

ITALY

WORKING PAPER

**BANNING THE PRODUCTION OF FISSILE MATERIAL TO PREVENT  
CATASTROPHIC NUCLEAR TERRORISM**

1. Fissile materials – essentially plutonium (Pu) and/or highly enriched uranium (HEU) enriched to over 20 percent  $U^{235}$  – are the physical core of any nuclear weapons (NWs) or other nuclear explosive devices (NEDs). Thus, controlling fissile material, as well as the systems for its production (namely uranium enrichment and spent fuel reprocessing), is vital in preventing catastrophic nuclear terrorism and in providing the basis for any comprehensive nuclear disarmament and non-proliferation regime. The early achievement of such a “Fissile Material Cut-off Treaty (FMCT)” was firmly demanded among the commitments made by the nuclear-weapons States (NWSs) at the 1995 Non-Proliferation Treaty (NPT) extension conference and the 2000 NPT Review Conference.
2. This paper concerns the nexus between the FMCT and any serious comprehensive effort to prevent nuclear proliferation and hence to reduce the possibility of catastrophic nuclear terrorist attacks. In particular, the paper will argue that the evolution of nuclear proliferation networks represents the potential start of a new era, in which the same global fissile material might be vulnerable to diversion, theft or sale. It is estimated that existing quantities of HEU and Plutonium globally stockpiled could produce more than 50,000 nuclear devices.
3. The issue of nuclear terrorism is addressed by UNSC Resolution 1540 and by the International Convention for the Suppression of Acts of Nuclear Terrorism. Both these documents request all States, inter alia, to adopt and enforce appropriate effective domestic legislation to prohibit any non-State actor to manufacture, acquire, possess, develop, transport, transfer or use nuclear weapons and their means of delivery. The efforts to dispose of fissile material through arrangements such as the Trilateral Initiative (IAEA, Russia, USA), the G8 Global Partnership and other “blending down” activities of excess HEU are also relevant to nuclear terrorism prevention.

4. Nuclear terrorism is probably the least understood of all contemporary nuclear threats, and the countermeasures implemented so far may be less than optimal. It is hardly reassuring that possession of nuclear weapons by terrorist groups has not been established. Terrorist groups however have not hesitated to use the most lethal means they could get hold of; it is difficult to believe that they would hesitate in doing so in the future. The present security enforcements and nuclear threat responses are often driven by worst-case scenarios and perceptions of vulnerability. Furthermore, these efforts tend to emphasize demand-driven proliferation, namely the possible quest for NEDs or NWs or weapon-usable nuclear materials, by state and non-state actors, such as terrorists.

5. To launch a nuclear attack, terrorists must first obtain a nuclear weapon. They could do this in two ways: by stealing it or buying it. A third possibility also exists, however: to build a crude NED. All three pathways pose significant constraints to terrorists: the barriers against the stealing or the buying of intact NWs, and hence their successful detonation (specialized security codes and arming-firing devices on most NWs may prevent non-state actors from detonating), appear extremely difficult to surmount. Therefore, the last usable option for non-state elements is to build at least a crude NED. No terrorist organization currently has the ability to produce fissile materials, and hence terrorists would have to acquire already made HEU or Pu. It should be noted that, if non-state actors have sufficient quantities of un-irradiated, or “fresh”, HEU, the production of a crude gun-type NED could be within their reach, since terrorists have far less stringent requirements than nations do in terms of safety, security reliability, yield or delivery constraints.

6. Furthermore, it is worth underlining that it is an extremely challenging task to detect illicit fissile materials at borders, or in a busy urban environment, especially in the case of fresh HEU (which also involves limited health hazards in its handling). Therefore, the production of a crude NED might go undetected. It is, therefore, evident that, if the international community wants to effectively prevent nuclear terrorism, it must emphasize and act on the supply side of the problem. To terrorists and non-state actors in general, as we have mentioned above, difficulty in access to HEU or Pu is likely to constitute the single most important obstacle to their plans. Denying terrorists the fissile material by increasing supply-side security measures on the declared facilities in NWSs, where weapons-usable material is being or could be produced, by banning the current (if any) and future production of these materials, by reducing the global stocks of fissile material and securing those which remain, could be the best and most effective of all nuclear terrorism countermeasures.

7. Yet, there exists another compelling counter-terrorism argument for a worldwide ban on the production of fissile material by speedily pursuing an FMCT and hence calling for the Conference of Disarmament (CD) in Geneva to commence negotiations on an FMCT immediately: one can expect that nuclear proliferation networks, that are either state-based or are the product of non-state actors, will eventually intersect and/or adopt some of the characteristics and behaviour generally associated with the “dark underside” of globalisation, like the existing global networks of organized crime, drugs procurement, illicit arms- trafficking, etc.

8. If this turns out to be actually true, one could expect that, in such an environment, nuclear proliferation networks might produce the greatly feared “nexus” between global fissile material stockpiles and terrorist organizations with nuclear ambitions. Indeed, in an ideal “organized crime paradigm” everything may be potentially stolen or smuggled by threatening or buying human beings, and hence the nuclear establishments of the NWSs may also be vulnerable to insider threats.

9. It is not likely that terrorist groups could reach HEU or Plutonium production capabilities. However all measures should be taken to prevent that such groups get hold of weapons-grade fissile materials or credibly declare their possession. In addition to reduction and safe storage, a ban on production of weapons-grade fissile material would prevent terrorist groups from acquiring nuclear capabilities. **Appropriate language indicating that an FMCT would reduce the risk of nuclear terrorism by curbing the possibilities of an illegal diversion of fissile material should be included in the text of a treaty.**

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