

STUDIES

Insurance Coverage for Third Party Liability and Material Damage Arising From Nuclear Incidents Caused by Terrorist Acts

by the OECD/NEA Secretariat*

Introduction

The OECD Nuclear Law Committee first began looking at the impact of terrorist acts upon the nuclear liability insurance market in November 2001, shortly after the attacks which took place in the United States on 11 September of that same year. The Committee was concerned about the impact which terrorist acts might have on the ability of nuclear operators to obtain third party liability and material damage insurance coverage for nuclear incidents resulting from such acts.

While the major international nuclear liability conventions in force, the 1960 Paris Convention on Third Party Liability in the Field of Nuclear Energy and the 1963 Vienna Convention on Civil Liability for Nuclear Damage as amended by the 1997 Protocol to Amend the (1963) Vienna Convention, together with the legislation of many non-convention countries, exempt a nuclear operator from liability for damage caused by a nuclear incident directly due to an act of armed conflict, hostilities, civil war or insurrection, the prevailing view is that this exemption does not apply to acts of terrorism. This same view applies equally to the Convention on Supplementary Compensation for Nuclear Damage which, although adopted in 1997, has not yet entered into force.

Evolution in Insurance Coverage

The observer from the European Insurance Committee (EIC) had informed the Committee early on in its study of the matter that, unlike the risk of war, the risk of terrorist attacks on nuclear installations had historically been included in nuclear insurance policies. Insurers have always been aware of the latent threat of attacks against nuclear installations by opponents of nuclear energy and thus the threat of terrorism was not considered to be a new phenomenon. In addition, they had always considered the possibility that an accident caused by a terrorist attack could result in catastrophic damage, not only material damage, but third party damage as well.

What *was* considered to be a new phenomenon for insurers after the 11 September attacks was the possibility of simultaneous terrorist attacks on several nuclear installations which would completely exhaust all material damage and nuclear third party liability coverage. Such a risk is not unrealistic, given that nuclear installations are considered to rank among the principal terrorist targets.

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In the event of such attacks, the existence of the entire international nuclear insurance pooling system would be threatened as well as the existence of the actual pools concerned.

The attacks of 11 September 2001 therefore led the insurance industry to look much more critically at the risks to which it was exposing its capital and the extent to which it was willing to continue doing so. As a result, insurers are now generally unwilling to provide full third party liability or material damage coverage for risks of that magnitude. However, for some time now they have been exploring ways of solving the coverage problem which would enable them to maintain their responsibilities to nuclear operators while ensuring the protection of their own industry. For third party liability coverage, the solutions must take into account the fact that nuclear operators are obliged by law to maintain a specific amount of financial security (whether under international nuclear liability conventions or national legislation) which, of course, is not the case for material damage coverage.

In particular, the international nuclear insurance pooling system has been looking at whether insurance pools could join forces in order to make a meaningful amount of terrorism coverage available world wide, and it is now clear that, at least as regards material damage and related types of protection, operators can buy limited amounts of terrorism coverage, subject to additional premiums. As for third party liability, the extent to which terrorism coverage will be available to an operator in the amount required by its national law depends on several factors:

- the insurers' perception of the risk of terrorism in the country concerned (the United States and the United Kingdom are seen as more likely targets of terrorism than certain other countries);
- the strength/capacity of the national insurance market in the country concerned;
- the willingness of the national insurance market in the country concerned to assume terrorist risks altogether; and
- the legally imposed amount of operator liability in the country concerned (the higher the amount, the less likely it is that the available insurance will cover the entire amount).

It is true that in many countries today, terrorism risks are fully included in the insured limit under nuclear liability policies, but this is largely due to the fact that the operator's liability amount is relatively modest. It can be expected that following increases in operator liability amounts pursuant to recent amendments to the international nuclear liability conventions which are already in force or pursuant to the entry into force of new international instruments in the field, more insurance pools will be faced with a shortage of terrorism insurance capacity. This shortage is a matter that must be resolved by operators, insurers and governments together.

Part I. Financial Security for Third Party Liability

Legal Obligation to Cover Third Party Liability

As a first step, it is important to determine whether there exists, in general, a legal obligation to insure or otherwise financially secure third party liability in case of a nuclear incident.

Apart from Greece, Turkey, Australia, Ireland and Luxembourg, all countries confirm that there is a legal requirement in their country for an operator of a nuclear installation to maintain financial security in respect of its liability to third parties for damage resulting from a nuclear incident occurring at that operator's nuclear installation. The relevant national legislation is set out in Annex 1 attached

and the required financial security amounts are set out in Annex 2 attached. The legal requirement for an operator of a nuclear installation to maintain financial security in respect of its third party liability also applies to damage resulting from a nuclear incident during the transport of nuclear substances to/from that operator's installation.

Greece and Turkey each have only one 5 MW research reactor. Australia has a 10 MW research reactor and is currently commissioning a 20 MW research reactor. Neither Ireland nor Luxembourg has any nuclear installations at all. Not surprisingly, there is no legislation governing nuclear third party liability or financial security requirements with respect thereto in any of these five countries. Rather, these matters are governed by the principles of general tort law, although in Luxembourg a draft law on these matters does exist.

Almost all countries confirm that there is a legal obligation to have financial security for third party liability arising from an incident at a nuclear installation, or during the course of transport of nuclear substances. In some countries there are no exceptions to the financial security requirements (Belgium, Korea, Lithuania, and Slovenia). However, in others, exemption from financial security requirements is granted in particular circumstances:

- where the nuclear operator is the government or a government-owned entity (Austria, Canada, Germany, Norway and Switzerland); or
- where the nuclear installation itself is government-owned (Denmark, Finland, Norway, Spain); or
- where government guarantees the payment of compensation for nuclear damage (Austria); or
- where nuclear installations or nuclear substances are considered to be of very low risk, such as a teaching reactor (Czech Republic and the United States); or
- where only small quantities of nuclear material or radioactive waste are involved (the Slovak Republic); or
- where transport activities take place completely outside of Paris Convention countries (the United Kingdom).

In addition, although there are no “exemptions” from financial security requirements in the United States, a separate scheme exists for coverage of public liability arising from U.S. Government activities and those of its contractors in the event of a nuclear incident.

Forms of Financial Security to Cover Third Party Liability

In only a few countries is insurance the only acceptable form of financial security to cover third party liability obligations (Austria, Canada, Czech Republic and Slovenia). Most countries' national laws allow nuclear operators to financially secure their liability obligations by other means as well, such as a private guarantee, usually on condition that those means are judged acceptable by the appropriate authorities (Belgium, Denmark, Finland, France, Germany, Italy, Korea, Lithuania, the Netherlands, Norway, Romania, the Slovak Republic, Spain, Sweden, Switzerland, the United Kingdom and the United States). In practice, however, most nuclear operators resort to insurance to cover their liability entirely, even where other options are permitted (Belgium, Finland, France, Hungary, Italy, the Netherlands, Romania, the Slovak Republic, Spain, Sweden, Switzerland, the United Kingdom and the United States). In Lithuania, the sole nuclear operator is the State and it

maintains a special compensation fund to which it contributes from revenues gained from the sale of electricity. In Australia, the State-owned nuclear operator holds a public liability insurance policy but also enjoys the benefit of an indemnity issued by the Australian Government to cover third party damage.¹ In Korea, an indemnification contract may be entered into by the nuclear operator with the Korean Government under which the latter must provide financial security for those risks which are not covered by private insurance (e.g. nuclear incidents due to natural disasters).

Under German legislation, the operator of a nuclear reactor with power in excess of 495 MW/th must maintain financial security of 2.5 billion euros (EUR).² This amount is provided by a combination of private insurance and mutual guarantees furnished by the various companies involved in electricity production. A “Solidarity Agreement” concluded between the four leading electricity producers in Germany³ stipulates that the first tier of financial security shall be provided for by insurance of EUR 255 645 million, with the second tier of EUR 2 244 355 million being provided for by guarantees furnished by the partners under the Agreement. In addition, a further EUR 112 million is to be provided by these same partners to finance claims handling costs arising from a nuclear accident. The partners are to provide German nuclear power plant operators with the full amount of the second tier for each nuclear accident, regardless of whether the first tier is available, where neither the nuclear operator nor its parent company is in a position to provide compensation in the amount of that second tier.

Each partner is obliged to provide a percentage of the second tier calculated on the basis of the thermal power of its nuclear power reactors and where a power plant or shares therein are sold, the new owner must become a partner under the Agreement. Partners who have paid their contribution have a right of recourse against the liable nuclear operator although victims’ claims for compensation have priority over that right. In order to ensure that the partners’ guarantees are reliable, each partner is required to produce annually an official certificate of an accountant attesting to the fact that the partner’s available cash flow is twice the amount of its required contribution to the second tier.

In Germany, operators of reactors with lower thermal power and operators of other nuclear installations are required to maintain lower amounts of financial security, these amounts being determined according to the risks associated with each installation and to relevant regulations.⁴ These operators cover their liability exposure in respect of their installations and in respect of their transportation activities exclusively by insurance. Liability arising in connection with a State-owned nuclear installation (e.g. research reactors) may be covered by a State guarantee.

Third Party Liability Insurance

Where nuclear operators do maintain insurance to secure their third party liability, a distinction may be made between insurance that applies “per incident” or “per transport” and insurance that applies “per lifetime of the installation”. An example helps to clarify this distinction. Imagine a

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1. In Australia, the indemnity effectively indemnifies suppliers to the nuclear operator, providing a protection similar in effect to that afforded by the legal channelling of third party liability under the international nuclear liability conventions.
 2. See Section 13(3) of the Atomic Energy Act and Section 9 of the 1977 Nuclear Financial Security Ordinance, as amended in 2002.
 3. Energie Baden-Württemberg AG, Karlsruhe; E.ON Energie AG, München; *Hamburgische Electricitätswerke-Werke* AG, Hamburg; R W E AG, Essen.
 4. Detailed regulations are set out in the 1977 Nuclear Financial Security Ordinance, as amended in 2002.

nuclear operator which has insured its third party liability in respect of nuclear damage up to EUR 700 million. Five years after the commissioning of the plant, an incident takes place causing nuclear damage of EUR 200 million. The idea of “per incident” is that the insured amount is fully available for each and every incident that may occur so that in the example, the EUR 200 million damages will be paid and the nuclear operator will have to renegotiate payment of a premium in order to have the full EUR 700 million made available again for damage caused by any future incident.

The idea of “per lifetime of the installation” is that the insured amount is fully available during the entire life-time of the plant. However, when the insurer pays damages in case of a nuclear incident, the amount of these damages will be deducted from the insured amount. In the above example, this means that the EUR 200 million will be deducted from the EUR 700 million so that only EUR 500 million will be available for future incidents. The operator will therefore either be required to negotiate the reinstatement of the full EUR 700 million after the incident or, depending on the State of the installation following the loss, the government will have to assume liability for damage arising from for future incidents to the extent that the full EUR 700 million is no longer available through private financial security.

Where operators do maintain insurance to cover their third party liability obligations for nuclear damage, most countries indicate that insurance applies on a “per incident” or “per transport” basis (Austria, Canada, Czech Republic, France, Germany, Hungary, Italy, Korea, the Netherlands, Romania, the Slovak Republic, Slovenia, Spain, the United Kingdom and the United States). The operator is required to negotiate the reinstatement of the full policy limit, if necessary, after an incident (Finland, the Netherlands and Spain), or to renew its coverage within 60 days after an incident (Belgium). In Sweden, insurance may be obtained on a “per incident” basis but Swedish operators prefer the available alternative of obtaining insurance for an agreed amount to cover their liability, after deduction of damages paid out under that policy. In Norway, third party liability insurance applies on a “per incident” basis but this is of theoretical interest as nuclear facilities are all covered by State guarantees rather than by insurance.

Contrary to all other countries, in Germany,⁵ Switzerland and the United Kingdom, coverage is understood to be for the life-time of the installation. In reality, the distinction between the two types of coverage is not really significant, since insurers may not be prepared in either case to insure an operator once a catastrophic incident has occurred. In any event, such an incident would likely cause the permanent shut-down of that facility.

Generally speaking, certain risks are *excluded* from insurance policies simply because nuclear operators are not liable for third party damage resulting from those risks under applicable national legislation. This is usually the case damage caused by a nuclear incident resulting from an armed conflict or insurrection. However, even where nuclear operators *are* liable for nuclear damage resulting from specific risks under applicable national legislation, insurers may still exclude those risks from their third party liability policies where they are unable or unwilling to cover them. This is the case, for example, with nuclear damage caused by routine emissions of radioactivity. In their responses, Canada, Finland, the Netherlands, the Slovak Republic, Slovenia, Spain, Sweden and Switzerland distinguish between these two types of exclusions to greater or lesser degrees, but for the remaining countries the reasons behind the exclusion of certain risks are not always clear. Denmark and Lithuania indicate that since their nuclear installations are State-owned, the operators of those

5. In Germany, when coverage is reduced by more than 20%, the operator must obtain reinstatement of full coverage.

installations do not carry third party liability insurance.⁶ In Austria, financial security requirements do not extend to liability for damage resulting from war, armed conflict, civil war, riot or rebellion. The following is a list of the most frequently cited exclusions from nuclear third party liability insurance policies. Where a country has specified that the exclusion arises from the absence of liability on the part of the operator for damage caused by that risk, it is so indicated by an (*) and where it has specified that the exclusion arises from the inability or unwillingness of insurers to provide coverage for that risk, even if the operator is legally liable for it, then it is so indicated by (**):

- Third party damage caused by a nuclear incident resulting from an act of armed conflict, hostilities, civil war, insurrection and other similar acts of mass violence (Australia, Belgium, Canada*, Finland*, France, Germany, Italy*, Hungary, Korea (including military or usurped power), the Netherlands*, Romania*, the Slovak Republic*, Slovenia*, Spain*, Sweden*, Switzerland*, the United Kingdom, Ukraine*) or war only (the United States); According to the EIC, third party damage caused by acts of war is excluded from all insurance policies everywhere, although the definition of such acts may vary from country to country.
- Third party damage between CHF 500 million and 1 billion resulting from terrorist acts where financial security at an affordable cost is not available (Switzerland**); or, third party damage resulting from terrorist activities in general (Romania*); or, third party damage resulting from acts of terrorism or violence directed to the overthrow of the government in power (Australia).⁷
- Third party damage caused by a nuclear weapon or any explosive device utilising nuclear material (Canada**) or third party damage caused by the manufacture, supply, maintenance and use of any weapon or other instrument of war for purposes other than the peaceful uses of nuclear energy. Also, third party damage caused by arms or engines that are intended to explode through a modification of the structure of the nucleus of the atom (France). According to the EIC, third party damage caused by nuclear weapons is excluded from all insurance policies everywhere.
- Third party damage resulting from an incident caused by a grave natural disaster such as an earthquake, tidal wave, typhoon etc. (Czech Republic, Finland*, France, Germany, Italy*, Korea, the Netherlands**, Romania*, the Slovak Republic*, Slovenia*, Spain*, Sweden*, Switzerland*, Ukraine*).
- Damage to nuclear substances and to their packaging in the course of being transported and damage to other goods being transported on the same means of transport (Belgium, France);⁸ damage suffered by the means of transport on which the substances are being transported (Canada*, France, Slovenia*, the Slovak Republic*), the means of transport of which the nuclear installation forms a part (Canada*), or the place of storage incidental to the transport (Canada*).

6. In Lithuania, nuclear operators pay contributions to an independently managed fund which serves to compensate third party nuclear damage.

7. In Australia, nuclear operators hold a public liability insurance policy but also benefit from an indemnity issued by the Government. Unlike the former policy, the latter contains no exclusions.

8. In France, nuclear operators may include nuclear damage to the means of transport and nuclear damage to nuclear substances and to other goods being transported on the same means of transport in their insurance policy provided that they pay an extra premium and that they comply with specific conditions. The extent of coverage may vary from one operator to another.

- Third party liability for injury or damage to a person caused by a nuclear incident occurring as a result of the unlawful act or omission of that person with the intention of causing injury or damage (Canada*, Spain*,⁹ Slovenia*); third party liability for damage caused by intention, criminal act or fraud on the part of the operator (France, Korea, the Netherlands**).
- Third party damage for which claims are brought ten years or more after the nuclear accident has occurred (Korea, the Netherlands**,¹⁰ United Kingdom, Australia) unless otherwise provided by legislation (Canada*, the Slovak Republic*) or 20 years after the loss, theft, release or loss of possession of nuclear substances (Korea, France,¹¹ Switzerland**). In Canada, the Government agrees to reinsure coverage beyond ten years, up to the absolute time limit, if a national regulation were to be adopted extending the ten-year limitation period. In Switzerland, the Government will compensate third party damage up to CHF 1 billion if claims are brought beyond the ten-year time limit. According to the EIC, no nuclear insurer anywhere provides third party liability coverage for claims made more than ten years after a nuclear accident. Some do, however, offer longer periods of cover for damage resulting from lost/stolen material.
- Third party damage resulting from the operation of a nuclear installation without a licence or performing tests not conforming to the licence conditions (the Netherlands**, United Kingdom). According to the EIC, a licence is a prerequisite for insurance of a nuclear site, therefore insurance cover for an operator without a licence is not normal.
- Third party damage relating to routine emissions (Australia, Canada**, Korea, the Netherlands**); also, third party damage caused by small amounts of nuclear material assumed not capable of causing nuclear damage as established by the regulatory authority (the Slovak Republic*).
- Third party damage caused by any release of ionising radiation into the atmosphere or any other place where it would normally come into contact with third parties and where the quantities of radiation exceed the limits permitted by regulation or where, in the normal course of operation of a nuclear installation, the excess has been knowingly authorised by the operator or his delegate (France).
- Third party damage resulting from the final disposal of radioactive waste (Italy**, Slovak Republic*).
- Third party damage that takes the form of personal injury that is not bodily injury (Canada**).

9. In Spain, the law permits this exception, whereas the insurance policies do not mention it. Thus, the law enables the courts to declare that the operator is not liable in respect of damage to a person having intentionally caused an accident. If the courts release the operator from liability in this manner, it is not necessary to refer to the insurance policy.

10. Operators in the Netherlands are liable for loss of life and personal injury up to 30 years from the date of the nuclear incident, but as insurers do not provide coverage for more than 10 years, the Government covers third party liability claims if they are brought between 10 and 30 years after the nuclear incident.

11. In France, the loss, theft, release or loss of possession of nuclear substances must have occurred during transport. Claims for third party damage must be brought at the latest 20 years after the loss, theft or release of possession but the damage must have been notified to the insurer within 10 years after the cancellation or termination of the insurance policy.

- Third party damage resulting from injury to an insured's employees to the extent of any compensation paid through a workers', unemployment, disability or similar compensation scheme (Australia, Canada**, Spain*, the United States); also, damage arising from occupational disease or accidents suffered by the operators' employees in the course of their employment (Korea, the Slovak Republic**, Spain*).
- The cost of preventive measures taken at the nuclear installation itself (Korea) and expenses incurred in not complying with relevant legislation (e.g. the Disaster Management Act in Korea).
- Liability for damage suffered by the operator of the nuclear installation (Belgium, France, Korea and the Slovak Republic¹²), damage caused to the installation itself or to another nuclear installation on the same site, or damage to property on that same site used or intended to be used in connection with one of these installations (Belgium, Canada*, France, Korea, the United States); damage caused to goods not owned by the operator but in its possession for use at the site of the nuclear installation (Korea, the Slovak Republic**), all on the grounds that such liability is not related to damage suffered by third parties.

Third Party Liability for Nuclear Damage Caused by Terrorist Acts

While the legislation in most countries does not explicitly refer to it, liability for damage suffered by third parties as a result of a nuclear incident caused by a terrorist act is nevertheless imposed upon nuclear operators simply because terrorist acts are not a reason to exonerate the operator from such liability. Almost all countries confirm this (Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Italy, Korea the Netherlands, Norway, the Slovak Republic, Slovenia, Spain, Sweden, the United States,¹³ the United Kingdom, Ukraine and Switzerland). Ireland noted that “persons liable are likely to be, apart from the perpetrators, the nuclear operator (foreign) by reason of strict liability for extra hazardous operations, any persons whose negligence may have caused or permitted the incident.”¹⁴

However, not all countries impose liability upon nuclear operators for damage suffered by third parties as a result of a nuclear incident caused by a terrorist act. Examples of such countries are Australia, Lithuania, Romania¹⁵ and Ukraine. In Romania, nuclear damage caused by a terrorist act is covered by the government but in the other countries the question as to who is liable for such damage is not specifically governed by national legislation and would probably be determined by common law rules.

12. For the Slovak Republic, this would appear to be limited to loss of profits.

13. Provided, however, that the act of terrorism is not an act of war.

14. There is no legal requirement in Ireland to financially secure such liability.

15. In Romania, the Law on Civil Liability for Nuclear Damage exonerates nuclear operators from liability for nuclear damage if it is proven that the damage is the direct result of an act of armed conflict, civil war, insurrection or hostility. The Romanian authorities seem to adhere to a wide interpretation of the notion of “hostility” so as to cover terrorist acts.

Financial Security for Third Party Liability for Damage Caused by Terrorist Acts

Nuclear operators in countries having legislation that renders them liable for third party damage caused by a terrorist act normally financially secure that liability by insurance (Belgium, Czech Republic, Finland, France, Germany, Hungary, Italy, Korea, the Netherlands, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, the United Kingdom and the United States). Canada noted that before the terrorist acts of 11 September 2001, nuclear damage arising from terrorist acts would have been covered by private insurance under the operators' Third party liability policy. However, after these terrorist acts, the available insurance coverage was limited and it was decided to cover this risk both through private insurance and through government reinsurance.

In Denmark, there are only State-owned installations for which no financial security is required. In Norway, third party liability for nuclear damage caused by a terrorist act is covered by State guarantees rather than by insurance. In Ukraine, nuclear operators are not relieved from liability for third party damage caused by terrorist acts but since they are not legally obliged to obtain insurance to secure this risk, they would normally financially secure their liability through alternative means. However, as this is not done in practice, the Government will normally be bound to pay for such damage.¹⁶

Most countries confirm that, at least for existing liability amounts, full coverage for this particular risk is included in the overall coverage provided by the insurer (Belgium, Czech Republic, Finland, France, Germany, Italy, Korea, the Netherlands, Norway, the Slovak Republic, Slovenia, Spain and Sweden). Available insurance coverage for nuclear damage arising from terrorist acts has been limited, however, since 11 September 2001, in both Canada and Switzerland.

Where full coverage for that liability is not available under the operator's insurance policy, some countries have invented specific solutions. In Switzerland,¹⁷ the required financial security of CHF 1 billion is provided half by private insurers and half by Government insurance, directly to the operator. In Canada, insurers were able to continue to provide private insurance coverage during 2002, but for 2003 and 2004, insurers excluded this risk from their coverage, with the result that the Government reinsured 100% of the terrorist risk for those years. For the 2005 and 2006 policy years, the Government of Canada successfully negotiated with the insurers to provide 20% private insurance coverage for the terrorist risk, with the remaining 80% covered by Government reinsurance. In the USA, only part of the risk is provided by the private insurance market. US nuclear insurers have indicated that acts of foreign sponsored terrorism are fully covered under policies issued by them with no limit on the aggregate amount that can be paid out for such events, while acts of domestic sponsored terrorism are covered only up to an aggregate amount of 300 million US dollars for all such events under all policies. The Price-Anderson Act provides that on top of available insurance, a utility pool operates and makes available "retrospective premiums" from all operators, so that the Government does not assume the uninsured risk. It is also noteworthy that in the United States, the Terrorism Risk Insurance Extension Act (TRIEA) continues to support the availability of commercial insurance by sharing in the cost if, on an industry wide basis, it exceeds certain limits established by the TRIEA. This process was designed to give the market time to price terrorism insurance coverage realistically and to avoid the detriment to business that could occur from the lack of available terrorism insurance. Insurers covered by that act are prohibited from ceasing to cover terrorism risks.

16. See article VII of the 1963 Vienna Convention on civil liability for nuclear damage.

17. Private insurers provide half of the required financial security of CHF 1 billion + 100 million for interests and costs. The Government provides operators with insurance coverage of up to CHF 500 million + 50 million for interest and costs.

Part II. Coverage of Material Damage

Insurance of Material Damage

Fourteen countries have indicated that their nuclear operators regularly purchase one or more of the several types of insurance listed below (Belgium,¹⁸ Czech Republic, Finland, Germany,¹⁹ Korea, the Netherlands, Romania, the Slovak Republic, Slovenia, Spain Sweden, Switzerland, the United Kingdom and the United States):

- (a) material damage;
- (b) machinery breakdown;
- (c) clean-up expenses;
- (d) business interruption;
- (e) construction all risk (building/rebuilding nuclear facilities);
- (f) other types of non-liability insurance.

In the case of business interruption insurance in particular, Belgium, Italy, Slovenia, Spain, Sweden and the United Kingdom noted, either directly or indirectly, that their operators carry such insurance, with the Netherlands indicating that it is available but not often purchased, the United States indicating simply that it is available and Korea indicating that none is carried. Only Korea reported that its operators maintain other types of non-liability insurance referred to in (f) such as document and computer system coverage. France reported that there was no common insurance strategy amongst its nuclear operators regarding material damage and other such risks and that each operator makes its own decisions based on its risk assessment and available financial resources. Italy reported that nuclear operators carry insurance for material damage (“All Risks” policy) but not the other categories of risk. In Lithuania, there are no common legal requirements on insurance of material damage, thus the operator makes its own decision on this issue.

The amount of cover varies significantly based upon the nature, size and age of the installation in question and the type of activities in which the operator engages. In Finland, for example, overall insurance limits approximate EUR 1 billion. In Germany coverage for material damage/clean-up expense and for machinery breakdown is approximately EUR 410 million with a limitation of EUR 100 million for damage resulting from a terrorist act. In Italy, the sole nuclear operator maintains an “All Risks” insurance policy covering material damage in the amount of EUR 5 million. In Korea, material damage, machinery breakdown and clean-up expenses coverage are insured for around USD 1 billion and this includes other types of non-liability insurance. Nuclear operators in the Slovak Republic maintain “material damage/decontamination costs” insurance coverage with an annual limit of EUR 125 million including a EUR 5 million sub-limit for flood damage. In Slovenia, nuclear operators maintain “material damage/clean-up expenses” insurance with a limit of approximately USD 800 million, “machinery breakdown” coverage with a limit of USD 150 million and business interruption cover. In Spain, material damage/clean-up expenses/machinery breakdown policies are provided up to a total maximum of EUR 6 million. Swiss nuclear operators maintain “material damage” coverage ranging between CHF 833 and 1 500 million, depending on the characteristics of the particular installation and the insured’s preferences. In the United States, the maximum available

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- 18. Generally speaking coverage is 100% with both a deductible portion and an aggregate limit.
 - 19. “Construction all risk” coverage is obtained only where required, as is currently the case for local interim storage facilities for irradiated fuel rods.

property damage insurance is USD 2.75 billion and operators are required to purchase USD 1.06 billion of same although they usually purchase higher amounts. The maximum available amount of business interruption insurance is USD 490 million.

The risks normally *excluded* from such policies include war and warlike events, nuclear weapons, floods, earthquakes, volcanic eruptions, wear and tear, corrosion (stress and otherwise), insured's intentional act, and other standard exclusions for the insurance industry. Terrorist acts are excluded risks under material damage/decontamination cost policies in the Slovak Republic, under construction/all risk policies in Germany, under all casualty insurance policies in Sweden and are partially excluded under material damage policies in Switzerland.

Neither Canada nor the United Kingdom provided information on the types or amounts of insurance coverage actually maintained on the grounds that it is commercially confidential information, while Finland withheld information only on the amounts of coverage for the same reason. Denmark indicated that since its nuclear installation is State-owned, its operator does not carry any of the listed types of insurance. Lithuania specified that the operator is subject to no legal requirements with regard to insurance of nuclear risks and therefore it makes its own decision on this issue. At the present time, the operator (the State) does not maintain insurance with regard to most of the risks listed, but it does maintain insurance of the risks regarding to material damage where deemed reasonable.

Insurance of Material Damage Caused by Terrorist Acts

Most countries responded that full coverage for nuclear damage resulting from a terrorist act is not provided under operators' material damage policies and other similar types of insurance. In some cases only partial coverage is provided (Finland, France, Germany,²⁰ Korea, the Netherlands, Slovenia, Switzerland and the United Kingdom²¹), whereas in others no coverage is available at all (Belgium,²² Czech Republic, the Slovak Republic and Sweden²³). In Italy, full coverage for material damage resulting from a terrorist act is available under the "All Risks" policy which its operator has obtained (with exceptions in respect of damage resulting from the interruption of work, from lack of energy, from the alteration of products or from lack of controls) and in the Netherlands full coverage is provided under the policies normally purchased by nuclear operators. In the United States, it is presumed that full coverage for damage resulting from a terrorist act is available under material damage (and similar types of) insurance issued by nuclear insurers for both domestic and foreign-sponsored terrorist acts.

In countries where full coverage is not available, amounts of coverage vary considerably depending upon the risk assessment, the insurer's market capacity and the operator's view of the need to insure against this risk. In Belgium the proportion of coverage provided may range from 30-100% of the global coverage amount, in Finland it is approximately 30%, in France it may not be less than

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20. Partial coverage is provided under material damage/clean-up expenses and machinery breakdown policies, but not under construction all risk policies.
 21. It would appear that damage arising from a terrorist act is covered under these policies only where the act results in a fire or explosion.
 22. Terrorist acts are normally excluded risks under material damage policies but coverage may be purchased through a separately issued policy.
 23. Terrorist risks are excluded from casualty insurance policies, but an operator may purchase such coverage through a separately issued policy.

20% of the global cover and in all cases except the transport of goods, it may not be less than EUR 20 million. In Korea, the coverage is limited to up to USD 300 million. In Slovenia, coverage of only USD 100 million is available under the operator's material damage insurance policy. In Sweden, an operator may purchase up to approximately SEK 3 billion to cover all of its plants for a one year period. In the United Kingdom, insurance is only available for fire and explosion damage caused by terrorism. In Switzerland, material damage to nuclear power plants caused by terrorist acts is insured in two ways; The Swiss Nuclear Insurance Pool provides coverage up to CHF 500m/year for all nuclear power plants in Switzerland. In addition to this collective insurance, nuclear operators each have their proper insurance that may cover claims up to EUR 100 million. The situation in the United States is already described in the section entitled "Financial Security for Third Party Liability for Damage Caused by Terrorist Acts". It is not always clear how the operator protects itself against its uninsured risk exposure in cases where full coverage is not available. France, Finland, Korea and Sweden indicate that their operators would simply have to assume this risk without insurance protection, and Switzerland notes that its operators have a self-insurance scheme providing up to EUR 100 million. As noted above, the situation in the United States is already described in the section entitled "Financial Security for Third Party Liability for Damage Caused by Terrorist Acts".

Annex I

Legislation requiring Nuclear Third Party Liability Insurance or other Financial Security

1.	Australia	No existing legislation.
2.	Austria	Federal Act on Civil Liability for Damage by Radioactivity (Act on Nuclear Liability, 1999).
3.	Belgium	Law of 22 July 1985 on Civil Liability in the Field of Nuclear Energy, as modified by the Law of 11 July 2000.
4.	Canada	Nuclear Liability Act [R.S. 1985, c. N-28].
5.	Czech Republic	Act No. 18/1997 Coll. (Atomic Act).
6.	Denmark	Act No. 332 of 19 June 1974, as amended by Act No. 732 of 7 December 1988, Act No. 363 of 18 May 1994 and Act No. 433 of 31 May 2000.
7.	Finland	1972 Nuclear Liability Act as amended.
8.	France	Law No. 68-943 of 30 October 1968 on Civil Liability in the Field of Nuclear Energy, modified by Law No. 90-488 of 16 June 1990.
9.	Germany	1959 Atomic Energy Act as amended [sections 13 and 14] and the 1977 Financial Security Ordinance.
10.	Greece	No existing legislation.
11.	Hungary	Nuclear Energy Act [Act CXVI] of 1996 and Governmental Decree No. 227 of 1997.
12.	Ireland	No existing legislation.
13.	Italy	Act No. 1860 of 31 December 1962 on the Peaceful Uses of Nuclear Energy and Act No. 131 of 5 March 1985 authorising ratification of the 1982 Protocols to Amend the Paris Convention and the Brussels Supplementary Convention.
14.	Korea	1969 Nuclear Damage Compensation Act as amended, Article 5 and implementing Presidential Decree.
15.	Lithuania	Law on Nuclear Energy of 14 November 1996, No. I-1613, Chapter XI, Article 61.
16.	Luxembourg	No existing legislation.
17.	Netherlands	Nuclear Third Party Liability Act of 17 March 1979, as amended.
18.	Norway	Atomic Energy Act of 12 May 1972 nr. 28, as amended, Chapter III.

19.	Romania	Law No. 703/2001 on Civil Liability for Nuclear Damage, as amended by Law No. 470/2004. Governmental Decision No. 894/2001 on Civil Liability for Nuclear Damage.
20.	Slovak Republic	Act No. 541/2004 coll. on the Peaceful Use of Nuclear Energy (Atomic Act) of 9 September 2004, part VII, Chapters 29-30.
21.	Slovenia	Act of 19 April 1978 on Liability for Nuclear Damage. Decree No. 443-02/2001-1 establishing the amount of the operator's liability and the corresponding amount of insurance for nuclear damage.
22.	Spain	Nuclear Energy Act, No. 25/1964 of 29 April 1964, as amended, Arts. 45 et seq.
23.	Sweden	Nuclear Liability Act of 8 March 1968 (No. 45), as amended.
24.	Switzerland	Act of 18 March 1983 on Nuclear Third Party Liability and Implementing Ordinance of 5 December 1983, as amended.
25.	Ukraine	1995 Law of Ukraine on Use of Nuclear Energy and Radiation Safety, as amended. 2001 Law on Civil Liability for Nuclear Damage and its Financial Security. Decree of 23 June 2003, No. 953, on Compulsory Insurance of Civil Liability for Nuclear Damage.
26.	United Kingdom	Nuclear Installations Act 1965, as amended, Section 19(1).
27.	United States	Atomic Energy Act of 1954, as amended, Sections 170a, b and c; 42 U.S. Code 2210(a), (b) and (c).

Annex 2

Required Operator Financial Security Amounts for Nuclear Installations and Transport Activities²⁴

1.	Australia	No amount specified	
2.	Austria	Nuclear installations:	EUR 406 million + EUR 40.6 million for interest and costs
		Research installations and transport activities:	EUR 40.6 million + EUR 4.6 million for interest and costs
3.	Belgium	Nuclear installations and transport activities:	EUR 297.4 million
		Certain low risk facilities (e.g research installations):	EUR 74.3 million
4.	Canada	Nuclear installations and transport activities:	CAD 75 million (EUR 52.9 million)
5.	Czech Republic	Nuclear installations:	CZK 1.5 billion (min.) (EUR 51 million)
		Transport Activities:	CZK 200 million (min.) (EUR 6.8 million)
6.	Denmark	Nuclear installations and transport activities:	SDR 60 million
7.	Finland	Nuclear installations and transport activities:	SDR 175 million
8.	France ²⁵	Nuclear installations:	EUR 91.4 million
		Low risk nuclear installations and transport activities:	EUR 22.8 million

24. According to the EIC, the responses provided are not materially different from the observed practice of the nuclear insurance markets which it represents, although some differences were observed, particularly with respect to various sub-limits or additional limits for costs etc which have been omitted.

25. There are a number of additional financial security requirements in France. For the transport of nuclear substances, while in transit in France, the carrier must maintain financial security in the amount of EUR 22.8 million if the transport is covered by the Paris Convention and EUR 228.6 million if the transport is not covered by that Convention. In addition, for the international transport of nuclear substances not covered by the Paris Convention, the carrier must maintain financial security in an amount which must be specified in the certificate of financial security. Finally, for nuclear ships, the operator's liability amount is fixed at EUR 76.2 million and presumably it must maintain financial security in that same amount.

9.	Germany	Nuclear installations and transport activities:	EUR 2.500 million (max.)
10.	Greece	No amount specified	
11.	Hungary	Nuclear installations: Transport or storage of nuclear fuel:	SDR 100 million SDR 5 million
12.	Ireland	No amount specified	
13.	Italy	Nuclear installations and transport activities:	EUR 3.9 million
14.	Korea	Nuclear installations, nuclear material (depending upon its size, risk and nature):	KRW 10 million – 50 billion (EUR 8.400 – 4.2 million)
15.	Lithuania	No amount specified	
16.	Luxembourg	No amount specified	
17.	Netherlands	Nuclear power plants and storage facilities: Enrichment facilities and closed nuclear power plants: Research reactors and transport of irradiated nuclear fuel: Transport of all other substances:	EUR 340 million EUR 45 million EUR 22.5 million EUR 8-13.5 million
18.	Norway	Nuclear installations and transport activities: Exceptional cases, nuclear installations and transport activities:	SDR 60 million SDR 5 million (min.)
19.	Romania	Nuclear installations: Research reactors, radioactive waste repositories and spent nuclear fuel: Transport of spent nuclear fuel: Transport of nuclear materials:	SDR 300 million SDR 30 million SDR 25 million SDR 5 million
20.	Slovak Republic	Nuclear installations: transport activities/installation:	EUR 75 million EUR 50 million
21.	Slovenia	Nuclear installations: Research reactors: Transport activities:	SDR 150 million SDR 5 million SDR 20 million

22.	Spain	Nuclear installations: Low risk nuclear installations and transport activities:	EUR 150 million EUR 6 million
23.	Sweden	Nuclear installations: Installations for production, treatment, storage and transport or unirradiated uranium: Other transport activities:	SDR 300 million SDR 10 million SDR 10 million (min.)
24.	Switzerland	Nuclear installations and transport activities: Transit across Switzerland:	CHF 1 billion (EUR 645.9 million) + 100 million (EUR 64.6 million) for interest and costs CHF 50 million (EUR 32.3 million) + 5 million (EUR 3.23 million) for interest and costs
25.	Ukraine	Nuclear installations:	SDR 150 million
26.	United Kingdom	Nuclear installations and operator transport activities: Low risk facilities (e.g. research reactors):	GBP 140 million (EUR 204 million) GBP 10 million (EUR 14.6 million)
27.	United States	Commercial power reactors rated at or above 100 000 kW(e): Commercial power reactors rated at less than 100 000 kW(e) and transport activities	USD 300 million (EUR 248.7 million) + the sum of a pool comprising a maximum of USD 95.8 million (EUR 81.7 million) per reactor, totalling approximately USD 10 billion + 5% surcharge if claims/legal costs exceed this amount Amounts determined by the US/NRC + government guarantee for excess damage up to USD 500 million (EUR 415 million)