

3. Indian Scientific Service – S & T

Way Ahead- Creation of an Indian Scientific Service (ISS)

A dedicated Indian Scientific Service (ISS) should be established to institutionalise the role of scientists in governance.

Key Features of the ISS

1. Separate recruitment based on scientific credentials, research experience, and domain expertise.
2. An independent professional evaluation system aligned with scientific standards.
3. Clear career progression pathways comparable to other civil services.
4. Safeguards for scientific independence and documentation of technical dissent.
5. Embedding scientists directly within ministries, regulatory authorities, and policy units.
6. Mandatory involvement in evidence review, impact assessment, and long-term forecasting.

Such a service would not replace generalist administrators but complement them by providing domain depth where required. Creating a structured Indian Scientific Service would bridge the gap between science and governance, strengthen evidence-based policymaking, improve long-term risk assessment, and enhance India's institutional capacity to respond to emerging global challenges. Institutionalising scientific expertise within governance is no longer optional; it is essential for effective, future-ready public administration.

Reforming the Role of Scientists in Governance- Need for an Indian Scientific Service (ISS)

Core Structural Issue- Scientists entering government are governed by general civil service rules designed primarily for generalist administrators. Administrative systems prioritise hierarchy, procedural compliance, uniformity, and file-based decision-making. Scientific work is based on evidence-based reasoning, peer review, transparency, hypothesis testing, and open discussion of uncertainty. There is a structural mismatch between bureaucratic culture and scientific methodology. This mismatch weakens the effective integration of scientific expertise into policymaking.

Impact of the Existing System- Scientific advice remains reactive, often activated only during crises or litigation-driven interventions. Scientific input is advisory in nature rather than structurally embedded in decision-making. Scientists often lack institutional autonomy to formally record long-term risks or dissenting technical views. Administrative hierarchies may discourage documentation of uncertainty, which is central to scientific reasoning. Limited career progression pathways discourage high-quality scientific talent from entering governance roles. Science remains peripheral rather than central to public policy formulation.

Changing Nature of Governance- Modern governance increasingly involves complex domains such as climate science, artificial intelligence, biotechnology, epidemiology, environmental risk, and cybersecurity. Policymaking now depends on probabilistic modelling, long-term forecasting, and technical risk assessment. Generalist administrative frameworks are not designed to interpret or integrate highly specialised scientific inputs.

Without institutionalised scientific capacity, policy decisions risk being short-term and insufficiently evidence-based.

Mismatch in Service Rules- Existing civil service performance evaluation systems do not recognise peer-reviewed research, technical publications, or domain expertise. Administrative rules are not structured to accommodate scientific methods such as hypothesis testing or uncertainty documentation. Scientific caution and probabilistic assessments may be misinterpreted as indecisiveness within bureaucratic culture. There is no specialised professional pathway for scientists comparable to other civil services.

Weak Integration of Scientific Advice- Scientific committees and expert panels are typically temporary and lack permanent institutional authority. There is no statutory requirement for systematic scientific review in all major policy decisions. Ministries often consult experts externally rather than embedding

scientific professionals internally. Scientific advice is fragmented across departments without a coordinated governance architecture.

Long-Term Risk Assessment Gaps- Major policy challenges such as climate change, groundwater depletion, pandemics, biodiversity loss, and technological disruption require multi-decadal planning. Administrative systems are typically oriented toward short-term targets and annual budget cycles. There is limited institutional capacity for structured foresight, scenario modelling, and anticipatory governance. Absence of long-term scientific forecasting weakens strategic policy resilience.

Protection of Scientific Integrity- Scientists require safeguards to present evidence-based opinions without bureaucratic or political pressure. Institutional protection ensures credibility of scientific assessments in public policy. Transparent documentation of technical dissent strengthens democratic decision-making rather than undermining it. Scientific independence must coexist with democratic accountability.

Attracting and Retaining Talent- India produces high-quality scientists in multiple disciplines but lacks structured governance roles for them. Absence of defined career progression discourages top-tier professionals from entering public service. Compensation, recognition, and promotion systems are not aligned with scientific achievement metrics. This creates a persistent science-policy talent gap.

International Government Models- Many advanced democracies have established structured scientific advisory systems within government. Dedicated scientific cadres institutionalise expert input in policymaking. Professional independence and technical integrity are protected through formal safeguards. These systems balance democratic authority with technical expertise. India currently lacks a comparable institutionalised scientific governance framework.

Institutional Context in India- The Anusandhan National Research Foundation (ANRF) has been established to strengthen research funding and innovation. ANRF focuses on research promotion and funding support. It does not structurally embed scientists into policymaking institutions. Therefore, research funding reform alone does not address the science-policy integration gap.

Way Ahead- Creation of an Indian Scientific Service (ISS)- Establish a dedicated Indian Scientific Service within government structures. Recruitment should be based on scientific credentials, research output, and domain expertise. Develop an independent professional evaluation system aligned with scientific standards. Provide clear career progression pathways comparable to other civil services. Embed scientists directly within ministries, regulatory bodies, and policy units. Institutionalise mandatory scientific review and long-term risk assessment mechanisms. Provide safeguards for scientific independence and formal documentation of technical dissent. Promote integration of scientific modelling, data analysis, and evidence synthesis into routine policymaking.

Conclusion- Governance in the 21st century increasingly depends on scientific and technological expertise. The current generalist administrative framework is not fully aligned with modern scientific policymaking requirements. Establishing an Indian Scientific Service would institutionalise evidence-based governance. Such reform would strengthen long-term risk assessment, protect scientific integrity, attract top talent, and enhance India's policy capacity in complex global challenges.

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