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## Anshu Bharadwaj: Why, how and how much?

Liability provisions should be revised periodically to ensure they are adequate and aligned with international practice

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The government has recently drafted the "Civil Liability for Nuclear Damage Bill (CNLB), 2010" and plans to introduce it in Parliament. Several important issues have been raised in the public debate on the Bill.

### Do we need this Bill?

Most countries with nuclear power programmes have enacted legislation to cover the liability in the event of a nuclear accident and are also party to one of several international conventions such as the Vienna Convention, the Paris Convention, and the Convention on Supplementary Compensation (CSC). India stands out with neither a national liability legislation, nor membership in one of the international conventions. The government is fully responsible for compensation in the event of a nuclear accident in any of the current reactors.

Further, the Indian nuclear industry is now expected to grow several fold from the present 4,120 Mw, with a fleet of indigenous reactors and those built with international assistance. Such a large nuclear programme warrants legislation to cover all aspects of civil liability, including possible trans-boundary damage. In the absence of a civil liability law, it would be difficult for India to add a large number of

reactors as planned, and each reactor would have to be fully indemnified by the government.

### Who should own the liability?

A nuclear reactor consists of complex systems, each with materials, equipment, monitoring and control instruments procured from manufacturers from different countries. Their selection, pre-operation testing and subsequent performance are all subject to constant review by the plant operator and a regulatory body.

There have been two major accidents in commercial nuclear plants: Chernobyl (USSR) and Three Mile Island (US). In both cases, it was gross error on the part of the operations personnel at key stages during the

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overridden by operators' impulsive action. This highlights the need for continuing operator training that can never substitute for greater compensation.

In the event of an accident, assigning absolute, "no fault" liability to the operator enables the victim to claim compensation without delay and litigation. It also forces the operators to choose the best suppliers and ensure safe operation. The proposed Bill gives the operator the right to recourse, if the accident has resulted because of negligence on the part of the supplier of material and equipment. But, this is purely an internal matter between the operator and such supplier.

In India, as of now, the state-owned Nuclear Power Corporation of India Limited (NPCIL) is the only "operator" building and operating nuclear power reactors. The nuclear liability rests with NPCIL and indirectly with the government. With the entry of private operators into the nuclear industry, the logic of operator liability is unchanged in accordance with global practices.

### Is the liability amount sufficient?

The estimation of liability depends on the likely damage a nuclear accident could cause to human life, environment, property and economy.

The Chernobyl accident was a catastrophe — graphite fire, hydrogen explosion and fuel meltdown led to the destruction of the reactor and direct expulsion of vast quantities of radioactive content into the atmosphere. The cost of the Chernobyl accident has been estimated at hundreds of billion dollars<sup>1</sup>. In contrast, in the Three Mile Island accident, despite significant fuel meltdown, the containment structure was intact and allowed little release of radioactivity. Currently, reactors are so designed that the likelihood of fuel meltdown and breach of containment would be less than one in a million. The point is that liability laws cannot be designed to cope with a catastrophe. In the event of a catastrophe, civil liability ends and the government takes over like in case of major floods, tsunamis, cyclones and earthquakes.

The US' Price-Anderson Act (PAA) of 1957 was based on a theoretical study of radioactivity release from a 200 Mw reactor that ignored the presence of the containment structure and other safety features<sup>2</sup>. Despite the impressive advances in safety measures since then, the US is continuing with the same provisions as before. According to the PAA, the operator is now liable for up to \$300 million through American national insurers. The nuclear industry contributes up to \$11.9 billion and beyond this, the government bears the liability.

The Paris Convention, which includes most West European countries, has raised the operator's liability to euro 700 million. The installation state is expected to provide an additional euro 500 million and another euro 300 million would be available by collective state contribution. These amendments of 2004 are not in force yet since most countries have not ratified the convention, though they have signed it.

In 1997, the IAEA adopted the Convention on Supplementary Compensation for Nuclear Damage (CSC). It proposes a minimum of 150 million Special Drawing Rights, or SDRs (\$450 million) as operator liability. Additional amounts are to be provided through contributions from state parties collectively on the basis of installed nuclear capacity.

The liability provisions now prevailing in various countries show a wide range (Table 1). Each country has fixed the liability limits based on a combination of several factors, such as experience with nuclear power, perceived risk of accident, participation in any international agreement, etc.

## DEALING WITH LIKELY DISASTERS

Existing liability provisions in a few countries<sup>3456</sup>

