



IAEA Scientific Forum 2007

# 'Understanding Clandestine Nuclear Procurement Networks'

Mark Fitzpatrick

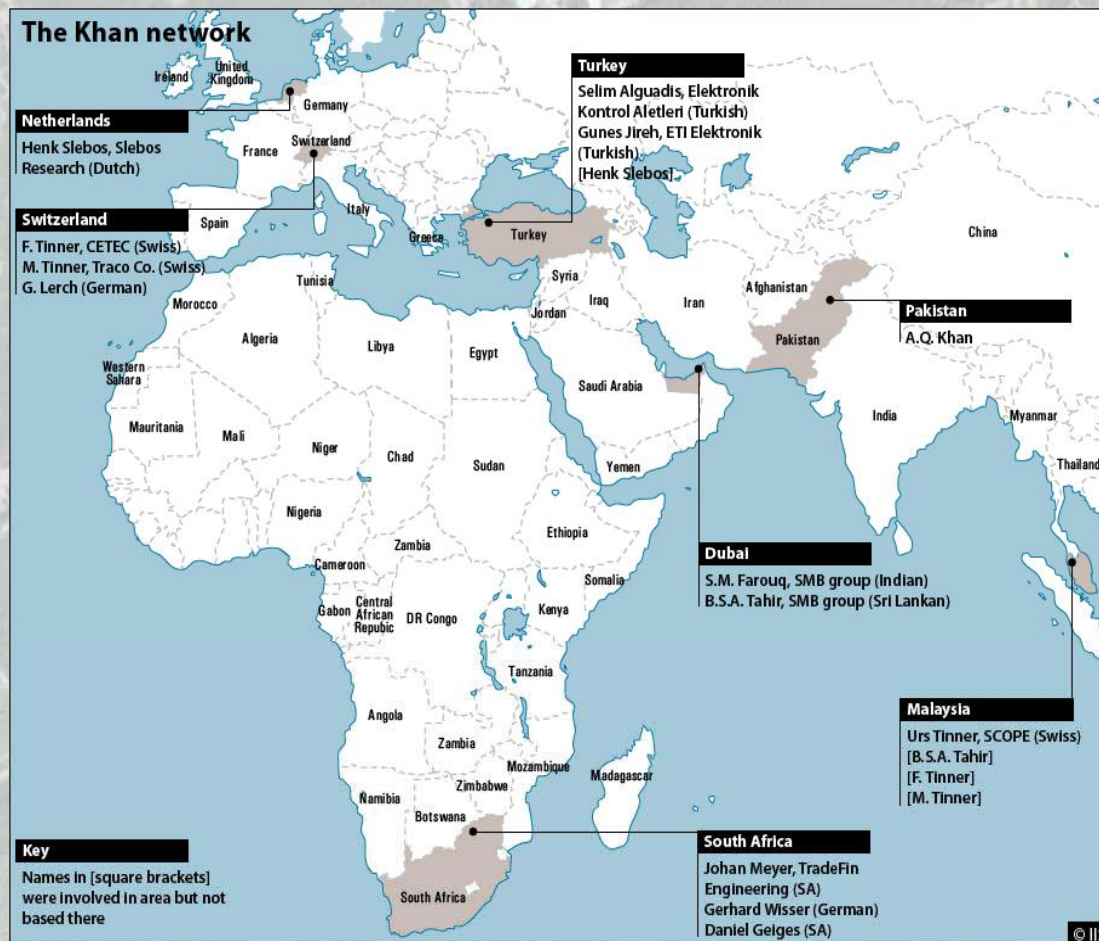
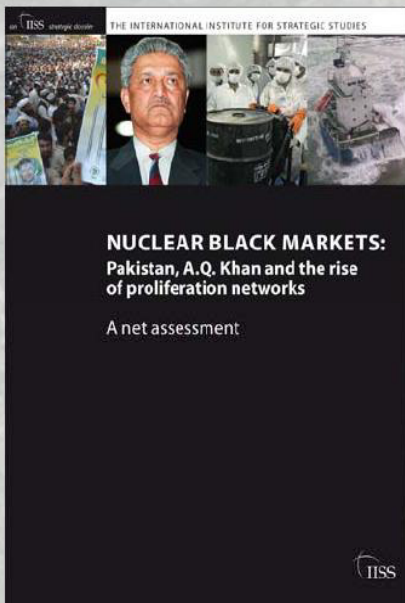
Senior Fellow for Non-Proliferation  
International Institute for Strategic Studies

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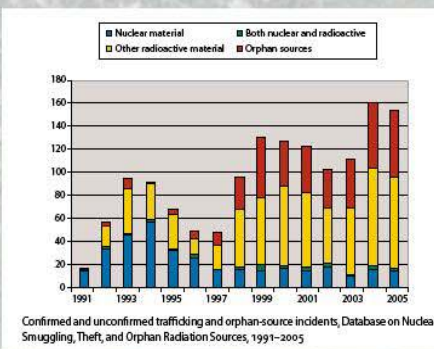
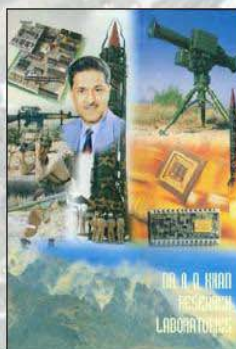
# NUCLEAR BLACK MARKETS: Pakistan, A.Q. Khan and the rise of proliferation networks

A net assessment



Incidents involving HEU and plutonium confirmed to the ITDB, IAEA, 1993-2006

Incident	Date	Location	Material	Amount, g
Seizure	24 May 1993	Vilnius, Lithuania	HEU (50%)	150
Seizure	Mar 1994	St Petersburg, Russian Federation	HEU (90%)	2,972
Seizure	10 May 1994	Tengen-Wiech, Germany	Pu	6.2
Seizure	13 Jun 1994	Landslut, Germany	HEU (87.7%)	0.795
Seizure	25 Jul 1994	Munich, Germany	Pu	0.24
Seizure	8 Aug 1994	Munich Airport, Germany	PuO <sub>2</sub> -UO <sub>2</sub> mixture	362.4
Seizure	14 Dec 1994	Prague, Czech Republic	HEU (87.7%)	2,730
Seizure	Jun 1995	Moscow, Russian Federation	HEU (21%)	1,700
Seizure	6 Jun 1995	Prague, Czech Republic	HEU (87.7%)	0.415
Seizure	8 Jun 1995	Ceske Budejovice, Czech Republic	HEU (87.7%)	16.9
Seizure	29 May 1999	Rousse, Bulgaria	HEU (72.65%)	10
Theft	Dec 2000	Katlsruhe, Germany	Pu	0.081
Seizure	16 Jul 2001	Paris, France	HEU (72.57%)	0.5
Seizure	26 Jun 2003	Sedzha, Georgia	HEU (89%)	~170
Loss	Mar-Apr 2005	New Jersey, USA	HEU	3.3
Loss	24 Jun 2005	Fukui, Japan	HEU	0.0017
Seizure	1 Feb 2006	Tbilisi, Georgia	HEU (89%)	79.5
Discovery	30 Mar 2006	Henningdorf, Germany	HEU	47.5



- The procurement network's modes operandi included various techniques that enabled its success and longevity
- Systematically using embassies abroad
  - Paying above market premium
  - Keeping one step ahead of export controls
  - Hiding a critical component in a long list of useless material
  - Buying a sample and the means to reproduce it
  - Using multiple connections and buyers to look for a given item
  - Using front companies
  - Falsifying the end user
  - Using multiple intermediaries
  - Enlisting the help of friendly countries
  - Involving countrymen
  - Making extensive use of personal connections

### ‘Nuclear black market’ :

Trade in nuclear-related expertise, technologies, components or material pursued for non-peaceful purposes and most often by secretive means.

Often the trade is not explicitly illegal, but exploits export control loopholes. ‘Black’ often means shades of grey.



## Global problem

At least a dozen countries have sought clandestine procurement of nuclear technology.

Every country that has developed nuclear weapons has used technology obtained elsewhere.

## Shifting mix of public and private actors

Until Khan started procuring for his own purposes, the black market suppliers were generally private merchants and the recipients were state actors.

Whereas state-to-state proliferation is generally hierarchically structured, Khan's network was a loosely interconnected set of



## Khan's network

Evolved from a state-controlled to a largely private criminal enterprise.

At least 30 foreign companies and middlemen did deals with Khan.

Some of the intermediaries also initiated deals on their own, not necessarily at Khan's instigation.

## Government involvement?

Khan cannot be characterised strictly as either a government representative or a businessman acting independently.

He was both, in varying degrees according to the circumstances.

Government complicity in his proliferation ranged along a spectrum.

Hard to distinguish Khan from his global network.

He was the deal-maker, but often the network appeared to act autonomously.

By time of the Libya deal, the network was a 'globalized supply chain'.



## Tricks of the Trade

1. Clandestine diplomacy.
2. Pay above market price.
3. Keep one step ahead of export controls.
4. Hide needle in a haystack.
5. Buy a sample and the means to reproduce it.

## Dozen Tricks of the Trade – cont.

6. Redundant purchases.
7. Front companies.
8. Falsify end user.
9. Multiple intermediaries and transshipment points.
10. Help of friendly countries.

## Dozen Tricks of the Trade – cont.

11. Special financial arrangements
12. Involve overseas countrymen
13. Personal connections
14. Purchasing foreign companies
15. Enlist foreign expertise

## Assessing the Damage

### Network not a nuclear weapons 'Wal-Mart'

- Sold centrifuge technology and, in one case at least, a weapon design.

### Does not minimize the negative impact.

- Precipitated the break-down of the US–North Korea Agreed Framework;
- Led to crisis over Iran's budding uranium enrichment capability;
- Libya could have had an atomic bomb by now.

## End of Khan network

Bush, Feb. 2004: Khan network rolled up.

None of 40 named associated worldwide are still in the proliferation business.

But some associates may be lying low.

Decapitating the nodes does not necessarily eradicate the enterprise.

## International reform efforts

Framework of export controls still contains serious gaps.

1. Many countries lack laws and regulations governing nuclear-related trade.
2. More countries have yet to implement controls.
3. Few countries are enforcing controls with thorough investigations and strict penalties.

Exporters may calculate that the risk of being caught is minimal.



## Action needed in four areas

1. Tighten export controls, including by rigorously implementing UNSC 1540.
2. Block supply of nuclear materials, including by ceasing production of HEU and separated plutonium.
3. Enhance intelligence collection and sharing, including through outreach programs to industries.
4. When all else fails, interdiction efforts.

Quelling demand will require fundamental changes to international system and role of nuclear deterrence.

When there is a demand, there is likely to be a supply.

Raising costs to would-be suppliers will drive most out of the market.



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