TELECOM REGULATORY AUTHORITY OF INDIA

Contribution to the Global Symposium for Regulators (GSR-25) Best Practice Guidelines "What does it take for regulators to become digital ecosystem builders?

Fostering Innovation in Regulatory Approaches:

Question 1: How can regulators cultivate an innovation-driven culture in regulatory work and decision-making? What new skillsets and mindsets do they need today?

Static regulatory models are inadequate in today's fast-evolving digital landscape. Regulatory philosophy should emphasize agility, technology neutrality and a principle-driven approach. TRAI has consistently promoted fair, balanced regulation across platforms, avoiding discrimination between traditional and emerging technologies. While emerging technologies offer new opportunities and services, any over regulation carries the risk of nipping it in the bud. Legacy technologies and networks face investment problems. Therefore, the evolving models may rely on light touch regulations, keeping intact the principles of transparency, non-discrimination and level-playing field.

Regulators should proactively engage with a broad set of stakeholders viz industry, academia, civil society and other government bodies, to co-design policies that are responsive and future-proof. A shift from "compliance-first" to "innovation-friendly" thinking is necessary and regulators need to see themselves as enablers of responsible innovation rather than mere enforcers of regulations.

Regulators need to develop expertise in emerging domains such as artificial intelligence (AI), blockchain, Internet of Things (IoT), cyber security and big data analytics. A shift towards collaborative, risk-tolerant and evidence-based regulatory mindset is essential for regulators.

A Regulatory Sandbox framework may be helpful to test new technologies, services and business models in a real-world environment with regulatory relaxations for a limited period.

Adapting and Enhancing Regulatory Capacity:

Question 2: How should regulatory mandates, capacity, and decision-making evolve to balance market innovation with digital inclusion and support broader social and economic policy goals? What institutional mechanisms can enhance regulatory responsiveness to emerging digital business models and evolving risks?

The dynamic and fast evolving landscape of the telecom sector demands a regulatory framework that not only fosters market innovation but also champions digital inclusion and aligns with overarching social and economic policy goals.

Regulatory mandates need to move beyond traditional command and control approaches towards more agile and principle-based frameworks. Instead of prescribing specific technologies or business models, regulations should be technology agnostic and need to focus on desired outcomes, such as universal service obligations with clearly defined and progressively increasing broadband speed targets (India's Bharatnet project, aimed at connecting villages, exemplifies this approach) and interoperability standards that encourage open ecosystems.

Regulators have to be equipped with multidisciplinary teams with expertise in emerging technologies (like 5G, 6G, IoT, and AI,) data analytics, cyber security, economics, and social sciences. The decision-making processes have to be transparent, consultative, and data driven. Open consultation, involving a wide range of stakeholders particularly onboarding of key/relevant stakeholders are essential to gather diverse perspectives and build consensus.

Regulators should work on the **Comprehensive IT Ecosystem.** TRAI is working on it for Data Reporting, Analytics and process automation for ease of doing business (EoDB). It is proposed to use AI/ML technologies for generating

data insights which will help regulator in knowing the data compliances in near real time, view non-compliance data, issue show cause notice (SCN), impose financial disincentives (FD) etc. The ecosystem will help stakeholders, to submit data comprehensively, automated data submissions (through data APIs), due-date reminder alerts, view & track data status, digital signatures, submit FD through online payments, schedule consumer outreach programme (COP), drive tests, and track various audits as per regulatory requirements, etc.

Collaborative Regulation: Regulators may form a joint committee of some key regulators. TRAI has formed a Joint Standing Committee of Regulators (JCoR) to study future regulatory implications in the digital world and to collaboratively work on future regulations. The members of the committee are Securities and Exchange Board of India (SEBI), Reserve Bank of India (RBI), Ministry of Consumer Affairs and TRAI .

Regulatory Convergence: Presently there is a fragmented set up and multiple agencies regulating and monitoring IT, Telecom and Broadcasting services. *Convergence of IT, Telecom and Broadcasting* sector and setting up of single regulator for all the three sectors will have several advantages like- a single regulator can establish a unified policy framework, simplifying the regulatory environment, reducing overlap between different sectors, promoting innovation and competition and reducing the complexity & cost of compliance for stakeholders. A converged regulator can efficiently manage spectrum allocation, ensuring optimal utilization and minimizing interference between different services. A single regulator can ensure a level playing field for all stakeholders, including telecom operators, broadcasters, and IT companies. Countries like UK have successfully implemented a converged regulatory framework.

Harnessing Transformative Technologies for Regulatory Excellence:

Question 3: How can regulators better leverage AI, big data, IoT, blockchain, and other digital technologies to enhance decision-making, compliance monitoring, and regulatory agility? What technology tools and applications

can regulators use to strengthen transparency, stakeholder engagement, and public trust?

Regulators can better leverage digital technologies to collect, analyze, and act on consumer feedback more effectively and efficiently. **AI and big data analytics** can process large volumes of consumer input from diverse sources—such as social media, online reviews, mobile apps, and surveys, to detect patterns, identify emerging issues, and prioritize regulatory responses. Digital platforms are used for public consultations and dissemination of regulatory information, thereby enhancing transparency and public trust in regulatory processes. Further, use of APPs and its promotion through Public Relations for stakeholder feedback will enhance stakeholder engagement.

The regulatory sandbox framework enables live testing of AI, IoT, and blockchain applications in telecom, ensuring that regulatory responses are grounded in practical insights and real-world data.

Technology Tools for Transparency, Stakeholder engagement and Public Trust:

- AI and machine learning algorithms can analyze vast datasets to identify compliance risks, predict market trends, and automate routine regulatory tasks. For instance, AI-powered platforms can assist in real-time regulatory research and change management, reducing human error and improving accuracy. These tools enable regulators to process complex information swiftly, facilitating proactive decision-making.
- A centralized, publicly accessible online platform can provide stakeholders with easy access to regulatory documents, consultations, decisions, and performance reports. Publishing regulatory data and decisions on open platforms enables public scrutiny and fosters trust.
- Regulators can leverage **AI-powered chatbots and virtual assistants** to provide instant responses, in simple and easy to understand language, to

common queries from stakeholders and the public, improving accessibility and efficiency.

- Utilizing **social media platforms** for proactive communication and public awareness campaigns can also enhance engagement, public connection and build trust.
- **Distributed Ledger Technology (DLT)** can help regulators enhance decision-making, compliance monitoring, and regulatory agility by providing real-time, tamper-proof access to data across multiple stakeholders. Through its transparent and immutable nature, DLT enables more accurate risk assessment, early detection of non-compliance, and automated enforcement of rules using smart contracts. It supports dynamic and responsive regulation by facilitating real-time audits and regulatory sandboxes, allowing authorities to adapt quickly to market changes. Overall, DLT strengthens regulatory oversight while fostering greater efficiency and trust in the system. Regulators may use Decentralized Digital Identity (DID) to verify users/entities without storing sensitive personal data centrally. It enhances privacy while ensuring compliance (especially in sectors like finance and health).
- APIs (Application Programming Interfaces) will enable seamless, real-time data exchange between regulatory bodies, institutions, and service providers. APIs allow regulators to access up-to-date information directly from regulated entities, reducing delays and manual reporting errors. This improves **decision-making** by providing timely, accurate data for analysis. For **compliance monitoring,** APIs can automate checks, flag anomalies, and integrate with RegTech tools to ensure continuous oversight. APIs also support **regulatory agility** by allowing quick updates to reporting requirements, and faster rollout of new policies. Overall, APIs create a more responsive, transparent, and efficient regulatory ecosystem.
- To improve customer experience, enhance transparency and empower mobile subscribers, Telecom Regulatory Authority of India (TRAI) has given

the mandate to the Telecom Service Providers (TSPs) to publish mobile network **coverage maps** on their websites. Coverage maps, also known as service area maps or network coverage maps, provide valuable insights into the availability and strength of network signals, internet connectivity, or other geospatial data in specific areas.

Cross-Border Cooperation for Building Digital Ecosystems:

Question 4: How can regulators leverage regional and international cooperation to foster harmonized regulatory approaches, knowledge exchange, and capacity-building?

In this digitally connected world, ICT regulators cannot function in isolation. Regulatory policies and approaches need to be harmonized to address cross-border issues effectively. As digital technologies transcend national boundaries, coordination among regulators is essential to ensure consistency, promote fair competition, protect consumers, and foster innovation. Harmonized frameworks help address challenges such as data privacy, cybersecurity, digital trade, and spectrum management, thereby enabling a more inclusive and resilient digital ecosystem. Therefore, the regional and international cooperation among the regulators is imperative.

Several Mechanisms can be leveraged by regulators to enhance regional and international cooperation. One such mechanism is through bi-lateral or multilateral agreements among regulators to formalize their cooperation on specific regulatory areas, setting clear objectives and mechanisms for collaboration among regulators. Also active participation in the activities of regional regulatory bodies would help in fostering collaboration, knowledge sharing and development of common positions among regulators within a specific region. Such regional bodies have members which have similar requirements and economies are of similar nature. Some of the regional regulatory bodies where TRAI gets involved are APT, SATRC, ASEAN etc.

The deliberations and discussions at regional and global level help in promoting interoperability and formulation of uniform standards to leverage economies of scale & volume development of technology at lower costs.

Participation in the activities of international organizations such as ITU, plays a central role in convening global discussions, developing international standards, and providing technical assistance to its member states by actively participating in all three sectors of ITU (Standardization, Development & Radiocommunication). The involvement of government and regulators in these international organizations on equal footing is always desirable.

Some of the other mechanisms can be:

Memorandum of Understanding (MoUs): Such agreements can establish frameworks for mutual cooperation on specific issues, facilitating information exchange and joint initiatives.

Joint Working Groups and Task Forces: Establishing dedicated groups to address specific challenges, can lead to focused and effective collaboration.

Regular Bilateral and Multilateral Meetings: Periodic meetings and dialogues provide opportunities for regulators to build relationships, experience sharing, updates, and discuss areas of mutual interest.

Knowledge Repositories: Centralized, open-access platforms support transparency and widespread dissemination of regulatory knowledge.

Industry and Stakeholder Engagement: Structured dialogues with industry representatives, Academia , civil society and members of public ensure that regulatory approaches not only remain consultative but also relevant and inclusive.