

How then are we to proceed? Do we on balance hold to a prejudice against civil plutonium and Russian contravention? Or, in pursuit of faster and cheaper arrangements for physical irreversibility now, do we join Minatom in using the disposition process to ease Russia's way into the closed fuel cycle, thereby opening the programme to attack and reversal on cost-effectiveness grounds? In my view a significant but incomplete bias against breed-up is pretty well the best that can be achieved for irreversibility in a Multilateral Agreement. Far better this than underwriting breed-up by going all-out for items (3) and (4) on the U.S. list of alternative approaches.

Note however that we've uncovered something of a contradiction between irreversibility of disposition as a political process and cost-effectiveness of disposition as a physical process: getting the job done as fast and cheaply as possible may increase the vulnerability of the enterprise in the long haul. We'll return to this when we look at the situation within Russia. But now let's move on to nuclear safety and environmental protection as further expressions of a proactive conditionality that aims to ensure the long-term sustainability of disposition. Interestingly, an emphasis on safety and environmental consideration favours the breed-up tendency in the U.S. list.

Safety and the Environment

Where irreversibility is ordinarily the preserve of politicians and attentive minorities until the media enter the picture, nuclear safety and environmental protection are issues-areas in which local and mass politics is more the rule. Considerations of safety and the environment may also be difficult to separate when civil nuclear activity is in question. Nevertheless, efforts on behalf of nuclear safety are likely to be keyed to technical reliability, process robustness and ability to withstand shock, and to standardized human performance. Action for environmental protection, on the other hand, will be based on considerations of ecosystem viability, design of human contrivance for minimum impact, and reliance on the precautionary principle which enjoins restraint when consequences cannot adequately be foreseen. Activity in both issue-areas, when fully developed, is not only well institutionalized but embedded in an enabling culture.

Donors need to be open to persuasion, but as indicated it is an initial supposition of this study that a culture of nuclear responsibility is not well established in the Russian Federation. Donors concerned to ensure the long-term sustainability of disposition should therefore seek to satisfy themselves on such matters in a civil discussion with their Russian counterparts. Again, to urge this kind of conversation is in no way to detract from the achievements of Russian science, the ingenuity of Russian engineering, or the diligence of individual nuclear operators. It is instead to say that donors owe it to themselves, to the programme, and ultimately to Russia to scrutinize the conditions in which disposition is to be done. Fail-safe engineering and exacting regulations are certainly to be relied upon, but only so far in Russia, as anywhere. Ultimately Russia's need is not unlike that of a market or a democracy that works well: success depends heavily upon the diffusion of values, knowledge, and shared understandings which all incline the individual to act to best effect. The richness of Russia's human resources bodes well in this regard, and yet the broad outlook is unpromising for a country whose aging population could decline by 30 per cent to around 100 million by 2050 (Feschbach, 2001, p. 16).

As of now, donor governments need to ask the Russian Federation to excuse them for asking impolite questions about Russia's internal affairs, and then go on to ask questions in order