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Cannabis and Water Management: International Regulation and the Legal Framework of the European Union

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Cannabis and Water Management: International Regulation and the Legal Framework of the European Union

*María E. Milanés-Murcia**

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ABSTRACT

Among member states of the European Union, cannabis is regulated under the 1961 Single Convention on Narcotic Drugs as amended by the 1972 Protocol, the 1971 Convention on Psychotropic Substances, and the 1988 Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances. The implementation of this international legal framework among the Member States may vary according to national social and historical circumstances. For example, each country of the European Union has specific regulations for cannabis that may be very different from one country to another. Cannabis cultivation requires use of a significant amount of water that may affect and cause harm to the environment. The illicit use of cannabis has created an irregular use of water, with the high level of water needed for this crop affecting the environment. Under the 1997 Watercourses Convention, the 1992 UNECE Water Convention, and the 2000 Water Framework Directive, ecological and environmental protection of all water bodies shall be guaranteed and protected by each Member State. In this regard, the national regulations for cannabis must take into consideration the legal environmental framework already in place to protect each Member State's ecosystem.

I. INTRODUCTION

The legal framework of the European Union regulating cannabis allows its use only for medical and scientific purposes. However, at the national level, each Member State has adopted the international regulations as adapted to its own history and tradition. The recent trend is for countries to decriminalize the use of cannabis for personal use, but current international law still requires them to regulate and control the use of cannabis.¹

The international legal framework for cannabis is composed of the 1961 Single Convention on Narcotic Drugs as amended by the 1972 Protocol,² the 1971 Convention on Psychotropic Substances,³ and the 1988 Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances.⁴ Members of the

1. The 1961 Single Convention as amended by the 1972 Protocol, *infra* note 2.

2. Single Convention on Narcotic Drugs, Mar. 30, 1961, 18 U.S.T. 1407, T.I.A.S. No. 6298, 520 U.N.T.S. 151, as amended by Protocol Amending the Single Convention on Narcotic Drugs, 1961, Geneva, Mar. 25, 1972, 26 U.S.T. 1439, T.I.A.S. No. 8118, 976 U.N.T.S. 3 [hereinafter the 1961 Single Convention as amended by the 1972 Protocol].

3. Convention on Psychotropic Substances, Feb. 21, 1971, T.I.A.S. No. 9725, 32 U.S.T. 543, 1019 U.N.T.S. 175 [hereinafter the 1971 Convention on Psychotropic Substances].

4. United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances, Dec. 20, 1988, 28 I.L.M. 493 (1989), 1582 U.N.T.S. 95 [hereinafter the 1988 Convention].

European Union are parties to these treaties but have incorporated them very differently into their national legal systems. For example, some countries impose administrative sanctions for personal use of cannabis, while others have criminal sanctions for the same behavior.⁵

There is no specific legal framework governing cannabis for the European Union as a whole.⁶ According to Articles 2 through 6 of the Treaty of the Functioning of the European Union, drugs are not a core competency of the European Union.⁷ Thus the regulatory approach varies from one country to another within the European Union.

The water management regulations transposed by the Member States of the European Union are the 2000 Water Framework Directive,⁸ the 1997 Watercourses Convention,⁹ and the 1992 UNECE Water Convention.¹⁰ These legal instruments provide the key elements for protecting the ecological status of bodies of water within the European Union.

Analysis of each of these legal instruments and their implementation shows the best management practices for cultivating cannabis for medical and scientific purposes, and for establishing mechanisms to control the illicit use of water for marijuana. The goals concerning natural flows and ecological protection set in the 2000 Water Framework Directive are still being implemented by the Member States. In this regard, the control of water for crops such as cannabis, which requires large amounts of water, applies the supplementary measures established under the Water Framework Directive. These measures are, among others, an efficient use of water by applying “water-efficient technologies in [the] industry,” “water-saving irrigation techniques,” and “codes of good practices” promoting ecological agriculture production.¹¹

II. INTERNATIONAL REGULATION

International regulation of cannabis is primarily based on three treaties:¹² the

5. Brendan Hughes, *Cannabis Legislation in Europe: An Overview*, EUR. MONITORING CTR. FOR DRUGS AND DRUG ADDICTION 9 (2017), <http://www.emcdda.europa.eu/system/files/publications/4135/TD0217210ENN.pdf> (on file with *The University of Pacific Law Review*).

6. *Id.*

7. Consolidated version of the Treaty on the Functioning of the European Union, 2007 O.J. (C 326) arts. 2–6.

8. Directive 2000/60/EC of the European Parliament and of the Council of 23 October Establishing a Framework for Community Action in the Field of Water Policy, 2000 O.J. (L 327) 1–73 [hereinafter Directive 2000/60/EC].

9. Convention on the Law of the Non-Navigational Uses of International Watercourses, May 21, 1997, A/RES/51/229, 36 I.L.M. 700 [hereinafter 1997 Convention].

10. Convention on the Protection and Use of Transboundary Watercourses and International Lakes, Mar. 17, 1992, 1936 U.N.T.S. 269 [hereinafter UNECE Water Convention].

11. Directive 2000/60/EC, *supra* note 9, at annex 1, pt. B.

12. United Nations Office on Drugs and Crime, *International Drug Control Conventions*, (last visited

1961 Single Convention on Narcotic Drugs as amended by the 1972 Protocol,¹³ the 1971 Convention on Psychotropic Substances,¹⁴ and the 1988 Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances.¹⁵ Under this international legal framework, the use of cannabis is allowed only for medical and scientific purposes.¹⁶

The Member States have implemented these treaties through organs and bodies of the United Nations. The Economic and Social Council¹⁷ (ECOSOC) established the Commission on Narcotic Drugs (CND) through resolution 9(I), 1946.¹⁸ The CND was created to supervise the implementation of the international treaties on drug control.¹⁹ In 1991, the authority of the CND was extended by the General Assembly to empower it to be the governing body of the United Nations Office on Drugs and Crime (UNODC).²⁰ The three goals of the UNODC align with the Millennium Declaration's goals "to counter the world drug problem,"²¹ to develop research to improve knowledge, and to establish policies to control illicit drugs.²² The UNODC also uses normative work to contribute to the "ratification and implementation of these relevant international treaties"²³ and to help develop "domestic legislation on drugs."²⁴

Each convention has definite revised schedules for substances, including a

Feb. 6, 2017), <https://www.unodc.org/unodc/en/commissions/CND/conventions.html> (on file with *The University of Pacific Law Review*).

13. The 1961 Single Convention as amended by the 1972 Protocol, *supra* note 2 at pmb1.

14. The 1971 Convention on Psychotropic Substances, *supra* note 3, at pmb1.

15. The 1988 Convention, *supra* note 4, at pmb1.

16. The 1961 Single Convention as amended by the 1972 Protocol, *supra* note 2 at arts. 22, 28.

17. The Economic and Social Council is one of the six organs of the United Nations under the Chapter X of the U.N. Charter signed on June 26, 1945, in San Francisco. According to articles 62 to 66 of the UN Charter, the functions and powers of the Economic and Social Council are to contribute on "international economic, social, cultural, educational, health, and related matters and may make recommendations with respect to any such matters to the General Assembly to the Members of the United Nations, and to the specialized agencies concerned." (U.N. Charter art. 62, ¶1).

18. Economic and Social Council Res. 1946/9(I) (Feb. 15, 1946), <https://documents-dds-ny.un.org/doc/RESOLUTION/GEN/NR0/041/51/IMG/NR004151.pdf?OpenElement> (on file with *The University of the Pacific Law Review*).

19. United Nations Office on Drugs and Crime, *Commission on Narcotic Drugs*, available at <http://www.unodc.org/unodc/en/commissions/CND/> (on file with *The University of Pacific Law Review*).

20. The United Nations Office on Drugs and Crime (UNODC) was established in 1997 and created between the United Nations Drug Control Programme and the Centre for International Crime Prevention, and helps Member States fight "against illicit drugs, crime and terrorism." *Id.*; *see also* United Nations Office on Drugs and Crime, *About UNODC*, (last visited Feb. 9, 2017), <http://www.unodc.org/unodc/en/about-unodc/index.html?ref=menutop> (on file with *The University of Pacific Law Review*).

21. *Id.*

22. *Id.*

23. *Id.*

24. *Id.*

list or table of drugs, issued in a separate document.²⁵ When the CND makes a decision regarding scheduling, the mechanism used to update schedules is to bring the CND's decision before the World Health Organization,²⁶ Member States, and the International Narcotics Control Board²⁷ through notification from the Secretary-General.²⁸ After this, the new schedule will be posted on the United Nations Office on Drugs and Crime's website.²⁹ The revised schedules of the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol, as of May 18, 2016, are published under document symbol ST/CND/1/Add.1/Rev.2.³⁰ The revised schedules of the Convention on Psychotropic Substances of 1971, as of November 13, 2016, are issued under document symbol ST/CND/1/Add.2/Rev.2.³¹ Also, the revised tables of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988, as of October 6, 2014, are issued under document symbol ST/CND/1/Add.3/Rev.1.³²

25. UNITED NATIONS OFFICE ON DRUGS AND CRIME, THE INT'L DRUG CONVENTIONS 1 (2013), *available at* https://www.unodc.org/documents/commissions/CND/Int_Drug_Control_Conventions/Ebook/The_International_Drug_Control_Conventions_E.pdf [hereinafter *The International Drug Conventions*] (on file with *The University of the Pacific Law Review*).

26. The World Health Organization (WHO) is a United Nations organization and its Constitution entered into force on April 7, 1948. The WHO works directly to coordinate international health in the United Nations. World Health Org., *Who We Are, What We Do*, (last visited Feb. 9, 2017), <http://www.who.int/about/en/> (on file with *The University of Pacific Law Review*).

27. "The International Narcotics Control Board (INCB) is an independent, quasi-judicial expert body established by the Single Convention on Narcotic Drugs of 1961 by merging two bodies: the Permanent Central Narcotics Board, created by the 1925 International Opium Convention; and the Drug Supervisory Body, created by the 1931 Convention for Limiting the Manufacture and Regulating the Distribution of Narcotic Drugs. INCB has 13 members, each elected by the Economic and Social Council for a period of five years. INCB members may be re-elected. Ten of the members are elected from a list of persons nominated by Governments. The remaining three members are elected from a list of persons nominated by the World Health Organization (WHO) for their medical, pharmacological or pharmaceutical experience. Members of the Board shall be persons who, by their expertise, competence, impartiality and disinterestedness, will command general confidence. Once they have been elected, INCB members serve impartially in their personal capacity, independently of Governments" (INCB, *About*, (2017) (visited February 9, 2017), <https://www.incb.org/incb/en/about.html> (on file with *The University of Pacific Law Review*).

28. The International Drug Conventions, *supra* note 25, at 1.

29. The International Drug Conventions, *supra* note 25, at 1.

30. The International Drug Control Conventions, Schedules of the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol, as at 18 May 2016. U.N. Doc. ST/CND/1/Add.1/Rev.2 (May 18, 2016) [hereinafter *Schedules 1961 Convention*], *available at* https://www.unodc.org/documents/commissions/CND/Int_Drug_Control_Conventions/1961_Schedules/ST_CNDI_Add1_Rev2_e_V1603027.pdf.

31. The International Drug Control Conventions, Schedules of the Convention on Psychotropic Substances of 1971, as at 13 November 2016, U.N. Doc. ST/CND/1/Add.2/Rev.2 (Nov. 13, 2016) [hereinafter *Schedules 1971 Convention*], <https://documents-dds-ny.un.org/doc/UNDOC/GEN/V17/032/64/PDF/V1703264.pdf?OpenElement> (on file with *The University of the Pacific Law Review*).

32. The International Drug Control Conventions, Tables of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988, as at 6 October 2014, U.N. Doc. ST/CND/1/Add.3/Rev.1 (October 6, 2014) (visited February 9, 2017), [hereinafter *Tables 1988 Convention*] https://www.unodc.org/documents/commissions/CND/Int_Drug_Control_Conventions/1988_Tables/1988_Tabe

This section analyzes each treaty and how cannabis is listed in each revised schedule or table. The current international trends and issues in the regulation of cannabis are also explored. Finally, this section examines international water and environmental laws that help avoid potential harm to the environment and watercourses caused by the management of beneficial uses like the cultivation of medicinal cannabis.

A. *The 1961 Single Convention on Narcotic Drugs as Amended by the 1972 Protocol*

The Single Convention on Narcotic Drugs, 1961 was signed in New York on March 30, 1961, and entered into force on December 13, 1964, according to article 41.³³ The number of parties to this Convention is 154.³⁴

The 1961 Single Convention on Narcotic Drugs as amended by the 1972 Protocol entered into force August 8, 1975 according to Article 18 of the Protocol of March 25, 1972.³⁵ The current number of parties to this treaty is 185 as of February 10, 2017.³⁶

The Convention in Article 1, Paragraph 1 defines cannabis as “the flowering or fruiting tops of the cannabis plant (excluding the seeds and leaves when not accompanied by the tops) from which the resin has not been extracted, by whatever name they may be designated.”³⁷ While the Convention excludes the seeds and leaves, the United States Code legal definition includes “all parts of the plants [. . .] whether growing or not.”³⁸ The Convention also adds the definition of “cannabis plant”³⁹ and “cannabis resin,”⁴⁰ where the first refers to any plant categorized as genus Cannabis, and the second includes the separated resin that can be crude or purified.⁴¹ The definition of “cultivation” is extended to cannabis,

ls_2015/STCNDIADD3Rev1e_V1502798.pdf.

33. UNITED NATIONS TREATY COLLECTION, STATUS OF THE SINGLE CONVENTION ON NARCOTIC DRUGS, 1961, 1 available at <https://treaties.un.org/doc/Publication/MTDSG/Volume%20I/Chapter%20VI/VI-15.en.pdf> (last visited Feb. 10. 2017) (on file with *The University of the Pacific Law Review*).

34. *Id.*

35. UNITED NATIONS TREATY COLLECTION, SINGLE CONVENTION ON NARCOTIC DRUGS, 1961, as amended by the Protocol amending the Single Convention on Narcotic Drugs, 1961. Status of Treaties, Chapter VI Narcotic Drugs and Psychotropic Substances, Status as at Feb.10, 2017, (visited Feb. 10, 2017) available at https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=VI-18&chapter=6&clang=_en#1 (on file with *The University of Pacific Law Review*).

36. *Id.*

37. The 1961 Single Convention as amended by the 1972 Protocol, *supra* note 2, at art. 1(1)(b).

38. 21 U.S.C. § 802(d)(16) (West 2016).

39. The 1961 Single Convention as amended by the 1972 Protocol, *supra* note 2, at art. 1(1)(c).

40. *Id.*, at art. 1(1)(d).

41. *Id.*, at art. 1(1)(c)(d).

opium, and coca in the Convention.⁴² The “production” of cannabis is the process to separate “cannabis resin from the plant.”⁴³

“Cannabis and cannabis resin and extracts and tinctures of cannabis”⁴⁴ are included in Schedule I and “cannabis and cannabis resin”⁴⁵ in Schedule IV of the 1961 Convention, as at May 18, 2016.⁴⁶ Article 2 of the 1961 Convention states that cannabis is “subject to all measures” of control established in the Convention.⁴⁷ Cannabis is also subject to Article 28, which specifically refers to the Control of Cannabis.⁴⁸ Paragraph 1 of Article 28 applies to cannabis the same control as to opium poppy, establishing very restrictive controls in the cultivation under the management of a governmental agency,⁴⁹ which has an exclusive right of importing, exporting, and keeping stocks; with the only permitted use being for medicinal purposes.⁵⁰ On the other hand, the use of cannabis for fiber and seed is not under the scope of this Convention,⁵¹ although measures should be taken to avoid illicit traffic.⁵²

Article 22 of the Convention establishes a “special provision applicable to cultivation,” requiring appropriate measures to seize any plants illegally cultivated and destroying them, with exceptions only for scientific or research purposes by the Party.⁵³

Article 49 allows specific reservations to permit temporarily “the use of cannabis, cannabis resin, extracts and tinctures of cannabis for non-medical purposes”⁵⁴ only when the use of cannabis was traditional in the territory for which the reservation was made and only if the practice was permitted on January 1, 1961.⁵⁵ Although the reservation permits temporary use of cannabis, the export of cannabis is not allowed.⁵⁶ The Convention establishes that the use of cannabis should be for medical and scientific purposes.⁵⁷ Any use for other purposes must cease, with cessation occurring no more than twenty-five years

42. *Id.*, at art. 1(1)(i).

43. *Id.*, at art. 1(1)(t).

44. Schedules 1961 Convention, *supra* note 30, at 2.

45. Schedules 1961 Convention, *supra* note 30, at 8.

46. Schedules 1961 Convention, *supra* note 30, at 8.

47. The 1961 Single Convention as amended by the 1972 Protocol, *supra* note 2 at art. 27(1).

48. *Id.* at art. 28(1).

49. *Id.* at art. 23(1).

50. *Id.* at art. 23(2).

51. *Id.* at art. 28(2).

52. *Id.* at art. 28(3).

53. *Id.* at arts. 22(1–2).

54. *Id.* at art. 49(1)(d).

55. *Id.* at art. 49(2)(a).

56. *Id.* at art. 49(2)(b).

57. *Id.*, at art. 49(2)(f).

after the Convention entered into force.⁵⁸ Because the 1961 Single Convention on Narcotic Drugs as amended by the 1972 Protocol was entered into force on August 8, 1975, the only permissible use of cannabis today is for medical or scientific purposes.

B. The 1971 Convention on Psychotropic Substances

The Convention on Psychotropic Substances signed on Vienna, February 21, 1971, entered into force on August 16, 1976, according to Article 26(1).⁵⁹ The number of parties is 183 as of February 16, 2017.⁶⁰

The scope of the 1971 Convention is to control certain substances listed.⁶¹ Under article 2 of this Convention, the World Health Organization has authority to determine if a substance can produce a “state of dependence”⁶² and affect the central nervous system or behavior or perception⁶³ in a manner similar to those substances listed in Schedules I–IV of this Convention.⁶⁴ The World Health Organization must communicate to the Commission an assessment with recommendations on control measures of any such substance.⁶⁵

Cannabis, as a psychotropic substance, is included in Schedule I and II.⁶⁶ Schedule I establishes the strictest control, prohibiting all use except for scientific and medical purposes, and then only by authorized professionals or scientific establishments under government control.⁶⁷ Any trade or possession requires a special license or prior authorization.⁶⁸ Substances in Schedule II can be traded and distributed under license or comparable control.⁶⁹ However, these substances do not require government approval of use for medical purposes if the person is “duly authorized to perform” medical or scientific practices.⁷⁰

58. *Id.* at art. 49(2)(f).

59. The 1971 Convention on Psychotropic Substances, *supra* note 3, at art. 26(1)

60. United Nations Treaty Collection, Status of the Convention of Psychotropic Substances 1 (last visited Feb. 16, 2017) [https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=VI-16&chapter=6&clang=_en](https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=VI-16&chapter=6&clang=_en(on file with The University of Pacific Law Review))(on file with *The University of Pacific Law Review*).

61. The 1971 Convention on Psychotropic Substances, *supra* note 3, at art. 2.

62. The 1971 Convention on Psychotropic Substances, *supra* note 3, at art. 2(4)(a)(i)(1).

63. The 1971 Convention on Psychotropic Substances, *supra* note 3, at art. 2(4)(a)(i)(2).

64. The 1971 Convention on Psychotropic Substances, *supra* note 3, at art. 2(4)(a)(ii).

65. The 1971 Convention on Psychotropic Substances, *supra* note 3, at art. 2(4)(b).

66. Schedules 1971 Convention, *supra* note 31, at 2–3.

67. The 1971 Convention on Psychotropic Substances, *supra* note 3, at art. 7(A–B).

68. *Id.* at art. 2(7)(a–b).

69. *Id.* at art. 2 (7) (a) (i).

70. The 1971 Convention on Psychotropic Substances *supra* note 3 at arts. 8(1–3).

C. The 1988 Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances

The Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances was signed in Vienna on December 20, 1988, and entered into force on November 11, 1990, according to Article 29(1).⁷¹ The number of parties to this treaty is 189 as of February 16, 2017.⁷²

The 1988 Convention defines in Article 1 “cannabis plant” as “plants of the genus *Cannabis*.”⁷³ Article 3 of the Convention suggests that the parties adopt criminal offences in their domestic laws for possession, cultivation, trafficking, and personal consumption.⁷⁴ Article 3.2 has been the subject of several interpretations regarding the implementation of this provision.⁷⁵ For example, EU Member States have incorporated into their national legislations the UN Drugs Conventions regarding the penal and administrative control of cannabis, but the application of these regulations have been established based on national characteristics. Therefore, each country has different rules regarding the use of cannabis for personal use.⁷⁶

Tables of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988, as of October 6, 2014, provide lists of substances regulated under the 1988 Convention.⁷⁷ The substances listed in tables I and II have additional controls, including special monitoring for cannabis.⁷⁸

Article 14.2 of the 1988 Convention establishes that each party should prevent illicit cultivation of cannabis.⁷⁹ The measures adopted by each party should not only respect fundamental human rights, taking into consideration historical “traditional licit uses,” but should also protect the environment.⁸⁰

71. The 1988 Convention *supra* note 4, at art. 29(1).

72. UNITED NATIONS TREATY COLLECTION, STATUS OF THE CONVENTION AGAINST ILLICIT TRAFFIC IN NARCOTIC DRUGS AND PSYCHOTROPIC SUBSTANCES, 1 (last visited Feb. 16, 2017), <https://treaties.un.org/doc/Publication/MTDSG/Volume%20I/Chapter%20VI/VI-16.en.pdf> (on file with *The University of the Pacific Law Review*)

73. The 1988 Convention, *supra* note 4, at art. 1.

74. *Id.* at 4 art. 3.2.

75. European Monitoring Centre for Drugs and Drug Addiction, Legal Topic Overviews: Possession of Cannabis for Personal Use, (last updated Feb. 17, 2017), <http://www.emcdda.europa.eu/legal-topic-overviews/cannabis-possession-for-personal-use> (on file with *The University of Pacific Law Review*).

76. *Id.*

77. Tables 1988 Convention, *supra* note 32, at art. 1.

78. *Id.* at art. 12.

79. *Id.* at art. 14(2).

80. *Id.*

D. Current International Trends in the Management and Regulation of Cannabis

The last time cannabis and cannabis resin were reviewed was in 1935 by the Health Committee of the League of Nations.⁸¹ The Expert Committee on Drug Dependence⁸² of the World Health Organization (WHO) never provided a formal review of cannabis under the 1961 and 1971 Conventions.⁸³ In 2015, the Committee asked WHO to collect data in order to start “the pre-review of cannabis, cannabis resin, extracts, and tinctures to identify any therapeutic advantages that they may have compared to other therapeutics.”⁸⁴

The religious and traditional aspects of cannabis are important in countries such as Jamaica, where there is a conflict between the UN treaties on human and indigenous rights and the UN drug control Conventions studied above.⁸⁵ Although the 1961 Convention allowed a period of 25 years to abandon the use of cannabis gradually, the deadline has long since passed and some countries continue to ignore this provision.⁸⁶

The United Nations General Assembly on April 19, 2016, adopted the A/RES/S-30/1 Resolution about the outcome of the Special Session of the United Nations General Assembly on the world drug problem—entitled, “[o]ur joint commitment to effectively addressing and countering the world drug problem.”⁸⁷ The Resolution emphasized the need for cooperation at all levels to prevent, reduce, or eliminate the illicit cultivation of cannabis.⁸⁸

81. Expert Committee On Drug Dependence, *World Health Organization, CANNABIS AND CANNABIS RESIN: INFORMATION DOCUMENT 3* (June 16–20, 2014), http://www.who.int/medicines/areas/quality_safety/8_2_Cannabis.pdf [hereinafter World Health Organization, 2014] (on file with *The University of the Pacific Law Review*).

82. “WHO has a mandate, under the UN Single Convention on Narcotic Drugs (1961) and the UN Convention on Psychotropic Substances (1971), to conduct medical, scientific and public health evaluations of psychoactive substances. It does this via the Expert Committee on Drug Dependence, which is made up of independent experts from around the world. The Committee can recommend substances be scheduled for international control or not, after conducting a critical review of the scientific and public health evidence.” World Health Organization, *Essential Medicines and Health Products* (Dec. 2015) (last visited Feb. 17, 2017), http://www.who.int/medicines/access/controlled-substances/recommends_against_ick/en/ [hereinafter WHO, *Essential Medicines*] (on file with *The University of Pacific Law Review*).

83. World Health Organization, 2014, *supra* note 81 at 3–7.

84. WHO, *Essential Medicines*, *supra* note 82, at ¶ 6. *See also* EXPERT COMMITTEE ON DRUG DEPENDENCE, WORLD HEALTH ORGANIZATION, *CANNABIS AND CANNABIS RESIN: PRE-REVIEW REPORT* (Nov. 14–18, 2016), <http://www.drugscience.org.uk/assets/files/WHOcannabisreport.pdf> (on file with *The University of the Pacific Law Review*).

85. Transnational Institute, *Cannabis Regulation and the UN Drug Treaties* (June 2016), https://www.tni.org/files/publication-downloads/cannabis_regulation_and_the_un_drug_treaties_june_2016_web_0.pdf (on file with *The University of the Pacific Law Review*).

86. *Id.*

87. G.A. Res. A/RES/S-30/1 (Apr. 19, 2016).

88. *Id.*

Some Member States are calling on the Commission on Narcotic Drugs to re-evaluate some aspects of the current UN drug control treaty framework.⁸⁹ The global trend is to legalize cannabis for non-medical and non-scientific purposes, even though such legalization violates the international conventions.⁹⁰ For example, Uruguay was the first country to legalize and regulate marijuana.⁹¹ The Uruguay Law 19.172 regulates the production, consumption, and marketing of cannabis, with the State managing and controlling the entire industry.⁹² In 2012, the states of Colorado and Washington⁹³ in the U.S. established legally taxed and regulated marijuana markets, followed by Alaska and Oregon.⁹⁴ Elsewhere, countries such as Mexico, Guatemala, and Morocco are considering new legislative proposals to regulate cannabis.⁹⁵ These new regulations continue to violate existing treaties, thereby raising the question: Should the UN drug treaties be amended as to cannabis regulation?

Under treaty law, an amendment is a new treaty.⁹⁶ Part IV of the 1969 UN Vienna Convention establishes the terms and conditions for amending a treaty.⁹⁷ In fact, under these terms and conditions, the 1961 Convention was amended by the 1972 Protocol.⁹⁸ Article 1 of the 1961 Convention, which Convention was amended by the 1972 Protocol establishes that Schedules I–IV can be amended periodically according to Article 3 of the Protocol.⁹⁹

E. International Water and Environmental Regulation for Cannabis

The UN Drug Conventions¹⁰⁰ do not provide specific provisions addressing water management, or any measures to avoid harm to the environment caused by the effects of cannabis plant cultivation. Only the 1988 Convention in Article 14 (2) provides that countries should adopt measures to protect the environment by eradicating cannabis plants illicitly cultivated.¹⁰¹ However, there is not any

89. Transnational Inst., *supra* note 85, at 6.

90. *Id.*

91. *Id.*

92. Marijuana and its Derivatives Control and Regulation of the Status of Importation, Production Purchase, Storage, Marketing and Distribution, Law 19.172, art. 5 (2013) (Uru.).

93. Brian Shactman, *Washington State, Colorado Vote Yes to Legalizing Marijuana*, CNBC (Nov. 7, 2012, 1:58 PM), <http://www.cnbc.com/id/49729596> (on file with *The University of the Pacific Law Review*).

94. Transnational Institute, *supra* note 85, at 6.

95. *Id.*

96. STEPHEN C. MCCAFFREY, UNDERSTANDING INTERNATIONAL LAW 113, (LexisNexis 2006).

97. Vienna Convention on the Law of Treaties pt. IV, May 23, 1969, 1155 U.N.T.S. 331.

98. The 1961 Single Convention as amended by the 1972 Protocol, *supra* note 2.

99. The 1961 Single Convention as amended by the 1972 Protocol, *supra* note 2 at art. 1 (1(u)).

100. *See* the 1961 Single Convention as amended by the 1972 Protocol, *supra* note 2; the 1971 Convention on Psychotropic Substances, *supra* note 3; the 1988 Convention, *supra* note 4.

101. The 1988 Convention, *supra* note 4, at art. 14(2).

specific measure adopted by the UN Drugs Conventions regarding water management in cultivation of cannabis for medical or scientific purposes, which are the only cannabis uses regulated and allowed by the international legislation.¹⁰²

The Convention on the Protection and Uses of Transboundary Watercourses and International Lakes, Helsinki, 1992,¹⁰³ and the Convention on the Law of the Non-Navigational Uses of International Watercourses, New York, 1997,¹⁰⁴ set forth the international legal framework to manage transboundary waters and therefore avoid the impact of human activities on transboundary water resources. These Conventions provide the main guidelines for cultivation of cannabis for medical and scientific purposes without causing harm in a reasonable and equitable manner, and in cooperation with riparian states and stakeholders.¹⁰⁵

Regarding water consumption and environmental damage, cannabis requires a large amount of water and can impact other users depending on variables such as soil, climate, strain, plant size, etc.¹⁰⁶ On average, one pound of processed flower requires one gallon of water per day, “i.e.[,] a one-pound plant needs one gallon of water per day, whereas a five-pound plant needs five gallons per day, and a 10-pound plant needs 10 gallons per day.”¹⁰⁷ An additional study developed by the University of California, Berkeley revealed that indoor cultivation requires a significant amount of water.¹⁰⁸ A planting room of 22 m² needs 151 L/day, which is 2.5 m of water per year (98 in./yr.).¹⁰⁹ The level of water is higher than for other crops.¹¹⁰ Also, the energy cost is very high.¹¹¹ “Indoor-grown marijuana is an energy-intensive product by weight, using on the order of 2000 kWh per pound of product.”¹¹² Indoor cultivation needs specific conditions such as light, cooling, fresh air ventilation, and control of fungal

102. The 1961 Single Convention as amended by the 1972 Protocol, *supra* note 2, at arts. 23, 28.

103. UNECE Water Convention, *supra* note 10.

104. Watercourses Convention 1997, *supra* note 9, at 2.

105. Watercourses Convention, 1997, *supra* note 9 at pt. II, General Principles Art. 5-10.

106. Casey O’Neill, *How Much Water Does It Take to Grow Cannabis?* THE GANJIER, (last visited July 20, 2017), <http://www.theganjier.com/2015/07/02/how-much-water-does-one-marijuana-plant-need-to-grow/> (on file with *The University of Pacific Law Review*).

107. *Id.*

108. Michael O’Hare, Daniel L. Sanchez, and Peter Alstone, *Environmental Risks and Opportunities in Cannabis Cultivation*, BOTECH ANALYSIS CORP. 14 (June 28, 2013), http://lcb.wa.gov/publications/Marijuana/SEPA/BOTEC_Whitepaper_Final.pdf [hereinafter O’Hare, 2013] (on file with *The University of Pacific Law Review*).

109. Evan Mills, *The Carbon Footprint of Indoor Cannabis Production*, 46 ENERGY POL’Y 58, 63 (2012).

110. Christopher Ingraham, *Forget Almonds: Look at How Much Water California’s Pot Growers Use*, THE WASHINGTON POST (June 26, 2015), <https://www.washingtonpost.com/news/wonk/wp/2015/06/26/forget-almonds-look-at-how-much-water-californias-pot-growers-use/> (on file with *The University of Pacific Law Review*).

111. O’Hare, *supra* note 108, at 5.

112. O’Hare, *supra* note 108 at 5.

agents and pests.¹¹³ Cannabis cultivation has negative environmental effects, which may cause erosion and groundwater pollution and depletion.¹¹⁴

F. The 1992 United Nations Convention on the Protection and Use of Transboundary Watercourses and International Lakes (UNECE Water Convention).

The United Nations Convention on the Protection and Use of Transboundary Watercourses and International Lakes was signed in Helsinki on March 17, 1992, and entered into force on October 6, 1996, under Article 26(1).¹¹⁵ “The UNECE Water Convention was initially only open to member States of the United Nations Economic Commission for Europe and regional economic integration organizations constituted by the member States.”¹¹⁶ The UNECE Convention was later amended to be open to all UN Member States.¹¹⁷ On February 6, 2013, the amendments entered into force,¹¹⁸ and since March 1, 2016, United Nations Member States can accede to the Convention.¹¹⁹

The UNECE Water Convention’s primary goal is to promote cooperation on transboundary water by establishing measures to protect the ecology of surface water and groundwater.¹²⁰ One important point of the UNECE Water Convention is the integration of water resource management at the basin level.¹²¹ The UNECE Water Convention defines “transboundary impact” as:

[A]ny significant adverse effect on the environment resulting from a change in the conditions of transboundary waters caused by a human activity, the physical origin of which is situated wholly or in part within an area under the jurisdiction of a Party, within an area under the

113. O’Hare, *supra* note 108 at 5–6.

114. *Cannabis Production (EU Drug Markets Report)*, EUROPEAN MONITORING CENTER FOR DRUGS AND DRUGS ADDICTION (2016), <http://www.emedda.europa.eu/publications/eu-drug-markets/2016/online/cannabis/cannabis-production> (on file with *The University of Pacific Law Review*).

115. UNECE Water Convention, *supra* note 10, at art. 26(1); Convention on the Protection and Use of Transboundary Watercourses and International Lakes as amended, p. 3, Nov. 28, 2003, http://www.unece.org/fileadmin/DAM/env/documents/2013/wat/ECE_MP.WAT_41.pdf (on file with *The University of the Pacific Law Review*).

116. Convention on the Protection and Use of Transboundary Watercourses and International Lakes as amended, Nov. 28, 2003, http://www.unece.org/fileadmin/DAM/env/documents/2013/wat/ECE_MP.WAT_41.pdf (on file with *The University of the Pacific Law Review*).

117. *Id.*

118. *Id.*

119. *Id.* at arts. 25–26.

120. *About the UNECE Water Convention*, UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE, (last visited Feb. 21, 2017), <https://www.unece.org/env/water/text/text.html> (on file with *The University of Pacific Law Review*).

121. *Id.*

jurisdiction of another Party. Such effects on the environment include effects on human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments or other physical structures or the interaction among these factors; they also include effects on the cultural heritage or socio-economic conditions resulting from alterations to those factors.¹²²

Lack of regulation and control over the negative environmental impacts of cannabis as it affects transboundary basins can be a breach of the UNECE Convention by State Members.¹²³ The cultivation of illegal outdoor marijuana is “a source of serious environmental damage, from wildlife poisoned by pesticides to overdrafted and polluted rivers to deforestation and erosion.”¹²⁴ Under Article 2 of the UNECE Convention, all “[p]arties shall take all appropriate measures to prevent, control and reduce any transboundary impact.”¹²⁵ The UNECE Convention contains the terms “prevent, reduce, and control,”¹²⁶ similar to Article 194 (1) of the 1982 United Nations Convention on the Law of the Sea,¹²⁷ and the Helsinki Rules.¹²⁸ The UNECE Convention is intended to ensure “ecologically sound, rational water management, conservation of water resources, and environmental protection,” as well as the reasonable and equitable use of water.¹²⁹ To achieve these goals, the UNECE Convention imposes the precautionary principle, the polluter-pays principle, and the sustainable development concept in each transboundary basin.¹³⁰ The UNECE Convention establishes explicit guidelines for developing water-quality objectives and criteria, taking into account “specific water-quality requirements,” such as “raw water for drinking-water purposes, [and] irrigation.”¹³¹

G. The 1997 United Nation Convention on the Law of the Non-Navigational Uses of International Watercourses

The United Nation Convention on the Law of the Non-Navigational Uses of International Watercourses was signed in New York on May 21, 1997, and

122. UNECE Water Convention, *supra* note 10, at art. 1.

123. *Id.* at arts. 9.2 (i)–(j), 9.4.

124. O’Hare, *supra* note 108, at 18.

125. UNECE Convention, *supra* note 10, at art. 2(1).

126. *Id.* at art. 2.2.

127. United Nations Convention on the Law of the Sea, Montego Bay, art. 194, 10 Dec. 1982, 21 ILM 1261 (1982), UN Doc. A/CONF.62/122 (1983).

128. Helsinki Rules on the Uses of the Waters of International Rivers, INTERNATIONAL LAW ASSOCIATION, REPORT OF THE FIFTY-SECOND CONFERENCE, HELSINKI 484 (1966).

129. UNECE Water Convention, *supra* note 10, at art. 2(2).

130. *Id.* at art. 2(5).

131. *Id.* at annex III(c).

entered into force on August 17, 2014, under Article 36(1).¹³² There are 36 parties to this convention as of February 21, 2017.¹³³

The 1997 Watercourses Convention “applies to uses of international watercourses and of their waters for purposes other than navigation and to measures of protection, preservation, and management related to the uses of those watercourses and their waters.”¹³⁴ The 1997 Convention codifies certain principles of international law: (1) equitable and reasonable utilization and participation,¹³⁵ with an essential factor to apply this principle being ecological and natural characters of the area,¹³⁶ (2) obligation not to cause significant harm,¹³⁷ and (3) general obligation to cooperate.¹³⁸ The 1997 Watercourses Convention in Part IV addresses protection, preservation, and management.¹³⁹ Article 20 establishes that “[w]atercourse States shall, individually and, where appropriate, jointly, protect and preserve the ecosystems of international watercourses.”¹⁴⁰ The ILC explained that “in some cases it will be necessary and appropriate that watercourse States cooperate, on an equitable basis, to protect and preserve the ecosystems of international watercourses.”¹⁴¹ The terminology “‘individually or jointly’ is therefore to be understood as meaning that joint, cooperative action is to be taken where appropriate, and that such action is to be taken on an equitable basis.”¹⁴² Article 21 refers to prevention, reduction, and control of pollution.¹⁴³ The ILC in its 1994 report explained the obligation to prevent, which “relates to new pollution of international watercourses, while the obligations to ‘reduce’ and ‘control’ relate to existing pollution.”¹⁴⁴ “[P]ollution of an international watercourse” is defined as “any detrimental alteration in the composition or quality of the waters of an international watercourse which results directly or indirectly from human conduct.”¹⁴⁵ The definition of pollution is more general and can apply to any type of detrimental alterations.¹⁴⁶

132. Watercourses Convention, 1997, *supra* note 9, at 1.

133. UNITED NATIONS TREATY COLLECTION, CONVENTION ON THE LAW OF THE NON-NAVIGATIONAL USES OF INTERNATIONAL WATERCOURSES 1 (2017), <https://treaties.un.org/doc/Publication/MTDSG/Volume%20II/Chapter%20XXVII/XXVII-12.en.pdf>.

134. *Id.* at Art. 1.

135. Watercourses Convention, 1997, *supra* note 9, at art. 5.

136. *Id.* at art. 6(a).

137. *Id.* at art. 7.

138. *Id.* at art. 8.

139. *Id.* pt. IV.

140. Watercourses Convention, 1997, *supra* note 9, at art. 20.

141. THE INT’L L. COMM’N, YEARBOOK OF THE INT’L L. COMMISSION 1994, at 119, ¶ 4 (1996).

142. *Id.*

143. Watercourses Convention, 1997, *supra* note 6, at art. 21.

144. THE INT’L L. COMM’N, YEARBOOK OF THE INT’L L. COMMISSION 1994, at 119, ¶ 4 (1996). *See* STEPHEN MCCAFFREY, THE LAW OF INTERNATIONAL WATERCOURSES 452 Oxford Second edition (2007).

145. Watercourses Convention, 1997, *supra* note 6, at art. 21(1).

146. THE INT’L L. COMM’N, *supra* note 144, at 121, ¶ 2 (1996).

The 1997 Convention applies the term “significant harm” not only to other watercourse states but also to the environment when using the waters for any beneficial purpose.¹⁴⁷ The harm is a factual threshold to delimit the level of pollution.¹⁴⁸ The Convention establishes the obligation to “take steps to harmonize their policies” according to each situation.¹⁴⁹

Article 21.3 establishes that watercourse states shall agree to provide the following measures and methods

to prevent, reduce[,] and control pollution of an international watercourse:

- a) Setting joint water quality objectives and criteria;
- b) Establishing techniques and practices to address pollution from point and non-point sources;
- c) Establishing a list of substances, the introduction of which into the waters of an international watercourse is to be prohibited, limited, investigated or monitored.¹⁵⁰

Article 22 refers to the prevention of alien or new species into an international watercourse, which may have detrimental effects on the ecosystem.¹⁵¹ “The term ‘species’ includes both flora and fauna . . . , ‘alien’ refers to species that are non-native, ‘new’ encompasses species that have been genetically altered or produced through biological engineering.”¹⁵² States should take all measures necessary to prevent the introduction of alien or new species.¹⁵³ Article 23 addresses the significant problem of marine environment pollution¹⁵⁴ by providing regulation to prevent further damage.¹⁵⁵ “In particular, the obligation not to cause pollution damage to the marine environment from land-based sources is recognized both in the 1982 United Nations Convention on the Law of the Sea and in conventions concerning various regional seas.”¹⁵⁶

147. Watercourses Convention, 1997, *supra* note 6, at art. 21(2).

148. THE INT’L L. COMM’N, *supra* note 144, at 121, ¶ 2 (1996).

149. Watercourses Convention, 1997, *supra* note 6, at art. 21(2).

150. *Id.* at art. 21(3).

151. *Id.* at art. 22.

152. THE INT’L L. COMM’N, *supra* note 144, at 121, ¶ 2 (1996).

153. *Id.* at ¶ 3.

154. Watercourses Convention, 1997, *supra* note 9, at art. 23.

155. THE INT’L L. COMM’N, *supra* note 144, at 121, ¶ 1 (1996).

156. *Id.*

III. REGULATION IN EUROPE

All EU Member States are party to the UN Drugs Conventions¹⁵⁷ and have applied these treaties with consideration for their own regional and local circumstances.¹⁵⁸ The consumption of cannabis for personal use has been controversial regarding policy and regulation within the European Union. The level of penalty or sanction varies from one country to another, with some countries tolerating certain forms of consumption and possession, others establishing administrative sanctions, and others imposing criminal penalties.¹⁵⁹

The European Union does not specifically define cannabis, as drug regulation is not within the competence of the EU.¹⁶⁰ The Commission, answering a question about the jurisdiction of EU on cannabis regulation, stated:

The European Union does not have the competence to take decisions concerning the legalization of cannabis use. In line with Article 168 of the Treaty on the Functioning of the European Union, Member States have the principal responsibility for legislation in the field of public health—including on drugs. Member States develop and implement policies on drug-demand reduction that are most appropriate in their socioeconomic and cultural contexts. The EU complements and supports the Member States' action.¹⁶¹

Therefore, the Commission neither financed a study on the effectiveness of medical marijuana, nor did it issue any recommendations on the topic. “The European Monitoring Centre for Drugs and Drug Addiction published in 2008 a comprehensive overview on cannabis with perspective on controversies, treatment, and regulation in Europe¹⁶² and in April 2015 a study ‘Treatment of cannabis-related disorders in Europe.’”¹⁶³

157. SINGLE CONVENTION ON NARCOTIC DRUGS, 1961, AS AMENDED BY THE PROTOCOL AMENDING THE SINGLE CONVENTION ON NARCOTIC DRUGS, 1961, *supra* note 35, at 2–5; CONVENTION ON PSYCHOTROPIC SUBSTANCES, *supra* note 3, at 1–3; UNITED NATIONS CONVENTION AGAINST ILLICIT TRAFFIC IN NARCOTIC DRUGS AND PSYCHOTROPIC SUBSTANCES, *supra* note 4, at 1–3.

158. *Legal Topic Overviews: Possession of Cannabis for Personal Use*, EUROPEAN MONITORING CENTRE FOR DRUGS AND DRUG ADDICTION (Jan. 26, 2012), <http://www.emcdda.europa.eu/legal-topic-overviews/cannabis-possession-for-personal-use> (on file with *The University of Pacific Law Review*).

159. *Id.*

160. Treaty of the Functioning of the European Union, December 13th, 2007 O.J. (C 326) 0001– 0390 at articles 2–6.

161. *Answer Given by Mr. Avramopoulos on Behalf of the Commission*, (Mar. 11, 2015), <http://www.europarl.europa.eu/sides/getAllAnswers.do?reference=E-2014-010575&language=EN> [hereinafter European Parliament, 2015] (on file with *The University of Pacific Law Review*).

162. *A Cannabis Reader: Global Issues and Local Experiences: Volume 1*, EUROPEAN MONITORING CENTER FOR DRUGS AND DRUG ADDICTION (June 2008), <http://www.emcdda.europa.eu/publications/monographs/cannabis> (on file with *The University of Pacific Law Review*).

163. EMCDDA, *Treatment of cannabis-related disorders in Europe*, European Monitoring Centre for

The European Monitoring Centre for Drugs and Drug Addiction, however, provides a detailed profile for cannabis, which includes the definition of the 1961 Single Convention on Narcotic Drugs as amended by the 1972 Protocol set in Article 1, Paragraph 1 and which Convention binds all Member States.¹⁶⁴

The Council of the European Union encouraged Member States to consider developing Joint Investigative Teams to establish anti-criminal networks to address large-scale trafficking and distribution of cannabis.¹⁶⁵ The Council also invited the Member States to “take measures against cultivation and trafficking of cannabis within the Union.”¹⁶⁶

Annex I to this article reproduces a table from the European Monitoring Centre for Drugs and Drug Addiction providing a general overview and a comparative table of different laws and regulations of cannabis in the EU Member States.¹⁶⁷ Annex I shows the legal status of marijuana used, cultivated, or possessed for personal consumption in different countries of the EU.¹⁶⁸

The laws and regulations on cannabis vary from one country to another within Europe.¹⁶⁹ An important aspect of cannabis regulation is that cannabis has a particular and different treatment and is distinguished from other drugs in both laws and judicial treatments.¹⁷⁰ The common factor is that the penalty or sanction for possession of small amounts of cannabis is lower than for other substances.¹⁷¹ For example, in Germany, cannabis for personal use is punished with up to five years imprisonment or a fine depending on the quantity held.¹⁷² If the quantity is insignificant and there is not harm to others, the criminal offense is not prosecuted.¹⁷³ Similarly, in the Netherlands, possession of up to 30g of cannabis

Drugs and Drug Addiction, PUBLICATIONS OFFICE OF THE EUROPEAN UNION, LUXEMBOURG (2013), <http://www.emcdda.europa.eu/news/2015/treatment-of-cannabis-related-disorders-in-Europe> (on file with *The University of Pacific Law Review*); see also European Parliament. Answer given by Mr. Avramopoulos on behalf of the Commission, (May 14, 2015), available at <http://www.europarl.europa.eu/sides/getAllAnswers.do?reference=E-2015-002582&language=EN> (on file with *The University of Pacific Law Review*).

164. *European Monitoring Centre for Drugs and Drugs Addiction*, CANNABIS DRUG PROFILE, (Jan. 08, 2015) (last visited Feb. 14, 2017), <http://www.emcdda.europa.eu/publications/drug-profiles/cannabis> (on file with *The University of Pacific Law Review*).

165. Council of the European Union Press Release C/04/226, General Affairs and External Relations 8 (July 26, 2004).

166. *Id.*

167. *Infra* annex I; *Legal Topic Overviews: Possession of Cannabis for Personal Use*, *supra* note 158.

168. *Infra* annex I.

169. *Legal Topic Overviews: Possession of Cannabis for Personal Use*, *supra* note 158.

170. *Id.*

171. *Id.*

172. *Legal Topic Overviews: Possession of Cannabis for Personal Use*, *supra* note 158.

173. *Betäubungsmittelgesetz [BtMG] [Narcotics Act]*, § 31a, 1, available at https://www.gesetze-im-internet.de/btmg_1981/_31a.html (Ger.) (on file with *The University of Pacific Law Review*); BVerfG, BVERFGE 90, 145, 146, Mar. 9, 1994, available at <https://germanlawarchive.iuscomp.org/?p=85> (on file with *The University of Pacific Law Review*).

is punishable by imprisonment of one month to six years.¹⁷⁴ In Poland, in the case of small amounts of cannabis considered of “lesser gravity,” the punishment is still imprisonment for up to one year.¹⁷⁵ A stricter regulation can be found in the Slovak Republic, where the possession of small amounts of cannabis for personal use is a criminal offense of up to three years in prison.¹⁷⁶

Directive 2001/83/EEC of 6 November 2001 codified the EU legal framework for medical products for human use.¹⁷⁷ The Directive defines a medical product as:

Any substance or combination of substances presented for treating or preventing disease in human beings. Any substance or combination of substances which may be administered to human beings with a view to making a medical diagnosis or to restoring, correcting or modifying physiological functions in human beings is likewise considered a medicinal product.¹⁷⁸

The EU legislation requires a marketing license to place cannabis for medical purposes on the market in any Member State.¹⁷⁹ Article 6 of Directive 2001/83/EEC states “no medicinal product may be placed on the market of a Member State unless a marketing authorization has been issued by the competent authorities of that Member State in accordance with this Directive or an authorization has been granted in accordance with Regulation (EEC) Nr 2309/93.”¹⁸⁰

The Netherlands and the Czech Republic have also legalized cannabis for medical use.¹⁸¹ The “EU Member States already undertaking clinical studies are Germany, Netherlands, Finland, and the UK,” with Belgium, France, and Spain following suit.¹⁸² The European Commission, in communication to the public, referred to one of the EU citizens’ initiatives—entitled, “Weed like to talk.”¹⁸³ This initiative asked for legalization of cannabis, closing it on November 20, 2014.¹⁸⁴ “The Commission awaits official confirmation from organizers whether

174. Opium Act, 13 July 2002, Stb. 2002, 250, art. 11(1) (Neth.).

175. Act of 29 July 2005 on Counteracting Drug Addiction, art. 62.3 (Pol.).

176. Criminal Code, § 171 (Slovk.).

177. Directive 2001/83/EC, of the European Parliament and of the Council of 6 November 2001 on the Community Code Relating to Medicinal Products for Human Use 2001 O.J. (L 311) 67.

178. *Id.* at art. 1(2).

179. European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), Medicinal Cannabis And Derivatives, A Legal Analysis Of The Options, Their Limitations, And Current Practice In The EU, EUROPEAN LEGAL DATABASE ON DRUGS 9 (May 2002) [hereinafter EMCDDA, 2002].

180. *Id.*

181. European Parliament, 2015, *supra* note 163.

182. EMCDDA, 2002, *supra* note 179, at 10.

183. European Parliament, 2015, *supra* note 163.

184. *Id.*

or not the required one million signatures have been collected. If the initiative obtains one million signatures, the Commission will carefully examine it and will respond, setting out what action it will propose, if any.”¹⁸⁵

A. *Water Regulation for Cannabis in Europe*

The EU legal framework for water regulation includes the Water Framework Directive 2000¹⁸⁶ and both the UN 1997 Watercourses Convention¹⁸⁷ and the UNECE Water Convention.¹⁸⁸ The Water Framework Directive 2000 “establish[es] a framework for Community action in the field of water policy.”¹⁸⁹ “This Directive is to contribute to the progressive reduction of emissions of hazardous substances to water.”¹⁹⁰ The directive’s main goal is to achieve a good ecological status for all EU waters.¹⁹¹ The Directive establishes that in order to achieve this ecological status Member States within each river basin district shall adopt a program of measures¹⁹² to achieve the goals established under Article 4, which sets the environmental objectives for surface water and groundwater.¹⁹³ Member States may choose to adopt supplementary measures, such as, “efficiency and reuse measures, *inter alia*, promotion of water-efficient technologies in industry and water-saving irrigation techniques,”¹⁹⁴ and codes of good practices.¹⁹⁵ For example, the Dutch government provided authorization to the company Bedrocan BV to provide medical cannabis and grow it according to Good Agricultural Practices, which are ecological practices without pesticides.¹⁹⁶ To meet the objectives of the WFD, other environmental directives should first be implemented.¹⁹⁷

EU environmental legislation is broad, and includes some of the following directives: Bathing Water,¹⁹⁸ Birds,¹⁹⁹ Drinking Water,²⁰⁰ Major Accidents,²⁰¹

185. *Id.*

186. Directive 2000/60/EC, *supra* note 8.

187. Watercourses Convention, 1997, *supra* note 9, at 2.

188. UNECE Water Convention, *supra* note 10.

189. Directive 2000/60/EC, *supra* note 8.

190. *Id.* at 22.

191. *Id.* at 19.

192. *Id.* at art. 11.

193. *Id.* at art. 4.

194. *Id.* at annex VI, Part B(X).

195. *Id.* at annex VI, Part B(VI).

196. Maurizio Bifulco & Simona Pisanti, *Medicinal Use of Cannabis in Europe*, 16 No. 2 EMBO REP. 130 (2015).

197. EUR. COMM’N, *The Water Framework Directive and The Floods Directive: Actions Towards The ‘Good Status’ Of Eu Water And To Reduce Flood Risks* 5–6 (2015), <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52015DC0120&from=EN> (on file with *The University of the Pacific Law Review*).

198. Council Directive 76/160/EEC, of 8 December 1975 Concerning the Quality of Bathing Water, 1976 O.J. (L 31) 1.

Environmental Impact Assessment,²⁰² Sewage Sludge,²⁰³ Urban Waste-water Treatment,²⁰⁴ Plant Protection Products,²⁰⁵ Nitrates,²⁰⁶ Habitats,²⁰⁷ and Integrated Pollution Prevention Control.²⁰⁸

Under the Environmental Quality Standards Directive,²⁰⁹ Member States list the emissions of priority substances, and, in doing so, they identify sources of pollution. Regarding water bodies, the point of diffuse sources is very different from one country to another.²¹⁰ In addition, the pollutants may raise different concerns at each national level. This situation resulted in Member States applying very general measures regarding chemical pollution without specifying the sources or substances.²¹¹

The EU Commission identified issues in the implementation of the Water Framework Directive 2000, such as the lack of Member States addressing “the water needs of nature,” as required under the WFD in its environmental objectives.²¹² Member States have not taken into consideration the different factors affecting ecosystems; therefore they have not guaranteed the “good status” of several water bodies affected by human practice in the management of water resources.²¹³ However, Member States are committed to implement the

199. Council Directive 79/409/EEC, of 2 April 1979 on the Conservation of Wild Birds, 1979 O.J. (L 103) 1, art. 1.

200. Council Directive 80/778/EEC, of 15 July 1980 Relating to the Quality of Water Intended for Human Consumption, 1980 O.J. (L 229) 11, as amended by Council Directive 98/83/EC, of 3 November 1998 on the Quality of Water Intended for Human Consumption, 1998 O.J. (L 330) 32.

201. Council Directive 96/82/EC, of 9 December 1996 on the Control of Major-Accident Hazards Involving Dangerous Substances, 1997 O.J. (L 10) 13 at (2).

202. Council Directive 85/337/EEC, of 27 June 1985 on the Assessment of the Effects of Certain Public and Private Projects on the Environment, 1985 O.J. (L 175) 40, art. 3.

203. Council Directive 86/278/EEC, of 12 June 1986 on the Protection of the Environment, and in Particular of the Soil, when Sewage Sludge is Used in Agriculture, 1986 O.J. (L 181) 6, art. 4.

204. Council Directive 91/271/EEC, of 21 May 1991 Concerning Urban Waste Water Treatment, 1991 O.J. (L 135) 40.

205. Council Directive 91/414/EEC, of 15 July 1991 Concerning the Placing of Plant Protection Products on the Market, 1991 O.J. (L 230) 1.

206. Council Directive 91/676/EEC, of 12 December 1991 Concerning the Protection of Waters Against Pollution Caused by Nitrates from Agricultural Sources, 1991 O.J. (L 375) 1.

207. Council Directive 92/43/EEC, of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora, 1992 O.J. (L 206) 7, art. 5.

208. Council Directive 96/61/EC, of 24 September 1996 Concerning Integrated Pollution Prevention and Control, 1996 O.J. (L 257) 26.

209. Directive 2008/105/EC, of the European Parliament and of the Council of 16 December 2008 on Environmental Quality Standards in the Field of Water Policy, Amending and Subsequently Repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and Amending Directive 2000/60/EC of the European Parliament and Council, 2008 O.J. (L 348) 84, art. 5.

210. EUR. COMM’N, *supra* note 197, at 7.

211. *Id.*

212. *Id.*

213. *Id.*

WFD's ecological strategies "to share good practices in using water balances that include environmental needs to ensure that allocation of water is sustainable."²¹⁴ Among the techniques used to implement these strategies, remote sensing helps to inspect and follow up on illegal abstraction.²¹⁵ These practices have also been applied to detect the illegal use of water in cannabis plantations, where following up on water resources has revealed illicit cannabis production.²¹⁶

IV. CONCLUSIONS AND RECOMMENDATIONS

The trend around the world is to legalize cannabis for non-medical and non-scientific purposes, although this legalization represents a violation of existing international treaties. This issue presents the following question: Should the UN amend the drug treaties regarding cannabis regulation? The current situation shows cannabis for personal use has been decriminalized in most countries, and this implies the need to develop and apply specific environmental rules to avoid pollution and overuse of water. The current legal framework for water management in the EU establishes measures to avoid pollution and degradation of ecosystems in bodies of water.²¹⁷ The Member States, however, may consider that cannabis requires special treatment and control to prevent inappropriate or illicit use of water for cannabis, as well as the control of CO₂ emission produced by greenhouses where most marijuana plants are cultivated.

This article's primary recommendation is to maintain and improve a monitoring system able to prevent illicit cultivation of cannabis, and therefore any negative impact on the environment. The implementation of this recommendation would provide a method to assess the ecological status of water in each Member State.

214. *Id.* At 7–8.

215. *Id.* At 8.

216. *Desmantelado en Murcia el Invernadero de Marihuana más Sofisticado de Europa*, ABC (Oct. 8, 2015 5:12 PM), <http://www.abc.es/espana/20151008/abci-desmantelado-invernadero-marihuana-murcia-201510081658.html> (Spain) (on file with *The University of Pacific Law Review*).

217. *Infra* Part II.E–Part II.G.

ANNEX I Country	Offenses and penalties related to personal use	Legislation	Level of prosecution	<i>Distinguished from other substances ? How?</i>	Notes
Belgium	Possession of cannabis for personal use is prohibited but receives a police warning if without nuisance. Offenses causing public disorder receive 3 months to 1 year in prison.	Loi 24 février 1921, Art 2ter; Arrêté royal de 31 décembre 1930, Art 28; Directive de 17 avril 1998; Directive ministérielle de 16 mai 2003 ; Directive commune de la Ministre de la Justice et des autorités judiciaires du 25 janvier 2005	2003 Directive says maximum for personal use is 3 g of cannabis or one plant.	Distinguished by law (Law of 1921, Art 11)	2003 law stated that cannabis-related offenses are specifically punishable by a police fine if non-problematic and for personal use, but this concept was annulled as unclear by the Constitutional Court.
Czech Republic	As with all drugs, administrative offense if the quantity is small, subject to police fine or warning. Possession of a quantity “greater than small” of cannabis or other substances containing THC is punished with up to 1-year imprisonment	Misdemeanor or Act s.30(1)(j); Penal Code s.284(1).	15 g of dry matter for marijuana and 5 g of hashish; Government Decree n. 467/2009 effective from January 2010.	Distinction by law for crimes of personal possession.	Before January 2010, the old Penal Code made no distinction between cannabis and other substances.

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	(possession of other drugs punishable by up to 2 years).				
Denmark	As with all drugs, cannabis-related offenses are punishable by a fine or imprisonment for up to 2 years	Euphoriant Substances Act s.3	A fine is the standard response. For first offense possession of up to 10 g hash or 50 g marihuana, the Chief Public Prosecutor permits a warning in limited circumstances.	Only distinguished in Prosecutor Directive; in limited circumstances, repeated warnings are permitted only for cannabis possession.	In June 2004, the law changed to state that warnings for cannabis should only be given in limited circumstances; a fine would be the norm.
Germany	As with all drugs, cannabis-related offenses are punishable by up to 5 years' imprisonment or a fine; punishment can be remitted in cases of 'insignificant quantities' for personal use	BtMG s.29, s.31a; Constitutional Court decision of March 1994	The Constitutional Court stated that even if penal provisions for the possession of cannabis are in line with the constitution, the Länder should waive prosecution in minor cases when possession of cannabis is for personal use. Each	Distinguished by Constitutional Court decision. Also judiciary; in practice, exemptions of BtMG are applied mainly for cannabis.	Possession of a small quantity of all drugs is a criminal offense, but is not prosecuted or punished when: there is no harm to third persons; minors are not involved; the substance is for personal use; the offense involves an 'insignificant quantity'

			Land has determined what it considers to be an 'insignificant quantity' of cannabis.		
Estonia	As with all drugs, it is a misdemeanor to use or handle a small quantity, punishable by police fine or 30 days' administrative arrest. It is a criminal offense to possess more than a small quantity (a large amount), punishable by up to 10 yrs.	Narcotic Drugs and Psychotropic Substances Act 1997, Art. 31, Art.151; Penal Code, Art.184	Since 1 July 2005, "large amount" is defined by the Narcotic Drugs and Psychotropic Substances Act (Art. 31) as a quantity of a substance which is needed to intoxicate at least ten persons. The Prosecutor's Office guidelines of 22 July 2005 define it as more than 20 g of marihuana or 10 g of hashish.	No distinction	The new article in the Act defining a quantity (of any drug) does not take into account the amount of pure substance in mixtures (e.g, tobacco+marihuana), but only the estimated number of doses (e.g, cigarettes) which could have been prepared for the given amount of confiscated substance.
Greece	As with all drugs, cannabis-related offenses of purchase, possession, as well	Law 3459/2006 Art.29(1), (4)	Resin 2.5g, herbal 20g - Law 3727/2008 Art 15.	Distinguished in law: the cultivation of cannabis	There will be no entry in the criminal record if there is no same offense

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	as cultivation for exclusive personal use, are punishable by up to one year's imprisonment. Reduction/suspension or conversion of the penalty is foreseen in case of small quantity.			only may also be included as an offense of personal possession.	within 5 years (Art 29(2)).
Spain	As with all drugs, cannabis-related offenses, such as possession and use in public places, are punishable by administrative sanctions	Law 1/1992, Art 25-28.	Judicial practice suggests that punishable possession comprises amounts exceeding 40 g of hashish.	No distinction	
France	As with all drugs, use is punishable by a fine or imprisonment for up to one year. From 2007 a drug awareness course (<i>stage de sensibilization</i>) may be ordered, for which the user might have to pay up to 450 Euro if required by the judge or prosecutor.	Code de la santé public Art.L.3421-1; Penal Code Art. 222-37; R 131-35 and on. Ministry of Justice Circular of 9 May 2008	In the case of occasional consumers (no problematic drug addicted) and small quantities of illicit substances, the drug awareness course should be the main penal response to inform about the risks and social consequences of drug	No distinction. But the Circular 2008 underlines the necessity to take into consideration the kind of drug when sentencing.	French law does not officially recognize the motives for possession. But the Circular 2008 underlines the necessity for a systematic and differentiated penal response, taking into consideration the type of drug, consumption (occasional or problematic), supply, family situation, age etc.

			use, as underlined in the Circular of 9 May 2008.		
Ireland	Specifically, possession of cannabis for personal use is punishable by a fine on the first or second conviction. From the third offense onwards, the offender can incur prison sentences of up to 1 year (summary) or up to 3 years (on indictment), or a fine, or both.	Misuse of Drugs Act ss.3, 27(1)(a)	The fine follows a criminal conviction in court.	Distinction by law	
Italy	As with all drugs, cannabis-related offenses (such as possession for personal use) are punishable by administrative sanctions from the second offense onwards.	DPR 309/90, Art. 75.	THC 1 g; DPR309/90 Art 72-75; Ministry of Health Decree of 11 April 2006<	No distinction.	A warning is possible only in case of a particularly minor violation and on the first occasion, with the presumption that the offender does not intend to repeat the offense in future - DPR 309/90, art. 75 (14). The warning is always given in case the other administrative sanctions are not applicable.
Cyprus	Cannabis is a Class B substance – life imprisonment is possible for use and	The Narcotic Drugs And Psychotropi	3 plants or more, or 30 g or more of cannabis	Distinction by law	In practice, a warning may be given to a minor first offender.

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	maximum 8 years for possession (maximum 2 yrs for first offense for under 25 yr old).	c Substances Law of 1977, s.6 (offense), s.30A (quantities), Third Schedule (penalties)	products, are presumed to be for supply.		
Lithuania	As with all drugs, a misdemeanor to possess a small quantity without intent to supply, punished by fine up to 6500 litas (approx □1800), arrest of 10-45 days, or restriction of freedom 3 mths-2 years. Crime to possess more than a small quantity without intent to supply, punished by fine up to approx □3700, arrest of 15-90 days, or up to 2 years' prison.	[Code of Administrative Offences Art. 44, overruled by Penal Code Art 259(2)]; Penal Code, Arts.259; Order of the Minister of Healthcare regarding the approval of the list of narcotic and psychotropic substances (6 January 2000 No 5, as amended; Order No V-314 of the Minister of Healthcare of 23 April 2003 (quantities)	Less than 5 g of herb, 0.25 g of resin is a misdemeanor.	No distinction	

Latvia	As with all drugs, administrative offense to use or possess a small quantity. Punished by a fine up to LVL 75 (EUR 110) or administrative arrest for up to 15 days. Under the Criminal law, possession of small amounts without the purpose of sale, or use repeated within one year, may be punished by up to 2 years.	Code of Administrative Offences, para.46; Criminal Laws.253.	Up to 5g cannabis plants, 1g herbal cannabis, 0,1g cannabis resin.	No distinction	
Luxembourg	Specifically, cannabis-related offenses, including use, without aggravating circumstances are punishable by fine from □250 to □2500	Law 19 February 1973 modified by law 27 April 2001, Art.7	Using cannabis in front of a minor, a school or in the workplace can lead to prison sentences (from 8 days to 6 months), use with a minor also participating can lead to prison sentences from 6 months to 2 years and/or is punishable by fine from EUR 500 to EUR 25 000	Distinction by law	The distinction for cannabis was made in 2001 (Art7 A: other drugs, and B: cannabis and cannabis products). Before this, all drugs were treated equally.

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Hungary	As with all drugs, a misdemeanor to possess a small quantity, punishable by up to two years' prison, or, if by an addict, up to one year's imprisonment, community service or a fine. There may be exemptions from punishment if the offender takes part in a treatment program.	Penal Code (Act IV of 1978), s.282, s.282/C; Statutory rule 5/1979 s. 23	Up to 1g of THC as active principle	No distinction	
Netherlands	Possession of any controlled drug is a criminal offense, with possession of up to 30g of cannabis legally punishable by imprisonment for one month and/or a fine of €3350.	Opium Act, Arts. 3C, 11(1); Opium Act Directive	The Directive states that investigation and prosecution of possession of cannabis for personal use (up to 5g) have the lowest judicial priority; the sale of up to 5g of cannabis per transaction in 'coffee shops' is generally not investigated (a transaction includes all sales and purchases made by a	Distinction by law	Sale, production, and possession of up to 30 g of cannabis are punishable by imprisonment for one month and/or a fine of €3 350; for more than 5 cannabis plants, the maximum penalties are 6 years' imprisonment.

			single coffee shop in the same day with the same buyer).		
Austria	As with all drugs, cannabis-related offenses are punishable by up to six months' imprisonment. If certain conditions are fulfilled, reports must be withdrawn in cases involving small quantities. According to the law, the conditions for the withdrawal of reports in connection with 'first consumers' of cannabis are easier to fulfill (no health report is necessary).	SMG, s.35(4)		Distinction by law	
Poland	As with all drugs, possession is a criminal offense, punishable by up to 3 yrs' imprisonment. In a case of "lesser gravity", the punishment is imprisonment for up to one year, limitation of liberty or a fine.	Act on Counteracting Drug Addiction of 29 July 2005, Art.62.1	Cannabis offenses are likely to be interpreted as of "lesser gravity".	No distinction as far as the Act is concerned. Distinction possible by court decision when interpreting "lesser gravity".	
Portugal	As with all drugs, cannabis-related offenses such as use, acquisition and detention may receive an administrative	Law 30/2000, Art.2, n.º 1	Cases are assessed and decided at a Commission for Dissuasion	Distinction by law – the administrative sanction varies according	

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	sanction.		of Drug Dependence (Law 30/2000, Art. 5, n° 1). Treatment is offered for situations involving problematic use/abuse of cannabis and administrative penalties for up to 10 daily doses, ie up to 25g of marijuana or 5 g of hashish may be applied (Law 30/2000, Art. 2, n°2 and Governmental Decree 94/96)	to the class of drug (Law 30/2000, Art. 15, n°4 c) and Art.16)	
Slovak Republic	As with all drugs, possession for personal use is a criminal offense, punishable by up to up to 3 years' prison, or up to 5 years for a larger amount. Home imprisonment or community service of 40-300 hours are also possible.	Penal Code, s.171, s.135	Amounts are defined as up to 3 doses or up to 10 doses for a "larger amount". According to the Penal Code, the court shall conditionally waive a	No distinction	

			penalty shorter than 2 years for any offense, if the offender and his prior behavior and other circumstances gives assurance that the purpose of a penalty will be fulfilled without the offender's staying in prison		
Slovenia	As with all drugs, possession is a minor offense coming under the Misdemeanours Act, punishable by a fine of SIT 50 000-150 000 or up to 30 days' imprisonment. Possession of small quantities for one-off personal use is a lesser offense punishable by a fine of EUR 42-208.	Production and Trade in Illicit Drugs Act, Art 33		No distinction	In line with the Misdemeanours Act, imprisonment for minor offenses has been abolished.
Finland	As with all drugs, cannabis-related offenses, such as use, possession or cultivation, are punishable by a fine or up to two years'	Penal Code Chapter 50:1 and 50:2a		No distinction	Finnish law recognizes the concept of a 'very dangerous drug', which refers to a narcotic drug

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	imprisonment. Possession of a small amount for personal use is punished by a fine or up to 6 months' imprisonment.				that may cause death by overdose or serious damage to health. This definition is not normally applied to cannabis
Sweden	As with all drugs, cannabis-related offenses, such as use, are punishable by imprisonment for up to 3 years. If judged petty, according to the nature of the substance etc, up to six months or a fine.	Narcotic Drugs Punishment Act (1968:64), ss.1-2	Users are usually fined.	No distinction.	
United Kingdom	Cannabis-related offenses, such as possession, are punishable by up to five years' imprisonment. For adults, police may warn or issue a penalty notice for disorder instead of prosecuting, as part of a three-point escalation process for cannabis possession for personal use.	Misuse of Drugs Act 1971 s.5; ACPO Cannabis Enforcement Guidance	Whilst arrest is always the first presumption, an adult offender is likely to receive a cannabis warning for a first possession offense, and a penalty notice for disorder for a second offense. A third offense will result in arrest and consideration of likely further	Distinction by law (class of substance) and police guidance (specific to cannabis)	In January 2009 cannabis was reclassified to Class B.

			<p>action including caution, conditional caution or prosecution . All subsequent offenses are likely to result in arrest. If any aggravating factors are present the police will escalate the response accordingly .</p> <p>Ultimately, decisions as to the most appropriate disposal for an offender are made by the police and prosecution service.</p>		
Croatia	<p>As all the other drugs, the possession of cannabis is punished as an administrative offense with a fine (from □140-14 000) and by the Criminal Code with a maximum penalty of one year in prison.</p>	<p>Law on Combating Drugs Abuse, Criminal Code (art. 173(1))</p>	<p>In cases of smaller quantities of drugs for personal use (and if it is a first criminal offense), according to the Article 28 of the</p>	<p>No distinction.</p>	

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			<p>Criminal Law, on the decision by State Attorney, the criminal charge can be dropped and minor offense proceedings initiated. In this case, punishment can be fine, warning, or treatment. Use in public is punishable by administrative sanctions, fines \square 55 to \square 200.</p>		
Norway	<p>Cultivation, possession and use of cannabis are regarded as criminal offenses</p>	<p>Act on Medicinal Products, ss.24 and 31 (2), Regulation Relating to Narcotics etc. s.4 and Civil Penal Code s. 162.</p>	<p>Based on a directive from the Director of Prosecutions, fines are usual for use and for possession of max. 5 g cannabis. Larger quantities or repetition of similar offence within short time (3 months)</p>	No distinction.	

			are normally prosecuted.		
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Source: The European Monitoring Centre for Drugs and Drug Addiction, Legal topic overviews: possession of cannabis for personal use. *Available at* <<http://www.emcdda.europa.eu/legal-topic-overviews/cannabis-possession-for-personal-use>> (last visited Feb. 23rd, 2017).