Criminal nuclear law: international obligations and their implementation in the EU

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Abstract: In this paper, 'criminal nuclear law' is understood as the group of rules adopted at the national, regional or international level which criminalises or makes it mandatory for states to criminalise the practices associated with nuclear energy or radioactivity and which can be distinguished from other provisions relating to similar practices on the basis of the inherent ultra-hazardous nature of nuclear energy or radioactivity. The paper presents the current rules of criminal nuclear law at the international (Convention on the Physical Protection of Nuclear Material or CPPNM, Nuclear Terrorism Convention (NTC) and UN Security Council (UNSC) Resolution 1540 (2004)), European and national levels, referring to France and Portugal as case studies. It then analyses the extent to which the European and national rules comply with international obligations. Finally, some thoughts on the possible future of international criminal nuclear law are presented.

Keywords: criminal nuclear law.

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1 Introduction

The scope of the present paper is best defined by explaining the sense in which the expression 'criminal nuclear law' is used throughout. For the purposes of this paper, 'criminal nuclear law' refers to the group of rules adopted at the national, 'regional'[1] or international level which criminalises or makes it mandatory for states to criminalise the practices associated with nuclear energy or radioactivity and which can be distinguished from other provisions relating to similar practices on the basis of the inherent ultra-hazardous nature of nuclear energy or radioactivity.

As can be seen from this definition and so as to keep the paper within a reasonable size, criminal procedural rules will not be looked at presently.[2]

We shall also not deal with the possible criminal consequences for individuals derived from the infringement of obligations imposed on states (*e.g.*, prohibitions in the International Humanitarian Law or IHL on the use of nuclear weapons). That being said, one should keep in mind in the analysis of the existing 'international criminal nuclear law' that the use on civilian populations of nuclear weapons (and potentially other nuclear-related weapons, such as 'dirty bombs') by the armed forces of states would, in almost all cases, trigger the criminal responsibility of the individuals responsible for deciding on the use of those weapons as a result of the Opinion of 8 July 1996 of the International Court of Justice,[3] coupled with the Rome Statute of the International Criminal Court[4] and, arguably, the principles of international law on criminal responsibility, which were at the heart of the Nuremberg trials.

It should be kept in mind that looking at the rules of 'criminal nuclear law', as defined above, will not give one the full picture of the criminal rules applicable to all the situations connected to nuclear or radioactive materials. For example, someone who intentionally uses radioactivity or nuclear energy to kill others would probably be accused of several 'general' types of crime, starting with murder and potentially ending in terrorism or genocide. Focusing on 'nuclear law', this paper will stay clear of the discussions which properly belong within the general theory of criminal law, despite recognising that there is a significant scope for debate therein.

2 The existing legal framework

2.1 International criminal nuclear law

'International criminal nuclear law' originated and has (so far) remained a product of the concerns of the international community with the proliferation of nuclear weapons and the possible use of nuclear energy or radioactivity by nonstate actors for nonpeaceful purposes, linked to the recognition of the transnational dimension of such activities and risks.

It is understandable, therefore, that the first treaty to include the rules of 'criminal nuclear law' was the *Convention on the Physical Protection of Nuclear Material* (CPPNM)[5] of 26 October 1979, *i.e.*, a treaty mostly aimed at preventing nonstate actors from unlawfully acquiring nuclear material.

Article 7(1) of the CPPNM stipulates that contracting parties shall make it: "a punishable offence (...) under [their] national law" to intentionally commit any of the following:

> "a) an act without lawful authority which constitutes the receipt, possession, use, transfer, alteration, disposal or dispersal of nuclear material and which causes or is likely to cause death or serious injury to any person or substantial damage to property;
>
> b) a theft or robbery of nuclear material;
>
> c) an embezzlement or fraudulent obtaining of nuclear material;
>
> d) an act constituting a demand for nuclear material by threat or use of force or by any other form of intimidation;

e) a threat:

   i. to use nuclear material to cause death or serious injury to any person or substantial property damage, or

   ii. to commit an offence described in sub-paragraph (b) in order to compel a natural or legal person, international organization or State to do or to refrain from doing any act;

f) an attempt to commit any offence described in paragraphs (a), (b) or (c); and

g) an act which constitutes participation in any offence described in paragraphs (a) to (f)."

It should be noted that the expression 'nuclear material' encompasses materials beyond those which allow the manufacture of nuclear weapons, also covering, for example, the materials suitable for the manufacture of 'dirty bombs'.[6]

The abovementioned practices must be made punishable offences in the 127 states which have ratified the CPPNM,[7] with the specification that "each State Party shall make the offences described in this article punishable by appropriate penalties which take into account their grave nature" (Article 7(2)).

On 13 April 2005, the General Assembly of the United Nations (UN) adopted the *International Convention for the Suppression of Acts of Nuclear Terrorism* (or Nuclear Terrorism Convention – NTC).[8] Very recently entered into force and still with a modest number of ratifications (23),[9] this convention has significantly broadened the scope of international criminal nuclear law. Although primarily aimed at preventing nuclear terrorism, the scope of its criminal provisions is not entirely limited to that perspective. On the other hand, this scope is limited to situations where at least two legal orders are at stake (Article 3) and "the activities of armed forces during an armed conflict" are excluded (Article 4(2)).

Articles 2 and 5 of the NTC oblige contracting parties to establish as criminal offences "punishable by appropriate penalties which take into account the grave nature of these offences" the following conducts:

(a) unlawfully and intentionally possessing radioactive material[10] or making or possessing a device[11] with the intent to cause death or serious bodily injury or with the intent to cause substantial damage to property or the environment

(b) unlawfully and intentionally using in any way radioactive material or a device or using or damaging a nuclear facility[12] in a manner which releases or risks the release of radioactive material if accompanied by the intention of: (i) causing death or serious bodily injury; (ii) causing substantial damage to property or the environment or (iii) compelling a natural or legal person, an international organisation or a state to do or refrain from doing an act

(c) threatening, under the circumstances which indicate the credibility of the threat, to commit an offence described in (b)

(d) demanding, unlawfully and intentionally, radioactive material, a device or a nuclear facility by threat under circumstances which indicate the credibility of the threat or by use of force

(e) attempting to commit an offence described in (a) or (b)

(f) participating as an accomplice, organising or directing others to commit or any other way that intentionally contributes (with the aim of furthering the general criminal activity or purpose of a group or with knowledge of that group's intention of committing the offence in question) to the carrying out of any of the previously described offences.

Both the CPPNM and the NTC allow a significant discretionary margin for national implementation measures (*maxime*, in the use of the term 'appropriate penalties', which should 'take into account the grave nature' of the offences).[13] This is a result of both the near impossibility of arriving at an agreement on the precise sanctions which should be applied for each crime (given the disparity between the criminal law regimes of the contracting parties) and of the limits imposed by the idea that criminal law is a matter closely attached to the sovereignty of each state, the reason for which international 'interferences' should be kept to a minimum and legitimised by the willing case-by-case acceptance of each state (as in this case, through the ratification of a treaty).

In recent years, however, a new basis for the legitimacy of international 'interference' in national criminal law has developed: legitimacy through the general delegation of powers to international organisations. At first glance, such an approach still respects the sovereignty of each state in criminal matters, as it depends on each state's acceptance of the power of an international organisation to, under certain conditions, define the main parameters of the criminal rules to be included in national law. More accurately, it must be noted that the recently witnessed 'interferences' of international organisations in national criminal law have derived from an evolution of the interpretation of powers under their founding treaties, rather than from provisions which could have expressed a clear and informed delegation of powers from its member states.

One example of such an evolution was the legal interpretation put forward by the European Court of Justice in its judgement of 13 September 2005 (*Comission v. Council*, case C-176/03), which gave the European Community the power to oblige member states to impose criminal sanctions for specific behaviours under certain conditions, whereas before, such an 'interference' would have had to be approved by each member state.

Another example – the one that concerns us here – is the evolution of the understanding of the powers of the United Nations Security Council (UNSC) under Chapter 7 of the UN Charter. No matter how long and closely one looks, one will not find anywhere in Chapter 7 even a vague reference to the power of the UNSC to oblige member states to foresee criminal penalties for certain behaviours of individuals (*e.g.*, terrorists) that threaten world peace. Indeed, Chapter 7 was drafted in the perspective that the threats to world peace would come from state actors and it aimed to give the UNSC the competency order the use of force and impose mandatory sanctions in reaction to such threats.

One would have been understandably surprised, therefore, to read on 28th September 2001 that the UNSC had made it mandatory for "all States" to criminalise the financing, planning, support, preparation or perpetration of terrorist acts (UNSC Resolution 1373(2001), op. clauses 1(b) and 2(e)). The legal basis for such an imposition by the UNSC was, according to the resolution, Chapter 7 of the UN Charter, international terrorism being considered "a threat to international peace and security". The fact that this happened two weeks after the largest single terrorist attack in history may partially explain why such a revolution in the interpretation of the powers of the UNSC was so quietly received.

Less than three years later, this new interpretation (and, effectively, this new competency) was used to adopt Resolution 1540 (2004) of 28 April 2004. By the second operative clause of this resolution, the UNSC decided that:

> "all States, in accordance with their national procedures, shall adopt and enforce appropriate effective laws which prohibit any non-State actor to manufacture, acquire, possess, develop, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery,[14] in particular for terrorist purposes, as well as attempts to engage in any of the foregoing activities, participate in them as an accomplice, assist or finance them."

As can be seen, the UNSC did not go as far as it had in Resolution 1373 (2001) – instead of expressly calling for criminal sanctions, it merely refers to 'effective laws which prohibit' these practices. Needless to say, prohibiting an activity is not the same as criminalising it, nor the same as foreseeing a sanction for it. One might still argue that the principles of *pacta sunt servanda* and of good faith in meeting international obligations (Article 26 of the 1969 Vienna Convention on the Law of Treaties)[15] effectively leaves no option but to foresee criminal sanctions for these practices, as only criminalisation achieves the objective and is true to the spirit of Resolution 1540 (2004), but we are inevitably confronted with a large amount of legal uncertainty in this regard.

Having a full picture of the existing provisions of international criminal nuclear law, we will now proceed to look at criminal nuclear law at the level of the European Union (EU) and of its member states (resorting to two case studies: France and Portugal). The final objective is to determine which rules are more or less far-reaching and whether international obligations in this regard are being met.

2.2 European criminal nuclear law

At the EU level, there has so far been only one initiative to harmonise the provisions of criminal nuclear law among the member states and it is found within the general context of combating terrorism. In that sense, the provisions mentioned below are not *stricto sensu* criminal nuclear law, but nonetheless have a significant impact in this domain.

On 13th June 2002, the European Council adopted the *Council Framework Decision on Combating Terrorism (2002/475/JHA)*.[16] This framework decision obliges member states to foresee criminal sanctions for, *inter alia*, the "manufacture, possession, acquisition, transport, supply or use of (...) nuclear, biological or chemical weapons, as well as research into, and development of, biological and chemical weapons",[17] when these practices:

> "given their nature or context, may seriously damage a country or an international organisation, where committed with the aim of seriously intimidating a population, or unduly compelling a Government or international organisation to perform or abstain from performing any act, or seriously destabilising or destroying the fundamental political, constitutional, economic or social structures of a country or an international organisation." (Article 1(1)(f))

In accordance with Articles 1(1)(i), 3 and 4, the obligation to foresee criminal sanctions further extends to:

- the threat of carrying out the described acts

- aggravated theft, extortion or drawing up false administrative documents with a view to carry out those acts
- inciting, aiding or abetting and attempting to carry out those acts.

The discretionary margin of the member states in defining the applicable sanctions is significantly reduced in relation to that found at the level of international law. Under Article 5, "effective, proportionate and dissuasive criminal penalties" must be foreseen and these must translate into "custodial sentences heavier than those imposable under national law for such offences in the absence of the special intent required pursuant to Article 1(1) [*i.e.*, terrorism], save where the sentences imposable are already the maximum possible sentences under national law". The admissibility of mitigating factors has also been restricted in this case by an exhaustive enumeration (Article 6).

Interestingly, the framework decision stipulates that member states should also foresee the liability of the legal persons responsible for the same infringements (Article 7), with specific sanctions being suggested (Article 8).

As this framework decision precedes Resolution 1540 (2004), it is not surprising that the two documents have different scopes. That being said, the EU has already affirmed "the need for compliance with obligations under Security Council Resolution 1540 (2004)"[18] and the objective of the "adoption by Member States of common policies related to criminal sanctions for illegal export, brokering and smuggling of WMD-related material".[19]

2.3 National criminal nuclear law

2.3.1 France

As far as the author is aware, French criminal nuclear law is to be found in the *Defence Code* and the *Criminal Code* (CC) and, to a small degree, in a law and decree mentioned below.[20]

The *Defence Code* dedicates a section to the 'protection and control of nuclear material' – Articles L.1333-1 *et ss*. (last revised by Law 2007-289 of 5 March 2007).

According to Article L.1333-9 of the Defence Code:

> "I. A penalty of 10 years imprisonment or a fine of EUR 7,500,000 will be applied to anyone:
>
> 1) exercising, without authorisation, the activities mentioned in Article L.1333-2 [import/export, manufacture, possession, transfer, use and transport of nuclear material], or supplying incorrect information so as to obtain the authorisation in question
>
> 2/3/4/5) unlawfully coming into possession of, abandoning or dispersing, altering or deteriorating nuclear materials mentioned in Article L.1333-1 (and Article R.1333-1), as well as destroying structural elements where such materials are kept;
>
> An attempt is punishable with the same penalties (III)."

The penalties applicable to the foreseen practices in this article are severely aggravated if such practices are carried out with terrorist intent (objective of 'seriously disturbing public order through intimidation or terror') – see Articles L.421-1(4) and (5) and L.421-3 CC.

Article L.1333-10 of the Defence Code stipulates that any physical or legal person who intervenes in facilities where nuclear materials are kept and breaches laws, regulations or the instructions of the operator or his deputies, thereby risking the endangerment of the protection/safety of the materials and facilities or of persons and property, may be punished (aside from other applicable criminal sanctions) by the suspension or cancellation of contractual or statutory rights without compensation, as well as (for legal persons) the withdrawal of administrative authorisations.[21]

Article L.1333-11 adds:

> "In application of the [CPPNM] (...), possession, transfer, use or transport, outside the territory of the Republic, of nuclear materials within the scope of Articles 1 and 2 of that Convention, without authorisation from the competent foreign authorities, shall be punished with the penalties foreseen in Articles L.1333-9 and L.1333-10."

Furthermore:

- the obstruction of the controls foreseen for nuclear materials, the transmission of incorrect information in the framework of such controls or disrespect for an administrative order following such a control is punished with two years' imprisonment and a fine of EUR 30,000 (Article L.1333-12)
- anyone authorised to handle or is in charge of the safe-keeping or management of nuclear material (or the managers of the legal person meeting those conditions, with knowledge of the events) who notices the loss, theft, disappearance or detouring of such materials and fails to inform the police authorities within the first 24 h is punished with two years' imprisonment and a fine of EUR 37,500 (Article L.1333-13)
- the managers of operators of nuclear facilities who fail to produce an adequate protection plan or carry out necessary works within a deadline prescribed by an administrative order or those who fail to adequately maintain the protection instruments that are already in place are punished with a fine of EUR 150,000 (Articles L.1332-7 and L.1332.4).

Article L.322-6-1 CC (as last revised by Law 2004-204 of 9 March 2004) stipulates that:

> "Publishing, by whatever means, except those intended for professionals, procedures for the manufacture of destructive devices made from gunpowder or explosive substances, nuclear, biological or chemical materials, or from any other product for domestic, industrial or agricultural use, is punished by a year's imprisonment and by a fine of EUR 15,000.
>
> The penalties are increased to three years' imprisonment and a fine of EUR 45,000 where a telecommunications network for the distribution of messages to a non-specified audience has been used to publish these procedures."

Law 75-1335 of 31 December 1975 (last revised by Law 2006-686 of 13 June 2006) and *Decree 77-1331 of 30 November 1977* (last revised by Decree 2006-1246 of 11 October 2006) impose small criminal penalties on the people involved in the transport of dangerous goods in breach of the applicable rules (total interdiction, labelling, packaging, documentation, *etc.*).[22]

2.3.2 Portugal

Portuguese criminal nuclear law is to be found in the CC,[23] in *Law 5/2006 of 23rd February (New Legal Regime for Weapons and Ammunition)*[24] and in *Law 52/2003 of 22nd August (Combating Terrorism)*.[25]

Articles 272 and 273 CC stipulate that:

> "Whoever (...) emits radiation or releases radioactive substances (...) and thereby endangers the life or physical integrity of a third party or valuable goods of a third party is sentenced to a jail term of:
>
> – 3 to 10 years (or 5 to 15 years in case of 'release of nuclear energy'), or
>
> – 1 to 8 years (or 3 to 10 years in case of 'release of nuclear energy') if the endangerment was negligent, or
>
> – up to 5 years (or 1 to 8 years in case of 'release of nuclear energy') if the action itself was negligent."

Article 274 CC imposes criminal sanctions for the preparatory acts of the crimes described above:

> "Whoever, to prepare the execution of one the crimes foreseen in Articles 272 and 273 manufactures, dissimulates, acquires for himself or for a third party, delivers, possesses or imports an explosive substance capable of producing a nuclear [or] radioactive (...) explosion, or devices/instruments required for the execution of such crimes, is sentenced to a jail term of up to 3 years or to pay a fine."

According to Article 277(1)(c) CC:[26]

> "Whoever destroys, damages or renders useless, totally or partially, a facility for the use, production, storage, transport or distribution of (...) nuclear energy (...), thereby endangering the life or physical integrity of a third party or valuable goods of a third party is sentenced to a jail term of:
>
> – 1 to 8 years, or
>
> – up to 5 years if the endangerment was negligent, or
>
> – up to 3 years if the action itself was negligent."

In what concerns mitigating and aggravating circumstances (for all the crimes above except those described in Article 274):

- the sentence may be especially reduced or even dispensed "if the agent voluntarily removes the danger before considerable damage has occurred" (Article 286 CC)
- the minimum and maximum limits of the sentence are aggravated by one-third if the crime results in "death or aggravated offense to the physical integrity of a third party" (Article 285 CC).[27]

The attempt to carry out a crime foreseen in Articles 272, 273 and 277(1)(c) CC is criminally punishable (Article 23 CC).[28] Participation or assistance in any of the crimes mentioned above is also punishable (Article 27 CC).

Law 5/2006 regulates access to weapons and ammunition, including nuclear/radioactive weapons (using a broad definition – see Article 2(z)). Nuclear/ Radioactive weapons are included in a broad category of the most dangerous weapons.[29]

The "sale, acquisition, transmission, possession, use and carrying" of all weapons in this category is forbidden, absent exceptional authorisation from the proper authorities (Article 4). The penalties for disrespecting this interdiction are foreseen in Articles 86 and 87. Article 86(1) reads as follows:

> "Whoever, without authorisation, disrespecting legal conditions or the impositions of the competent authority, possesses, transports, imports, guards, purchases, acquires at any title or means, obtains by manufacturing, transforming, importing or exporting, uses or carries:
>
> a) (...) a radioactive weapon or a weapon capable of a nuclear explosion (...) is punished with a jail term of 2 to 8 years;
>
> b) products or substances destined or potentially destined, totally or partially, to be used for the development, manufacture, handling, activation, maintenance, storage or proliferation of (...) radioactive weapons or weapons capable of a nuclear explosion, or for the development, manufacture, maintenance or storage of devices capable of transporting those weapons, is punished with a jail term of 2 to 5 years (...)"

Article 87 focuses more specifically on the dimension of trafficking of unlawful weapons without distinguishing nuclear/radiological weapons in any way.[30]

Law 52/2003 aimed to implement the European Council's Framework Decision on Combating Terrorism within the Portuguese legal order, but the transposition seems not to have been perfect. In particular, the manufacture, possession, acquisition, transport or supply of nuclear weapons has not been included in this law. As a result, the general regime of Law 5/2006 continue to apply, with no increased sanction for when these behaviours are carried out with 'terrorist intent', contrary to what is required by the framework decision. Another difference worth noting is that the threat of carrying out the crimes in question has not been criminalised.

In what concerns the quantification of criminal penalties, Law 52/2003 has opted for a general penalty of two to ten years' imprisonment or, if the facts meet the criteria for another crime already foreseen in Portuguese law and punished with an equivalent or higher penalty, such a penalty shall be applied, but increased by one-third.

3 Comparison of European and national provisions with international obligations

One of the main difficulties in verifying the compliance of European and national law with the international obligations in criminal nuclear law derives from the absence of a unified or even harmonious international law regime. Indeed, each of the three documents analysed in Section 2.1 describes the acts for which criminal sanctions should be foreseen differently.

Another difficulty derives from the fact that the difference in language and structure of the international and national law regimes means that the correspondence between the two levels of rules shall necessarily be a matter of dispute. In that sense, the indications supplied in the tables below should be perceived as personal and nondefinitive interpretations.

In contrasting European and national criminal nuclear provisions with the obligations deriving from international law in this domain, it should be kept in mind that all 27 EU member states are bound by UNSC Resolution 1540 (2004) (as members of the UN) and by the CPPNM (as contracting parties), but only seven EU member states have so far ratified the NTC[31] (which does not mean that the European and national provisions analysed above might not already include some of the practices described in the NTC). The European Atomic Energy Community has ratified the CPPNM, being bound to it to the extent of its relevant competencies.

Table 1 Compliance with the CPPMN's criminal nuclear law obligations by European and national law

Practice[1]	*EU*[2]	*France*	*Portugal*
Intentional receipt, possession, use, transfer, alteration, disposal or dispersal of nuclear material which causes or is likely to cause death or serious injury to any person or substantial damage to property (or participation therein or attempt)	–	✓ (result or risk of result not required)	Partial overlap (alteration and disposal not included)
Intentional theft or robbery of nuclear material (or participation therein or attempt)	–	✓ (not distinguished from unlawful acquisition)	✓ (not distinguished from unlawful acquisition)
Threat of theft or robbery of nuclear material in order to compel a natural or legal person, international organisation or state to do or refrain from doing any act (or participation therein)	–	✓ (not distinguished from unlawful acquisition with terrorist intent)	–
Intentional embezzlement or fraudulent obtaining of nuclear material (or participation therein or attempt)	–	✓	–
Intentional demand for nuclear material by threat or use of force or by any other form of intimidation (or participation therein)	–	–	–
Threat of using nuclear material to cause death or serious injury to any person or substantial property damage (or participation therein)	–	–	–

Notes: [1] A common requisite for all the listed practices to be unlawful is that they be the actions of nonstate actors and that they have not been authorised by a state. It should also be taken into account that this analysis has, in some cases, been slightly simplified. As an example, the obligations contained in the CPPNM require that attention be paid to the definition of 'nuclear material', which is not addressed in this table.

[2] Since the practices described in the Council's Framework Decision on Combating Terrorism all focus on 'nuclear weapons' rather than on 'nuclear material', we concluded that, technically, there is not even a partial overlap with the practices described in the CPPNM, even though in practice, some situations might lead to overlaps (since a 'nuclear weapon' obviously contains 'nuclear material').

Table 2 Compliance with the NTC's criminal nuclear law obligations by European and national law

Practice	*EU*	*France*	*Portugal*
Intentional possession of radioactive material with the intent to cause death or serious bodily injury or with the intent to cause substantial damage to property or to the environment (or attempt or intentional participation, organisation or direction of others therein)	–	✓ (intent not required)	✓ (intent not required)
Intentional possession or manufacture of a nuclear/ radioactive device with the intent to cause death or serious bodily injury or with the intent to cause substantial damage to property or to the environment (or attempt or intentional participation, organisation or direction of others therein)	Partial overlap (only with 'terrorist intent';[1] an arguably more restrictive concept of nuclear weapon)	–	✓ (intent not required)
Intentional use of radioactive material in a manner which releases or risks the release of radioactive material if accompanied by the intention of: (i) causing death or serious bodily injury, (ii) causing substantial damage to property or to the environment or (iii) compelling a natural or legal person, an international organisation or a state to do or refrain from doing an act (or credible threat thereof or attempt or intentional participation, organisation or direction of others therein)	–	Partial overlap (only terrorist intent corresponds to an aggravated penalty)	✓
Intentional use of a nuclear/radioactive device in a manner which releases or risks the release of radioactive material if accompanied by the intention of: (i) causing death or serious bodily injury, (ii) causing substantial damage to property or to the environment or (iii) compelling a natural or legal person, an international organisation or a state to do or refrain from doing an act (or credible threat thereof or attempt or intentional participation, organisation or direction of others therein)	Partial overlap (only with 'terrorist intent'; an arguably more restrictive concept of nuclear weapon)	–	✓
Intentional use of or damage to a nuclear facility in a manner which releases or risks the release of radioactive material if accompanied by the intention of (i) causing death or serious bodily injury, (ii) causing substantial damage to property or to the environment or (iii) compelling a natural or legal person, an international organisation or a state to do or refrain from doing an act (or credible threat thereof or attempt or intentional participation, organisation or direction of others therein)	–	Partial overlap (only terrorist intent corresponds to an aggravated penalty)	Partial overlap (no aggravated penalty foreseen for situations with the described intents)
Intentional and forceful demand for radioactive material, a nuclear/radioactive device or nuclear facility (or credible threat thereof or intentional participation, organisation or direction of others therein)	–	–	–

Note: [1] The practices included in the Council's Framework Decision on Combating Terrorism all contain the extra requirement of 'terrorist intention' and, therefore, will only partially cover the practices described in international law which do not specifically require such an intent.

Table 3 Compliance with UNSC Resolution 1540 (2004)'s criminal nuclear law obligations by European and national law

Practice	*EU*	*France*	*Portugal*
Manufacture, acquisition, possession, development, transport or use of nuclear weapons, in particular, for terrorist purposes (or attempt or participation, assistance or financing thereof)	Partial overlap (only with 'terrorist intent')	– (the law seems to focus on nuclear material, rather than devices)	✓
Manufacture, acquisition, possession, development, transport or use of means of delivery of nuclear weapons (or attempt or participation, assistance or financing thereof)	–	–	✓

The preceding tables, subject to confirmation through a more in-depth analysis, highlight the fact that there is no perfect compliance of French and Portuguese laws with the international obligations in the domain of criminal nuclear law. One may suspect that similar divergences would surface in an analysis of the national laws of other EU member states.

In the cases of both France and Portugal, these divergences also seem to exist at the level of compliance with the obligations imposed by European law (European Council's Framework Decision on Combating Terrorism).

It also becomes clear that there has been but a minimal attempt to harmonise at the EU level. Considering that the European Atomic Energy Community has ratified the CPPNM and that the EU is bound to Resolution 1540 (2004), taking into account the complexity of the field and the evidenced difficulty in establishing a regime which fully complies with international law, as well as the objective already defined by the Council of the EU (see end of Section 2.2), it is worth reflecting on whether this would not be an area where an EU intervention would be desirable and beneficial.

4 Thoughts on the future of criminal nuclear law

So far, the international law approach to the criminalisation of practices within the nuclear field has shown three main characteristics:

1 it has been limited to reacting to concerns on the proliferation of nuclear/radioactive devices and their potential use by nonstate actors

2 it has been a piecemeal effort based on different perspectives at different times, without an integrated overarching perspective

3 it has been pursued mostly through treaties.

The following sections shall address each of these characteristics. These thoughts shall benefit from the wide freedom that comes from purely intellectual debates without focusing on the political feasibility of the considered options.

4.1 Different practices and areas

International criminalisation efforts have not exhausted the practices which could be covered in the field of nonproliferation and physical protection. Furthermore, the efforts have been limited to this field, whereas other areas of nuclear law might benefit from the protection of criminal legislation.

Without expressly addressing the principles which limit the use of criminal law in general, it should be kept in mind that international law inevitably requires cross-border effects, direct or indirect, actual or potential.

In what concerns the first type of extension of the international criminal nuclear law regime mentioned above, a good example of something that requires an international approach in order to allow an effective response and which is arguably worthy of being made a crime is the practice of making available to indiscriminate audiences information allowing the manufacture of nuclear or radioactive devices. This practice has been rendered a criminal offence by Article L.322-6-1 of the French CC. Clearly, the internet has widely reduced the utility of such an interdiction if it is not imposed on a global basis.

But bolder moves are possible. The recent resolutions of the UNSC concerning North Korea and Iran have brought to the forefront the idea that the acquisition of nuclear weapons by any state which does not yet possess it (*i.e.*, the proliferation of nuclear weapons) is in itself a threat to world peace, justifying the imposition of sanctions to force such a state to give up its nuclear weapons programme. It is but a small step to join this path with the criminalisation path opened by Resolution 1540 (2004) by foreseeing criminal sanctions for the political or military leaders of States responsible for the decision to create and maintain a nuclear weapons programme.

As for the second type of extension mentioned above, one might envisage, for example, the creation of criminal rules applicable to those who, knowingly or with gross negligence, infringe safety rules that are applicable to nuclear facilities or transports of nuclear or radioactive material, thereby causing the death of others or damage to the health or property of others or to the environment. It is well known that a significant accident at a nuclear power plant would, in all likelihood, have cross-border effects, which seems reasonable for international law to attempt to guarantee the safety of these installations – as it already does – by any proportional means available.

The Paris and Vienna Conventions on Nuclear Liability both make the insurance of nuclear facilities mandatory, but neither imposes the obligation of backing up this rule with criminal sanctions for those managing an operator which fails to contract the required insurance or allows it to expire. While reflecting on this characteristic, one should recall that in many countries, the failure to hold a valid insurance for a vehicle is punishable with criminal sanctions and also that the very reason for the Paris and Vienna Conventions is that it was recognised that nuclear accidents would likely require the payment of cross-border compensation.

Finally, adapting a French solution adopted for the internal level (Article L.1333-13 of the Defence Code) and reminiscent of the events that followed Chernobyl, one might also consider backing up the obligation of the early notification of a nuclear accident with criminal sanctions to be imposed on the individual responsible for informing the appropriate international authorities if he or she fails to do so as required (or on the persons responsible for deciding not to provide or to delay that information), thereby endangering the population, property or environment of another state.

4.2 Improvement of the existing regime

Even within the practices that have so far been the focus of attention for international criminal nuclear law, the existing rules seem to have been drawn without an integral picture of what the main concerns are and how precisely they should be addressed. The main reason for this is, of course, is that the two treaties and the UNSC resolution that are at the source of these rules have approached the same problems from different angles and without the need to be exhaustive.

Certain options must be made by the international as well as national legislator and these options are fairly limited, albeit confusing at times. Figure 1 aims to provide a list of these options (restricted to the fields covered so far by international criminal nuclear law) and a visual perception of the possible combinations.

On the basis of Figure 1, it is possible to produce a rough draft of an all-encompassing criminal nuclear law regime for the areas presently covered by international law. Such an all-encompassing regime, which would in fact be wider (in letter, if not in spirit) than the combined regimes of the CPPNM, NTC and UNSC Resolution 1540 (2004), might look as follows:[32]

> "1. Each Contracting Party shall make the following offences subject to criminal sanctions under national law:
>
> a) intentional unauthorised access to means of transport or delivery of nuclear or radioactive devices or to components and instruments for the manufacture of nuclear or radioactive devices, access being understood as any of the following behaviours relating to such means, components or instruments: receipt, possession, transfer, alteration, manufacture, development, transport, theft, robbery, embezzlement, fraud, demand through use of force, threat or intimidation and facilitation of access to others;
>
> b) intentional unauthorised access to nuclear or radioactive material, access being understood as any of the following behaviours relating to such material: receipt, possession, transfer, alteration, extraction, transport, theft, robbery, embezzlement, fraud, demand through use of force, threat or intimidation and facilitation of access to others;
>
> c) intentional unauthorised access to a nuclear or radioactive device, access being understood as any of the following behaviours relating to such a device: receipt, possession, transfer, alteration, manufacture, development, transport, theft, robbery, embezzlement, fraud, demand through use of force, threat or intimidation and facilitation of access to others;
>
> d) intentional or negligent interference with or damage to a nuclear facility, when it is likely to result in death or serious bodily injury to another person or in substantial damage to the property of another person or to the environment;
>
> e) intentional or negligent use, dispersal or disposal of nuclear or radioactive material, when it is likely to result in death or serious bodily injury to another person or in substantial damage to the property of another person or to the environment;
>
> f) intentional or negligent use or detonation of nuclear or radioactive devices, when it is likely to result in death or serious bodily injury to another person or in substantial damage to the property of another person or to the environment;
>
> 2. Each Contracting Party shall also make the intentional participation or assistance, organisation or direction of others, incitement, financing or attempt of carrying out of any of the offences described in the previous number subject

> to criminal sanctions under national law, the same being applicable to a credible threat of carrying out any of the offences described in (d), (e) or (f) of the previous number.
>
> 3. Each Contracting Party shall ensure that the offences described in the preceding numbers shall be punishable by appropriate penalties which take into account their grave nature, and that they shall under no circumstance be justified by considerations of a political, philosophical, ideological, racial, ethnic, religious or other similar nature.
>
> 4. Each Contracting Party shall foresee more severe criminal sanctions for:
>
> (a) the offences foreseen in number 1, when they are accompanied by the motivation of causing death or serious bodily injury to another person, of causing substantial damage to the property of another person or to the environment or of compelling a natural or legal person, an international organisation or a State to do or to refrain from doing any act;
>
> (b) the offences foreseen in number 1, when they are carried out by someone responsible for preventing the verification of the result in question or benefiting from privileged access to the facilities, material, devices, means of transport, components or instruments in question;
>
> (c) the offences foreseen in number 1(d), (e) and (f), when these effectively result in death or serious bodily injury to another person or in substantial damage to the property of another person or to the environment."

4.3 Different legal source

The adoption of the UNSC resolutions mentioned previously in this paper has opened the door to a change in the current paradigm of absolute respect for the principle of sovereignty in criminal matters. So far, this new paradigm has been tied to the UNSC's interpretation of what constitutes a threat to world peace, since this is the essential prerequisite for action to be taken under Chapter 7 of the UN Charter.

But if terrorism and the proliferation of nuclear weapons (to both state and nonstate actors) constitute a threat to world peace and if the imposition on member states of the obligations of criminalisation of certain practices is a legitimate and available means for the UNSC to react to such a threat, as the already adopted resolutions have established, one cannot help but wonder if the regime of Resolution 1540 (2004) has not been less ambitious than it could be.

The main shortcomings of this resolution, when checked against the range of practices already covered by international criminal nuclear law, are:

- it does not expressly impose the obligation of foreseeing sanctions of a criminal nature, nor does it provide any additional criteria for the differentiation of sanctions (see No. 4 of the draft regime in Section 2.2)
- it does not cover access to nuclear/radioactive material
- it does not cover 'dirty bombs'
- it does not cover access to components and instruments for the manufacture of nuclear or radioactive devices
- it does not cover interference with or damage to a nuclear facility
- it does not cover threats of carrying out the practices foreseen therein.

Figure 1 Main legislative options

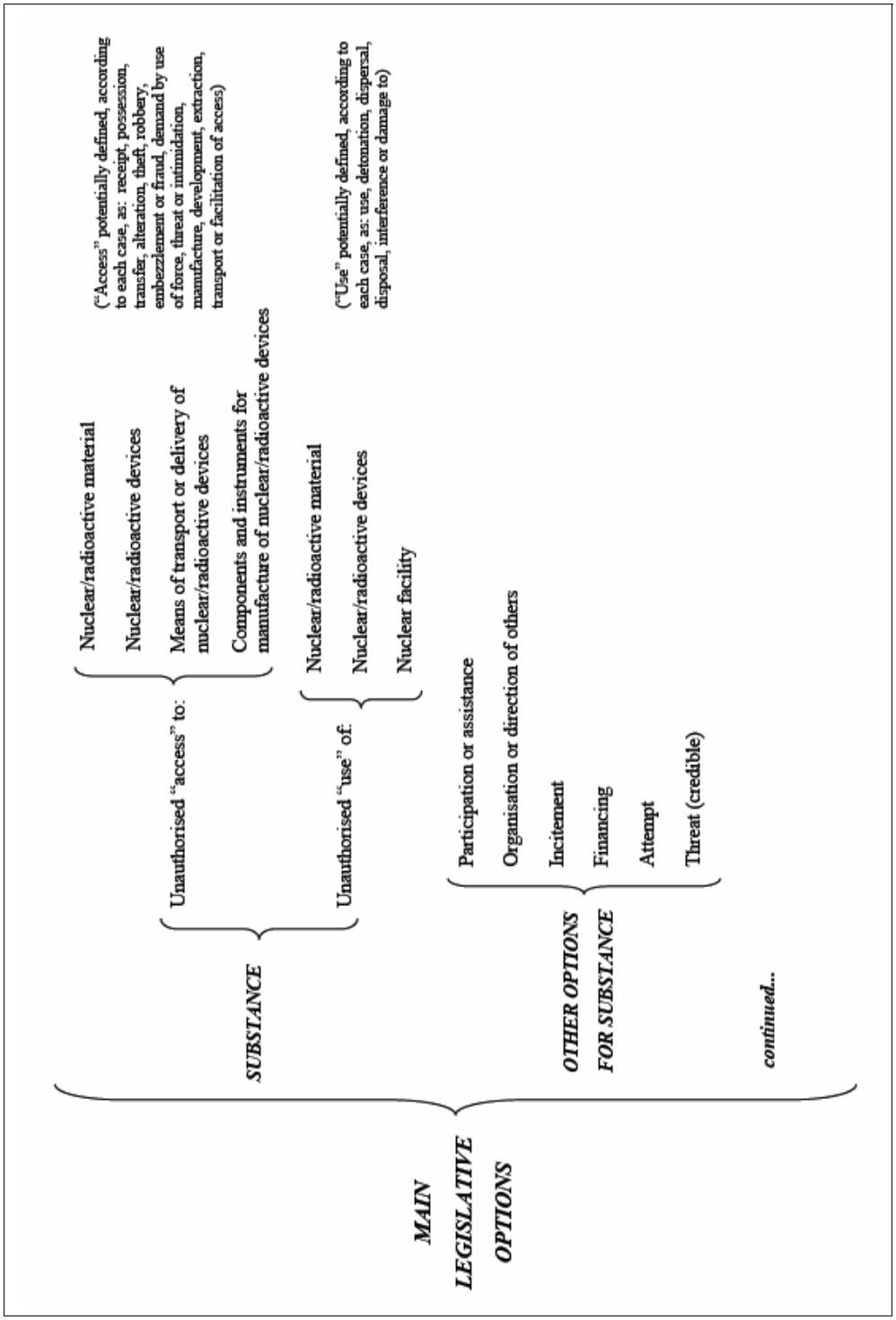
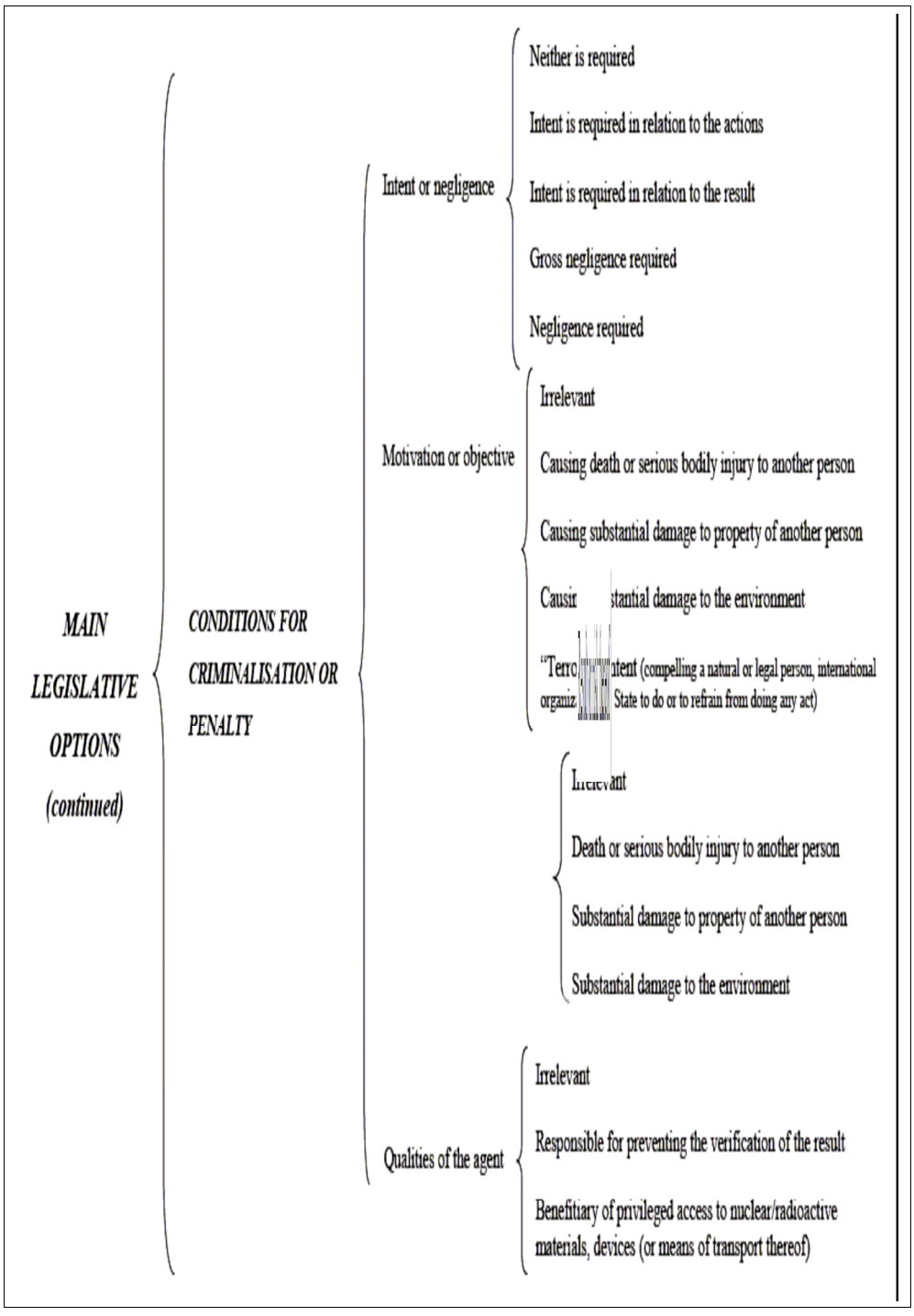


Figure 1 Main legislative options (continued)



Aside from the political question of whether the adoption of an improved regime by the UNSC would at all be possible, the essential legal question that must be answered is whether this body has the power to go further than it has gone, even if one accepts its (re)interpretation of Chapter 7 of the UN Charter.

According to the majority view, the principle of national sovereignty in criminal matters is still very much in force and powers such as those awarded to the UNSC – if they exist at all – must be considered exceptions and, consequently, interpreted restrictively. In this view, it becomes easier to conclude that it is not within the UNSC's powers to go beyond what has already been established in Resolution 1540 (2004) – easier, but not necessarily correct.

If the exception to the principle of national sovereignty is justified by the powers of the UNSC to prevent and react to the threats to world peace, than the limit of these powers must be the necessity and proportionality of the measures to achieve that goal.

It should also be kept in mind that the international community accepted, without challenge, the legitimacy of the second operative clause of Resolution 1540 (2004), which may also serve to indicate an evolution of customary international law.

It is true that the resolution does not explicitly mention the obligation to impose criminal sanctions, but it does stipulate that the laws prohibiting the behaviours foreseen therein must be 'appropriate' and 'effective'. As mentioned previously, although there would certainly be advantages in a clearer phrasing, such a phrasing already creates, in practice, an obligation of foreseeing criminal sanctions in the light of the principles of *pacta sunt servanda* and of good faith in meeting international obligations, considering the severity of the practices in question and the proportion to the prohibition in national law of the practices which constitute or lead to threats to life and society.

As for the rest of the shortcomings identified above, there is seemingly no reason why these cannot be the object of a UNSC resolution in similar terms to the one that already exists. A 'dirty bomb' can have an extremely high destructive capacity (not only in the moment of use, but also through subsequent lasting radiation) that is certainly not inferior to that of many chemical weapons. The potential consequences of willful interference with a nuclear facility (*maxime* a nuclear power plant) can also not be considered inferior to those of the weapons already mentioned in the resolution.

If the international community has already accepted the necessity and proportionality of the measures contained in Resolution 1540 (2004) for the attainment of the objective of preserving world peace, it is only logical (indeed, necessary) to extend that same acceptance to other practices with equivalent destructive potential.

Furthermore, it is a commonly accepted principle of criminal law that unlawful access to materials, components or instruments which, by its very nature, cannot but aim to carry out a crime is in itself criminally punishable. It should added to this that criminal law also encompasses the practices which unwillingly create a very serious risk, *inter alia*, for the life or health of others. More to the point, it is widely accepted that it is virtually impossible to prevent the use of a nuclear or radioactive device once it has been obtained by a group willing to deploy it in secret and use it. That being so, the protection of world peace must necessarily (and quite proportionately) move upstream to the avoidance of the creation of the conditions which would allow that situation to come about.

In this author's opinion, the only element of the previous enumeration of the shortcomings of Resolution 1540 (2004) which finds a serious challenge in the test of necessity and proportionality is imposing the criminalisation of the threat to carry out the practices in question.

All this being said, it should be kept in mind that while the adoption of a Chapter 7 UNSC resolution with a widened and improved international criminal nuclear law regime would make such a regime binding on virtually all states and eliminate the possibility of any state withdrawing from the treaty foreseeing those criminalisation obligations, the main problem is and would always continue to be the enforcement of this regime. Focusing exclusively on the enforcement of criminal law (rather than on the difficulties of enforcing international law in general), certain theoretical solutions might reduce the enforcement obstacles, such as the universal jurisdiction of national courts or the attribution of jurisdiction to the International Criminal Court.

5 Conclusion

There is good reason to believe that the transposition into national law of international criminal nuclear law is not entirely complete or successful. In the cases of France and Portugal, presented as case studies, there are disparities not only in relation to the regime imposed by international law, but also to that imposed by European law. It is suggested that this is an area where a wider harmonisation at the European level seems desirable.

There are many ways in which the existing international criminal nuclear law could be improved. Even without widening the current scope and focus of this law, it is possible to improve it through a unifying approach – a draft of an improved regime has been presented, along with the method used to determine it.

As for widening the current scope of international criminal nuclear law, it was argued that there is much that could still be done, not only within the fields of nonproliferation and physical protection, but also (as examples) in what concerns the safety of nuclear installations and nuclear transports, nuclear insurance or the early notification of nuclear accidents.

Finally, it has been pointed out that no longer are the obligations of criminalisation of certain practices created in the international legal order exclusively through treaties. The recent years have seen the reinterpretation of the powers of international organisations to impose such obligations upon their member states, of which the maximum example is to be found in the resolutions adopted by the UNSC to counter terrorism and the proliferation of nuclear weapons to nonstate actors. This process has occurred silently and without opposition and it has created opportunities that are yet to be explored. This paper has put forward some thoughts on how these newly discovered powers might be used to improve international criminal nuclear law.

Notes

1 The only ‘regional’ body with the power to impose an obligation of criminalisation of certain practices is the EU (including the European Communities).

2 However, the importance of the adoption of international criminal procedural rules within nuclear law cannot be overstated (as a crucial element to guaranteeing the *effet utile* of the substantial provisions), nor should one forget the existence of such provisions in the Convention on the Physical Protection of Nuclear Materials and in the International Convention for the Suppression of Acts of Nuclear Terrorism.

3 ‘Legality of the use of by a State of nuclear weapons in armed conflict’, available at http://www.icj-cij.org/docket/files/93/7407.pdf.

4 Available at http://www.un.org/law/icc/index.html.

5 Available at http://www.iaea.org/Publications/Documents/Infcircs/Others/inf274r1.shtml.

6 Article 1(a) of the CPPNM defines 'nuclear material' as: "plutonium except that with isotopic concentration exceeding 80% in plutonium-238; uranium-233; uranium enriched in the isotope 235 or 233; uranium containing the mixture of isotopes as occurring in nature other than in the form of ore or ore-residue; any material containing one or more of the foregoing".

7 The CPPNM has been ratified by most of the states for which the regime could be most relevant, but it has not yet achieved the numerical success of other treaties. Notable exceptions include Iran and North Korea.

8 Available at http://untreaty.un.org/English/Terrorism/English_18_15.pdf.

9 The only nuclear weapon states to have ratified this convention so far were Russia and India.

10 Defined by Article 1(1) as: "nuclear material and other radioactive substances which contain nuclides which undergo spontaneous disintegration (a process accompanied by emission of one or more types of ionizing radiation, such as alpha-, beta-, neutron particles and gamma rays) and which may, owing to their radiological or fissile properties, cause death, serious bodily injury or substantial damage to property or to the environment."

'Nuclear material' is defined as: "plutonium, except that with isotopic concentration exceeding 80 per cent in plutonium-238; uranium-233; uranium enriched in the isotope 235 or 233; uranium containing the mixture of isotopes as occurring in nature other than in the form of ore or ore residue; or any material containing one or more of the foregoing; whereby 'uranium enriched in the isotope 235 or 233' means uranium containing the isotope 235 or 233 or both in an amount such that the abundance ratio of the sum of these isotopes to the isotope 238 is greater than the ratio of the isotope 235 to the isotope 238 occurring in nature."

11 Defined by Article 1(4) as: "any nuclear explosive device; or any radioactive material dispersal or radiation-emitting device which may, owing to its radiological properties, cause death, serious bodily injury or substantial damage to property or to the environment."

12 Defined by Article 1(3) as: "Any nuclear reactor, including reactors installed on vessels, vehicles, aircraft or space objects for use as an energy source in order to propel such vessels, vehicles, aircraft or space objects or for any other purpose; [and] any plant or conveyance being used for the production, storage, processing or transport of radioactive material."

13 It is interesting to note that the NTC added a new limitation to the discretionary margin of contracting parties in this domain: Article 6 stipulates that the crimes foreseen in the NTC shall "under no circumstances [be justified] by considerations of a political, philosophical, ideological, racial, ethnic, religious or other similar nature."

14 'Means of delivery' is defined in this resolution as "missiles, rockets and other unmanned systems capable of delivering nuclear, chemical, or biological weapons, that are specially designed for such use."

15 Available at http://untreaty.un.org/ilc/texts/instruments/english/conventions/1_1_1969.pdf.

16 Official Journal L 164/3, 22/06/2002. A 'framework decision' is equivalent in its effects to a directive adopted by the European Community – it is binding on the member states and defines the general parameters to be implemented by each member state in its own legal order.

17 For unknown reasons, the framework decision imposes criminal sanctions for research into chemical or biological weapons, but not for nuclear weapons. Other practices mentioned in Article 1(1) might also be relevant for the dimension of the use of nuclear weapons by terrorist groups, but they are not differentiated from the use of any other weapon.

18 Council Common Position 2005/329/PESC of 25 April 2005 relating to the 2005 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, O.J. L 106/32, 27/04/2005, Article 2(b)(13).

19 'EU Strategy against proliferation of weapons of mass destruction', adopted by the Council of the European Union on 12 December 2003, available at http://www.consilium.europa.eu/uedocs/cmsUpload/st15708.en03.pdf. See also Council Common Position 2005/329/PESC, cited above, Article 2(b)(21).

20 All French legislation mentioned herein is available at www.legifrance.gouv.fr.

21 It should be noted that the infringements foreseen in Articles 1333-9 and 1333-10 are the only ones applicable to nuclear material held in military facilities (Article L.1333-14).

22 These are not, *stricto sensu*, rules of criminal nuclear law, since there is no distinction in relation to the transport of less dangerous goods.

23 Law-Decree 48/95 of 15th March, last revised by Law 16/2007 of 17th April, available in Portuguese at http://www.pgdlisboa.pt/pgdl/leis/lei_mostra_articulado.php?nid=109&tabela=leis&ficha=1&pagina=1.

24 Available in Portuguese at http://www.dre.pt/pdf1sdip/2006/02/039A00/14621489.pdf.

25 Available in Portuguese at http://www.dre.pt/pdf1sdip/2003/08/193A00/53985400.pdf.

26 Strictly speaking, according to the definition retained in the introduction to this paper, this is not a rule of 'criminal nuclear law', considering that the actions with a 'nuclear dimension' are not treated differently from others (which do not have such an inherent ultra-hazardous nature).

27 In other words, the limits of the sentence for the crime foreseen in Article 272 and 273 would be 4 to 13 years, or 6,5 to 19,5 years in case of 'release of nuclear energy'.

28 Except for the crime foreseen in Article 277(1)(c), when the action itself was negligent.

29 So broad, indeed, that it also includes weapons such as electric batons and 'automatically opening knives'.

30 Article 87: "1. Whoever, without authorisation, disrespecting legal conditions or the impositions of the competent authority, sells, transmits at any title or distributes by any means, mediates a transaction or, with the intention of transmitting possession or property, adopts one of the conducts foreseen in [Article 86], involving any equipments, military means and materials of war, weapons, devices, instruments, mechanisms, ammunition, substances or products [mentioned in Article 86], is punished with a jail term of 2 to 10 years.

2. The penalty foreseen in the preceding number will be of 4 to 12 years if: (a) the agent is a civil servant in charge of preventing or repressing the unlawful activities in question; (b) the agent is aware that the thing or things in question are destined to criminal groups, organisations or associations; or (c) the agent makes a living of such conducts." Article 87(3) foresees special circumstances which allow the mitigation or dispensing of the criminal penalty.

31 Austria, Czech Republic, Denmark, Hungary, Latvia, Romania and Spain.

32 Certain concepts would have to be carefully defined, *maxime* those of 'nuclear or radioactive material', 'nuclear/radioactive devices', 'nuclear facility' and 'components and instruments for the manufacture of nuclear or radioactive devices', possibly by reference to other documents.