Prospects for Nuclear Disarmament in S. Asia

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Background

- Alarmingly soon after turning nuclear in 1998, S Asia was hit twice by serious crises--- the Kargil border war in 1999 and the terrorist attack on the Indian parliament in 2001, leading to an eyeball-to-eyeball confrontation between full deployed forces across the border
- Serious though they were, fortunately neither crisis escalated further. Since then Indo-Pak relations have improved and a dialogue is proceeding over the past 3 years on different fronts. It progresses in fits and starts but, for example, a bilateral Agreement addressing nuclear dangers was just signed last month.
- As of now, both governments have shown themselves to be responsible and capable possessors of nuclear weapons . Notwithstanding occasional bluster and threatening noises, they are unlikely to initiate deliberate nuclear attacks, barring extraordinary developments
- No accidents, pilferage, unplanned detonations or major Snafus and bloopers so far.

Despite the Thaw

- But the Kashmir problem still remains unresolved .
- There are increasing terrorist attacks on Indian soil, many of which the Indians suspect are supported, if not by the Pakistan government, then by rogue elements in its Army and intelligence service (ISI)
- Hence the possibility of renewed hostility between the two countries is not closed.
- Meanwhile there has been no interruption in the further build-up of their respective nuclear forces.
- India's nuclear doctrine, which speaks of a triad of air, land, and sea-based assets with multiple redundant systems, continues as its blueprint .
- In turn, President Musharraf has repeatedly assured his nation that its nuclear assets and its missile program would not be rolled back.
- Already ≈ 100 weapons are estimated to exist in the sub-continent
- Fissile material for making more are being steadily accumulated.

Unlike the NPT NW states, where…

- The process of arms reduction has been going on in both the US and (USSR) Russia through bilateral treaty.
- The overall size of the British and French arsenals also seem to have leveled off. UK has brought down its force to just 4 submarines carrying about 200 warheads.
- There is far less compelling reason in these countries for producing more weapon-usable fissile materials
- Indeed four NPT NW states have formally (and I believe, China informally) suspended production of FM for weapons.

Recent NW states

- By contrast new NW states like India and Pakistan feel that their nuclear forces (few dozen warheads each) are still at the growing stage.
- These countries feel they don't yet have an adequate arsenal for their security needs and don't want to cap their FM production yet.
- They do support the evolution of some form of a worldwide FMCT regime,
- but meantime, with the quiet confidence that FMCT will take some time to materialize, they are continuing to protect and improve their capability for making fissile materials, e.g. terms of the Indo-US deal

Estimated weapons grade plutonium production (in kg per year)

	CIRUS (Until 2010)	Dhruva	Breeder (after 2010)	Spent already	TOTAL stocks	Weapon Eqwt
Cumulative production (kg) so far	234	414		- 130	~ 520	104
Annual future production (kg)	9	20-25	135		~ 160	32

(The technical results here and the rest of this talk are from collaborative work with Z. Mian, A.H. Nayyar, and M.V. Ramana.

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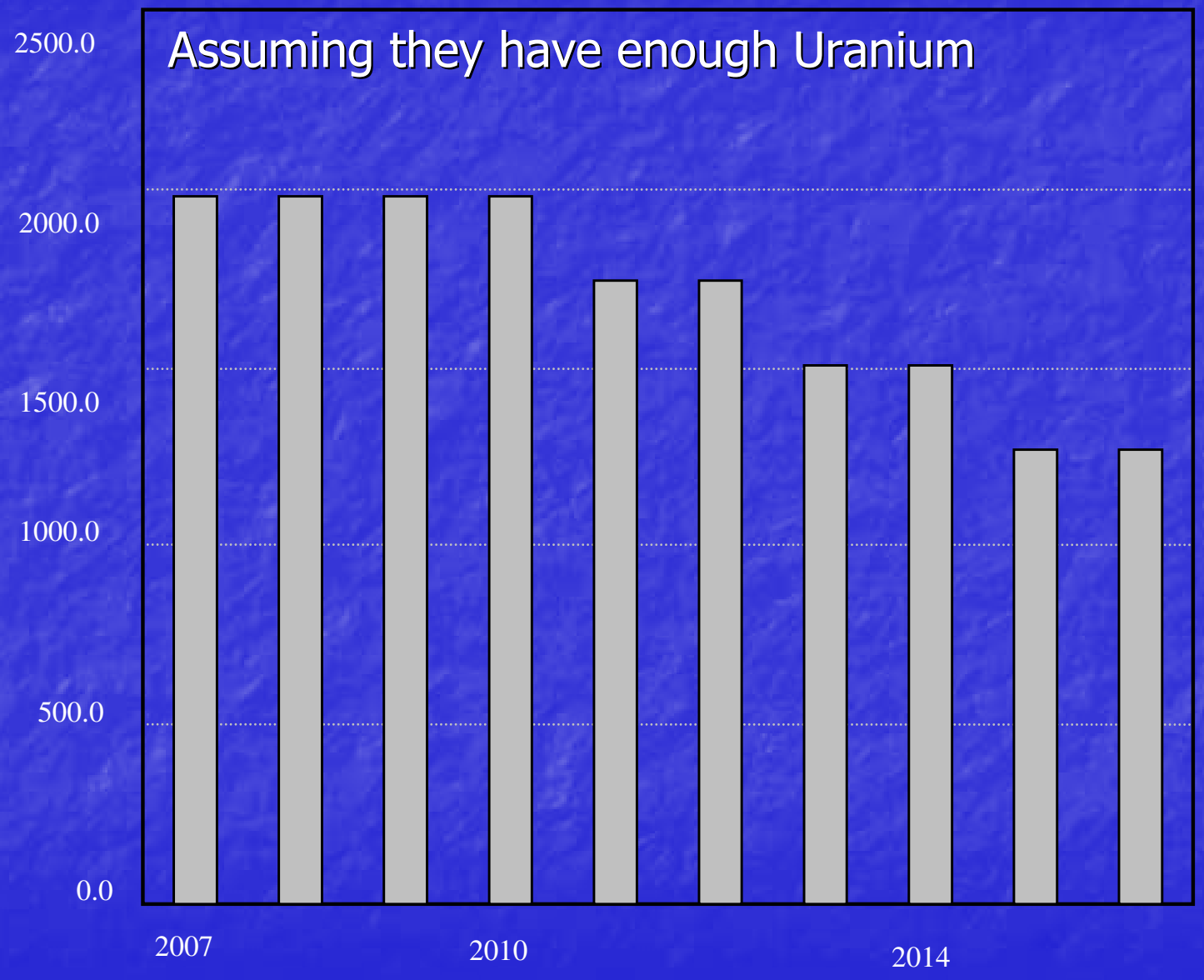
and International Panel on Fissile Materials, **www.fissilematerials.org)**

Annual Reactor–Grade Pu production (in kg) from Unsafeguarded PHWR

Existing stocks as of May 2006 is 11.5 tons

1 weapon ≈ 10 kg



Pakistan

- Pakistan's main source of fissile material so far has been the U enrichment facility at Kahuta
- These are mostly P2 type centrifuges of about 5 SWU each
- Estimated cumulative stock of WGr U at present 1,300 kg . That is about 65 warheads worth.

Future production

- Estimates are that Kahuta now may have a capacity of about 13,000 -22,000 SWU/yr
- At ≈160 SWUs per kg of 90% enriched U at a high tail fraction of 0.5% they can produce 80-138 kg of WGrU per year (4-7 weapons) at Kahuta alone
- There are reports of more centrifuges at Golra, Sihala and Gadwal
- Pakistan has also started a WGr Pu line at the 50 MWth reactor at Khushab, presumably to make smaller weapons to fit on their missiles
- Current stock of Pu should be about 90kg (18 weapons) and growing at 12kg per year
- New reactor being built at Khushab. Originally estimated it to be 1000 MWth which could generate 200 kg of WGr Pu per year. US and Pak officials have since claimed it is much smaller

The Build-up goes on

- Therefore, despite the Thaw , the nuclear arsenals on both sides are steadily growing.

  More fissile material is being produced and weapons assembled.

  Bigger & longer range missiles are being developed

  Command and Control measures getting consolidated.
- If one goes by the rate of growth of fissile materials on both sides, there will be well over a hundred nuclear weapons worth on each side within a decade.
- With arsenals of this size, clearly many potential dangers exist, of low probability but of catastrophic consequence if they do happen – related to physical accidents, unintended launch due to command failures or misjudgment, misuse by rogue elements, terrorists..
- These are not new to this audience and thoughtful people in this country have worried about them decades. So I wont elaborate on the dangers here.

Urgent need to start disarmament

- In S Asia these dangers are compounded by the geographical proximity of the two countries (a Ghauri missile, on a depressed trajectory from Lahore will take only 7 minutes to reach New Delhi).
- There is no time for any meaningful early warning or for mutual consultations to prevent a single act of accidental or hasty launch from escalating into a full scale nuclear war.
- Even a non nuclear missile attack can be misconstrued and trigger an unintended nuclear war.
- Given all this, the urgent need for nuclear disarmament in the region is self evident. What are the prospects of such disarmament ?

Is anyone worried about the growing S. Asian nuclear arsenal ?

- No groups with any significant weight either in S Asia or abroad!
- After the initial applause following the 1998 tests, there has been no serious discussion in the Indian political arena about our having gone nuclear, either in the parliament or in election campaigns.
- In policy making circles, there is no need felt to even slow down the growth of the nuclear arsenals, let alone get rid of them altogether. Any suggestion of total nuclear disarmament would be met with indifference if not derision.

The public sentiment

- Sadly, the S Asian public is also quite comfortable with, and indeed proud of having gone nuclear.
- True not just of the man in the street, but also much of the intelligentsia, including my fellow professors, bureaucrats, company executives, doctors …….
- I know some influential voices in India that would want even bigger arsenals.
- Serious concern about the growing nuclear force is largely limited to peace activists. But they have an impact only on a small fraction of the public and none on policy makers.
- [In fairness, public indifference bordering on complacency in the face of large nuclear arsenals was not invented by the S Asians ! We are only following the pattern set by earlier NWS]

Nature of the S Asian Arms control community

- India and Pakistan spent a long period as non-nuclear weapon states in a nuclear world, when they built up a substantial body of expertise on nuclear diplomacy and geo-political strategy, both in the Government and in think tanks, universities and the Press.
- But there is no corresponding technical arms control community in S.Asia outside the government. Even nine years after the 1998 tests there are barely a handful of such people between the two large countries put together.
- Practically no expertise on nuclear technology (civil or military) exists in universities. The larger science community, funded almost entirely by government grants, generally keeps away from all controversial issues.
- Department of Atomic energy is the sole source considered respectable by policy makers, whose technical inputs on the need for and feasibility of disarmament come solely from the Bomb makers.
- The international arms control community, which does have tons of such expertise, has largely replaced the S Asian nuclear crisis by those in Iran and N Korea as the "day's flavor". This is understandable given their priorities. But the S Asian problem remains as serious as before.

Dim Prospects right now for Total Disarmament

It is this combination of

- **A largely indifferent public and polity**
- **A lack of appreciation by security strategists**
  (i) of the dangers of nuclear weapons
  (ii) of the changed world view on the limitations of nukes as war-fighting weapons
- **A feeling that our nuclear enterprise has only "just started"**
- **A protected, revered and expanding nuclear technocracy,**
- **that makes the prospects of nuclear disarmament dim in South Asia.**

Aim for Capping the Arsenal

- Quite obviously, demanding full disarmament of South Asia at this stage will not yield results.
- But the more modest goal of capping the arsenal soon may have better prospects.
- South Asian nuclear forces are still relatively small . If further growth and consolidation could be stopped soon, it may be possible eventually to roll back the arsenal.
- It is the first step on the road to full disarmament.
- It will lower the various nuclear risks in S Asia
- It will also lower proliferation urges among other potential NW states

Deterrence

- But even capping the arsenal will not be easy to achieve. It requires evolving a consensus among people with different shades of opinion on the nuclear issue including the majority who feel that nuclear weapons are a necessary evil to deter our nuclear neighbors.
- Most of them are not hawks by nature. Their concern for deterrence, misplaced or not, must be addressed if a consensus is to be evolved to stop the onward march of nuclearisation.

Minimal Arsenal for Deterrence

- It is for this reason that I have been trying, for several years, to get a discussion going on how large an arsenal of warheads is really called for in India, even accepting the need for nuclear deterrence.
- More recently, help on this endeavor came from unexpected quarters - the Bush administration ! The Indo–US Deal generated widespread discussions in India, in which the desired size of our arsenal– until then a holy cow - was debated even by conservative columnists.
- The arguments I have been trying to push go, briefly, as follows:
- Deterrence relies on possessing a nuclear capability that can inflict, even after a first attack by the enemy, a second strike capable of causing "unacceptable" damage to the other side.

How much Damage is “Acceptable” ?

- Now, just a couple of 15-20 kiloton weapons dropped on Lahore and Karachi (or New Delhi and Mumbai) would kill half a million people immediately in addition to causing massive destruction, disease and panic.
- Surely, that should already be "unacceptable damage" to an even remotely responsible leadership and deter them from initiating adventures that could bring such a response.
- A leadership that finds this "acceptable" as a price for some political, ideological or conventional military gains, is beyond the pale of rationality .
- Such leadership, in any case, cannot be relied upon to feel deterred even by the prospect of a larger attack.

So, Who Needs a Hundred Bombs ?

- Given that a successful attack on a few major cities with a couple of 20 kiloton weapons each would inflict unacceptable damage, it is not clear why the notion of deterrence should call for dozens, let alone hundreds, of weapons.
- The present stockpile of a few dozen weapons will more than suffice if used "counter-value", even after taking into account due redundancy.
- It would be better to keep the arsenal minimal and concentrate one's energies in improving survivability, accuracy and reliability, so that a successful second strike capability is assured.

The China Factor

- India's nuclear strategy is of course designed also with China in mind.
- The de-nuclearisation of a region with three contiguous nuclear nations is obviously a very complicated matter.
- But the preceding arguments for capping the Indian arsenal hold just as much when applied to China as the adversary.
- The assured prospect of, say, Nanjing and Shanghai receiving a couple of bombs that would kill half a million people should be ample for deterring today's China, regardless of Chairman Mao's past rhetoric
- Furthermore, China is now focused strongly on pursuing its economic growth. It has plenty on its plate to translate this growth into equitable domestic prosperity. It is extremely unlikely to initiate any adventure against India that could invite nuclear retaliation against any of its major cities.
- In China's perception its main external threat comes not from India, but the US, NMD, Taiwan….

No Need to match China

- That China has hundreds of nuclear warheads does not negate the argument for capping the Indian arsenal at a much smaller number.
- The tenets of deterrence do not require that your arsenal match that of your adversary, but only that it be capable of inflicting damage that is unacceptable to the other side.
- Recall that China itself has been content to stay with just a few hundred weapons, even though the U.S. and Russia, which it views as its main adversaries, possess several thousands of them.

In Short,

- In summary, S. Asian arsenals are more than sufficient at existing levels for any reasonable requirements of deterrence.
- But, right now there isn't enough impetus in Indian or Pakistani civil society to muster the political push to stop further production of warheads or W-Gr fissile materials. But it is a goal worth aiming for – one that peace-loving people in S Asia and the world should support.
- To my Anti-nuclear activist friends:

  A call for capping is not a sanction for or approval of existing arsenals. But to reverse anything you have to first slow it down and then stop it. Total disarmament can be attempted only after that.

However

- It will not help for the US or other NW states to demand that India and Pakistan cap their arsenals. That would be counter-productive.
- Indeed, "capping" has become a dirty word in India because of such pressures (eg during the negotiations of the Indo-US Deal)
- "Who are the Americans (or the British or the French) to tell us to cap our strategic capabilities, when they have been holding much more than us for decades ?" , is an argument that is hard to counter, especially given post-colonial Third World sensibilities.
- We in S Asia have to do it in our own enlightened self interest. Major nuclear weapon states can only support such efforts quietly in the background.
- More importantly, arms control in S Asia will receive a real impetus from outside only when the US and Russia show a more visible and stronger commitment to continuing with their own disarmament program, down from current levels-- which the rest of the world even now finds un-understandably large.
- **THE END**

THE END

Projected reactor grade plutonium production from 2007 till reactors are safeguarded

Existing stocks as of May 2006 is 11.5 tons

Reactor	Proposed date of safeguarding	Plutonium production (kg) before reactor is safeguarded
Rajasthan-3	2010	475
Rajasthan-4	2010	475
Kakrapar-1	2012	712
Kakrapar-2	2012	712
Narora-1	2014	950
Narora-2	2014	950
Total		4274

Uranium Requirements and Pu production for India's Unsafeguarded Reactors after deal is implemented

Reactors	Burn up (MWd/t U)	Uranium demand (tons/year)	Reactor-grade plutonium (kg/y)	Weapon-grade plutonium (kg/y)
Dhruva	1000	29		26
Breeder				**135**
Seven reactors in power mode with partially depleted uranium cores and one 220 MWe reactor in production mode		467	1100	< 200
All eight reactors in power mode	7000	338	1265	--

Note: All reactors are assumed to run at 80% capacity factor