



Communication and Public Confidence in Nuclear Regulation: Public Information, Transparency and Stakeholder Consultation

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Abstract

Public confidence is a condition for the legitimate use of nuclear energy, and the regulatory body has a distinct part in earning it. Confidence cannot be created by communication alone; it depends on the regulator being competent, independent and honest, and on the public being able to see that this is so. This paper reviews the role of communication in nuclear regulation under three headings: public information, transparency, and stakeholder consultation. It summarises the international normative basis (IAEA safety standards, the Convention on Nuclear Safety and related instruments), the evidence on trust and risk perception, and the practices used by regulators, including proactive disclosure, event communication, public participation in licensing, and local engagement. Bangladesh, where BAERA regulates the first nuclear power plant project at Rooppur, is considered with reference to Pakistan and India. The paper identifies challenges facing newcomer regulators and makes recommendations for a communication and stakeholder engagement strategy.

Keywords: public confidence; risk communication; transparency; stakeholder consultation; public participation; regulatory body; nuclear safety; Bangladesh

1. Introduction

Nuclear technology arouses stronger public concern than its measured risks might suggest, in part because its potential consequences are severe, its risks are difficult for a layperson to assess, and its history includes accidents with long-lasting effects. Whether people accept a nuclear programme depends not only on the technical safety case but also on whether they trust the institutions responsible for it. The regulatory body sits at the centre of this trust relationship: it is the organisation that the public expects to be independent of both industry and government promotion, and to protect their interests.

International standards recognise this. The IAEA requires the regulatory body to inform and consult interested parties, and the Fukushima Daiichi accident has since shown how quickly confidence can be lost when a

regulator is seen as too close to the industry or unclear about risks. For newcomer countries, the issue is sharper still. The public has no experience of nuclear power, expectations are shaped by news of accidents abroad and by rumours, and the regulator itself is a new and unfamiliar institution.

This paper reviews communication and public confidence as a regulatory function. Section 2 discusses why it matters and what is known about trust. Section 3 outlines the normative basis. Sections 4 to 6 address public information, transparency and stakeholder consultation in turn. Section 7 covers how confidence can be assessed. Section 8 examines Bangladesh, Pakistan and India; the remaining sections present challenges, recommendations and conclusions. The paper is a narrative review based on international standards and published literature.

2. Why Communication Matters: Trust, Risk Perception and Legitimacy

Research on risk perception shows that people judge risk on more than probability and consequence. Factors such as dread, unfamiliarity, involuntary exposure and perceived lack of control raise concern, and nuclear technology scores high on several of them. Trust is fragile and asymmetric: it is hard to build and easy to destroy, and negative events carry more weight than positive ones (Slovic, 1993). A widely used formulation from the risk communication literature is that public concern depends on “outrage” as well as on technical hazard, and that outrage is reduced by openness, fairness, responsiveness and respect (Sandman, 1987).

For a regulator, four attributes are usually seen as underpinning trust: competence (the ability to do the job), independence (freedom from improper influence), integrity (honesty and consistency between words and actions) and care (visible concern for the public). Communication is how these attributes become visible. It is also a matter of legitimacy: in a democratic society, decisions about hazardous technologies should be open to scrutiny by those affected.

The Fukushima Daiichi accident illustrates the link. The independent investigation commissioned by the Japanese Diet concluded that the accident was rooted in institutional failures, including a regulator too close to the industry, and public trust in nuclear regulation fell sharply in Japan and elsewhere. Subsequently many countries reformed their regulatory bodies to increase independence and openness.

3. Normative Basis

The IAEA General Safety Requirements Part 1 (GSR Part 1) requires the regulatory body to promote, in a proper and open way, communication and consultation with interested parties and the public about the possible radiation risks associated with facilities and activities, and about the processes and decisions of the regulatory body. GSG-6 gives detailed guidance on communication and consultation with interested parties by the regulatory body, covering the establishment of a communication strategy, the identification of interested parties, methods and channels, and the handling of specific situations such as events and emergencies. GSR Part 7 addresses public information and communication during a nuclear or radiological emergency.

The Convention on Nuclear Safety provides for transparency mainly through its peer review process, in which national reports are made available for review. In the broader international setting, the UNECE Aarhus Convention establishes rights of access to environmental information, public participation in environmental decision-making and access to justice, and the Espoo Convention provides for transboundary environmental impact consultation; although Bangladesh is not a party to these regional instruments, they are influential reference points for good practice. The IAEA Milestones approach for introducing nuclear power lists stakeholder involvement as one of the infrastructure issues to be addressed from the earliest stages of a programme.

National law adds to these standards. In Bangladesh, the Right to Information Act, 2009, gives citizens a legal right to request information from public authorities, and environmental clearance rules require impact assessment for major projects. The regulator's own legislation, the Bangladesh Atomic Energy Regulatory Act, 2012, and its regulations, should be examined for their provisions on information and consultation.

4. Public Information

4.1 Principles

Good practice in public information rests on a few principles: it should be proactive rather than reactive; timely; accurate and consistent; understandable to non-specialists; accessible in the languages and channels people use; and honest about uncertainties and limits, including what the regulator does not yet know. It should also be two-way, so that the regulator learns about public concerns.

4.2 What to communicate

- The regulator's role, mandate and independence, and how it differs from the operator and from promoters of nuclear energy.
- How safety is regulated: the licensing process, the standards used, review and inspection activities and their findings.
- Regulatory decisions and their reasons, including licences granted, conditions imposed, and enforcement actions.
- Information on radiation, natural and man-made sources, and results of environmental and radiological monitoring.
- Safety performance of facilities, events and their significance, using scales such as the International Nuclear and Radiological Event Scale (INES) to give a consistent indication of severity.
- Emergency preparedness arrangements and what people should do in an emergency.

4.3 Channels and formats

Regulators use a mixture of channels: websites and document repositories, annual and topical reports, press releases and briefings, social media, information centres, publications for schools, public meetings and local media. In Bangladesh, Bangla-language materials are essential, as are approaches that reach people with limited internet access, such as community radio, local officials and educational institutions. Digital channels allow rapid dissemination but also make misinformation easy to spread, so regulators need monitoring and rapid correction capabilities.

4.4 Communication during events and emergencies

Communication in an event is a test of credibility. The guidance is to inform quickly, even when the information is incomplete; to say what is known, unknown and being done; to coordinate with the operator and other authorities so that messages are consistent while keeping the regulator's independent voice; and to give practical advice on protective actions. Pre-prepared messages, trained spokespersons, defined responsibilities and periodic exercises are needed. Delays or contradictions between authorities can do lasting damage to confidence.

5. Transparency

Transparency goes beyond providing information on request; it means making regulatory processes and decision-making open to scrutiny. Elements commonly identified are the publication of regulatory requirements and guides in draft form for comment; published safety assessments or summaries of the reasoning behind licensing decisions; publication of inspection reports and enforcement actions; open

reporting of regulator performance and resources; and clear rules on the interaction with the licensee, including meetings and correspondence. Independent peer review, such as IAEA IRRS missions, and publication of their reports, adds external credibility.

Transparency has limits. Information relating to nuclear security, physical protection and sensitive design details must be protected, and proprietary or commercially sensitive information may be subject to agreements with the vendor. A good approach is to make these limits explicit, to apply them narrowly and consistently, and to explain why particular information is withheld. Where the supplier country or vendor has confidentiality requirements, the regulator should work to ensure that these do not prevent it from giving the public an adequate account of the basis for its decisions.

Transparency also applies to the regulator's own conduct. Openness about errors, disagreements within the organisation, and lessons learned strengthens rather than weakens credibility, and rules on conflicts of interest and the relationship with industry should be public.

6. Stakeholder Consultation

6.1 Identifying stakeholders

Interested parties include those who may be affected by regulatory decisions, those with an interest or role in them, and those who influence opinion. The identification should be systematic and revised as the programme develops. Table 1 gives an indicative list with typical information needs and consultation methods.

Table 1. Stakeholder groups, information needs and consultation methods (indicative)

Stakeholder group	Typical interests and needs	Methods
Local communities near the site	Safety, health, environment, livelihoods, land, emergency arrangements	Local meetings, information centres, liaison committees, local media and leaders
General public	Understandable information on safety, radiation and the regulator's role	Website, media, social media, educational materials
Local and national government	Regulatory status, emergency roles, policy implications	Briefings, formal coordination, inter-agency committees
Parliament and elected representatives	Oversight, accountability, legislation	Annual reports, hearings, briefings
Civil society and NGOs	Independent scrutiny, environmental and social issues	Consultations on draft rules, dialogue forums, access to documents
Academia and professional bodies	Technical basis, research collaboration	Seminars, advisory panels, joint studies
Media	Accurate and timely information	Briefings, press releases, spokespersons, media training
Licensee and industry	Clear requirements, predictability	Formal meetings, published guidance, draft regulation consultation
International partners and neighbouring States	Notification, information exchange, peer review	Conventions, bilateral agreements, IAEA missions

6.2 Methods of consultation

Consultation methods range from providing information, through seeking comment, to genuine dialogue and, in some countries, shared involvement. Common methods include public comment periods on draft regulations and major licensing decisions; public hearings; advisory committees with external experts or citizen representatives; local information or liaison committees around nuclear sites; workshops and dialogue forums; surveys and focus groups; and open days and site visits. The choice depends on the legal context and culture, but a few conditions matter for any method: consultation should occur early enough to influence decisions, participants should have access to understandable information and adequate time, and the regulator should explain how inputs were considered and what changed as a result. Consultation that is seen as a formality can damage confidence more than none.

6.3 Consultation in the licensing life cycle

Table 2. Communication and consultation across the regulatory life cycle (indicative)

Phase	Communication focus	Consultation opportunities
Policy and framework	Explaining the regulator's role and independence, and the legal framework	Consultation on draft laws and regulations
Siting and environmental assessment	Site studies, hazards, environmental and social impacts	Public hearings, community meetings under the EIA process
Construction and commissioning	Inspection findings, hold points, readiness for operation	Local liaison committee, periodic public reports
Operation	Safety performance, events, environmental monitoring, periodic safety review	Continuing local dialogue, public reporting, comments on major changes
Emergency	Prompt, consistent information and protective action advice	Exercises involving the public and local authorities
Decommissioning and waste	Long-term plans and financial provisions	Early and continuing involvement of communities

7. Assessing Public Confidence

A regulator needs evidence on how it is perceived and whether communication is working. Approaches include periodic public opinion surveys on knowledge, attitudes and trust; monitoring of media and social media coverage; analysis of enquiries, complaints and requests for information; feedback from consultation participants; and review by independent bodies. Indicators should be tracked over time. Survey results should be interpreted with care, since support for nuclear energy and trust in the regulator are different things, and both vary with events. It is also worth remembering that the aim is informed, well-founded confidence rather than acceptance at any price: a regulator that gains trust by overstating safety or hiding problems will lose it in the long run.

8. Country Perspectives

8.1 Bangladesh

BAERA is a new regulatory body, and Rooppur is the first nuclear power plant in Bangladesh, with a large foreign involvement in its financing and construction. This context raises specific communication needs: explaining the separation between the regulator and the project-implementing organisations, addressing public questions on safety, the environment, spent fuel and emergency arrangements, and responding to misinformation. The Right to Information Act provides a legal basis for public access.

8.2 Pakistan

The Pakistan Nuclear Regulatory Authority (PNRA) regulates a long-operating programme and provides information through its publications and website.

8.3 India

The Atomic Energy Regulatory Board (AERB) publishes annual reports and safety documents, and public information and consultation around nuclear projects has been the subject of continuing debate in India.

Table 3. Comparative overview of communication practices (to be completed from verified sources)

Feature	BAERA (Bangladesh)	PNRA (Pakistan)	AERB (India)
Legal basis for information access	[verify]	[verify]	[verify]
Communication strategy / policy	[verify]	[verify]	[verify]
Publication of decisions and reports	[verify]	[verify]	[verify]
Public consultation on licensing	[verify]	[verify]	[verify]
Local liaison / information centres	[verify]	[verify]	[verify]
Public opinion surveys	[verify]	[verify]	[verify]

9. Challenges

- Technical complexity and specialised language, which make it difficult to explain issues in accessible terms without oversimplification.
- Low public familiarity with nuclear technology and radiation, and the influence of accidents and rumours from elsewhere.
- Misinformation and rapid spread of unverified claims through social media.
- A perception that a regulator is not independent, especially when the project is a national priority and the regulator is new.
- Confidentiality constraints associated with vendor information, security, and intergovernmental agreements.

- Limited communication capacity and specialised skills within the regulator, and competing demands from licensing work.
- Coordination between the regulator, the operator, and other authorities so that public messages are consistent while respecting each body's role.
- Reaching diverse audiences, including rural communities and people with low literacy, in appropriate languages.

10. Recommendations

- Adopt a written communication and stakeholder engagement strategy, endorsed at the top of the regulatory body, with defined objectives, audiences, roles and resources.
- Publish, in Bangla and English, the regulator's mandate, regulations and guides, licensing procedures, reports, inspection summaries and the basis for major decisions, and state clearly what is withheld and why.
- Consult on draft regulations and major licensing decisions with defined timelines, and publish how comments were considered.
- Establish sustained local engagement around the Rooppur site, for example an information centre and a liaison committee, and involve local authorities and community leaders.
- Prepare for event and emergency communication with trained spokespersons, pre-agreed roles among authorities, and exercises that include communication.
- Monitor media and social media, respond quickly to misinformation, and develop educational materials for schools and universities.
- Measure public awareness, trust and satisfaction periodically, and use the results to adjust the approach.
- Use international resources, including IAEA guidance, peer review missions, regional networks and exchange with other regulators, to develop communication capability.

11. Conclusion

Communication is a core regulatory function, and public confidence is an outcome that depends on the regulator's competence, independence, integrity and openness being visible. The international standards are clear that regulators should inform and consult interested parties, and experience since Fukushima Daiichi has underlined the cost of failing to do so. For BAERA and Bangladesh, the priority is to establish, before the plant begins operation, a credible communication and engagement practice: proactive public information in accessible language, transparency about decisions and their basis, and real opportunities for stakeholders to be heard. Further work should complete the comparative analysis with verified primary sources and assess the effectiveness of practices through public opinion and stakeholder data.

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