sustainable-development-rio20\\_761.html](http://old.unep-wcmc.org/united-nations-conference-on-sustainable-development-rio20_761.html).

Accessed 26 April 2015.

"United Nations Conference on Sustainable Development Rio+20", United Nations Department of Economic and Social Affairs, Sustainable Development, Knowledge Platform, 2012.

<https://sustainabledevelopment.un.org/rio20>. Accessed 26 April and 21 August 2015.

"Valuation of Ecosystem Services", Ecosystem Valuation, King, D.M., Mazzotta, M.J., 2000.

<http://www.ecosystemvaluation.org/1-02.htm>. Accessed 1 June and 10 September 2015.

"Water is finite and vulnerable resource", Global Water Partnership, 2012.

<http://www.gwp.org/en/The-Challenge/What-is-IWRM/IWRM-Principles/Water-is-finite-and-vulnerable-resource/>. Accessed 12 May 2015.

"What are "payments for environmental services"?", Payments for Environmental Services, CIFOR, 2011.

[http://www.cifor.org/pes/\\_ref/about/index.htm](http://www.cifor.org/pes/_ref/about/index.htm). Accessed 10 April and 31 August 2015.

"What is IWRM?", Global Water Partnership, 2010.

<http://www.gwp.org/en/The-Challenge/What-is-IWRM/>. Accessed 10 May and 28 July 2015.

"WFD – EC – Water Framework Directive – WFD – 2000/60/EC", WISE-RTD, Water Knowledge Portal, 2015.

<http://www.wise-rtd.info/en/info/ec-water-framework-directive-wfd-200060ec>. Accessed 27 April 2015 and 19 July 2015.