

Promoting Open Access Research in India: Role of Anusandhan Research Foundation (ANRF)

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India's Global Rankings in terms of Research & Publications

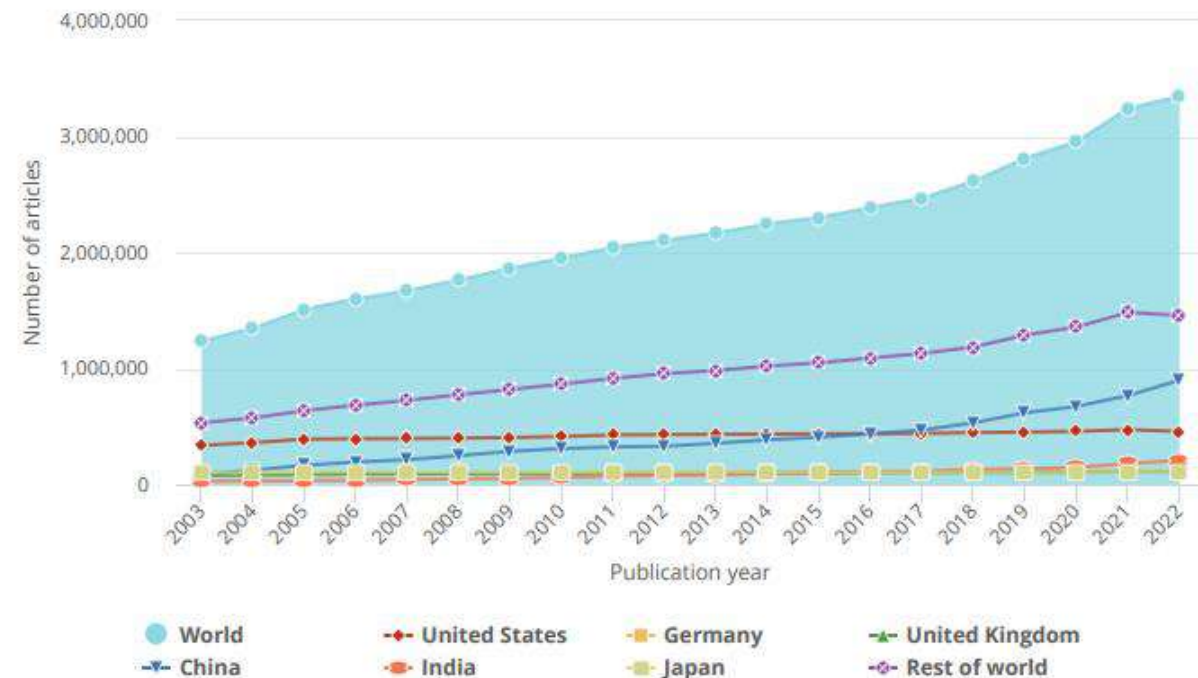
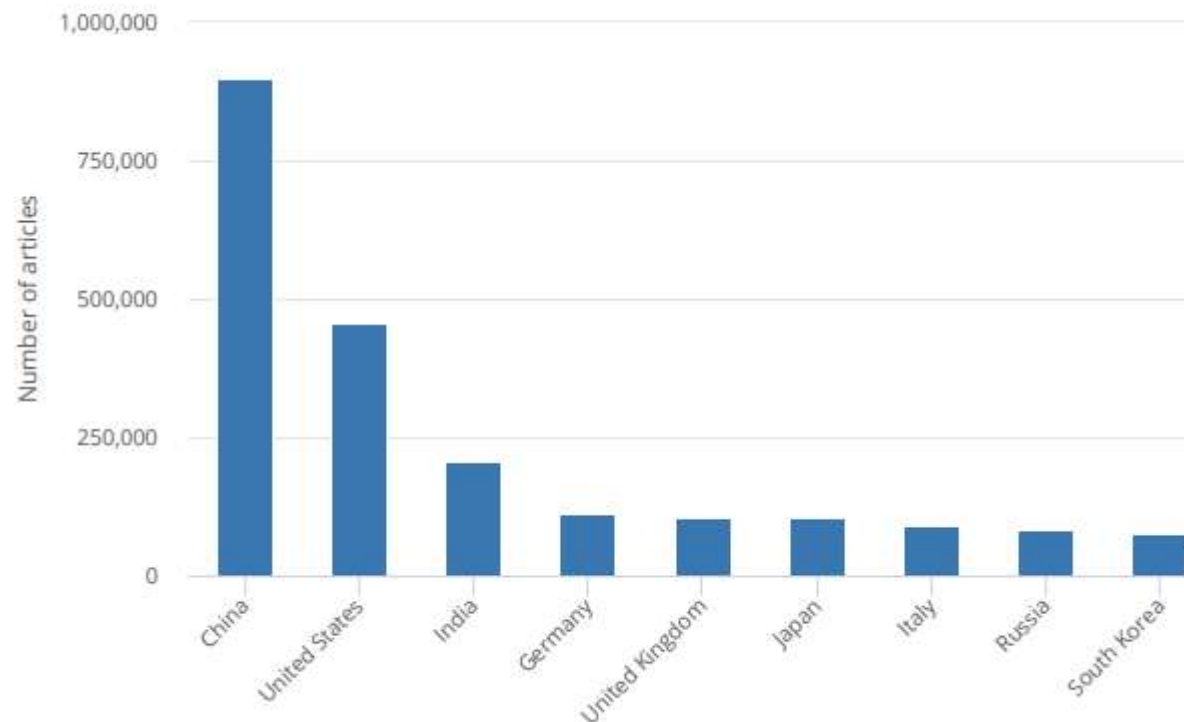
PARLIAMENT QUESTION: EFFORTS TO MAKE 'VIKSIT BHARAT' BY 2047

Posted On: 19 DEC 2024 1:30PM by PIB Delhi

The efforts made by the Government through various programmes and policy measures have helped the nation in improving its position in the Science and Technology at global level which is visible through its global position in scientific publications, number of Ph.Ds, number of start-ups, resident patent filing, Global Innovation Index, number of start-ups, etc. Some of the key highlights include:

- India ranks 3rd in terms of number of research publications (2,07,390) as per Science & Engineering Indicators 2024 published by National Science Foundation (NSF), USA.
- India ranked 3rd in terms of the total number of startups (more than 1,40,000) in 2024 as per DPIIT.
- India ranks 4th in number of PhD degrees awarded (16,968) in Science and Engineering as per Science & Engineering Indicators 2024 published by National Science Foundation (NSF), USA.
- India is ranked at 6th position both in terms of resident (38551) and non-resident (38517) patent filing activity from respective country as per WIPO Report, 2023.
- India has witnessed a significant jump in its Global Innovation Index (GII) ranking from 81st in the year 2015 to 39th in 2024 among 133 economies of the world.
- The Gross expenditure on R&D (GERD) in the country has been consistently increasing over the years and has more than doubled from Rs. 53041.30 crore in 2009-10 to Rs. 127380.96 crore in 2020-21. As per DST R&D Statistics 2022-23, India occupies 7th position in terms of GERD (in billion current PPP\$) ahead of United Kingdom, Russia, Brazil, Italy, Canada, Spain, Australia, etc
- Gender participation in R&D has increased to 18.6% (2021) from 14.3 % (2009) as per DST R&D Statistics, 2022-23.
- Number of researchers per million population has increased to 262 in 2020 as compared to 164 in 2009 as per DST R&D Statistics, 2022-23.

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PU Chandigarh



(Number and percent)

Rank	Region, country, or economy	2012	2022	2022 world total (%)
na	World	2,105,157	3,344,037	na
1	China	329,067	898,949	26.88
2	United States	430,164	457,335	13.68
3	India	78,135	207,390	6.20
4	Germany	105,639	113,976	3.41
5	United Kingdom	98,685	105,584	3.16
6	Japan	109,040	103,723	3.10
7	Italy	64,131	90,586	2.71
8	Russia	36,532	84,252	2.52
9	South Korea	56,101	76,936	2.30
10	Canada	59,762	69,052	2.06
11	Spain	54,680	67,100	2.01
12	Brazil	48,166	67,031	2.00
13	France	72,431	65,888	1.97
14	Australia	46,728	62,305	1.86
15	Iran	30,452	60,940	1.82

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Present Scenario of Open Access

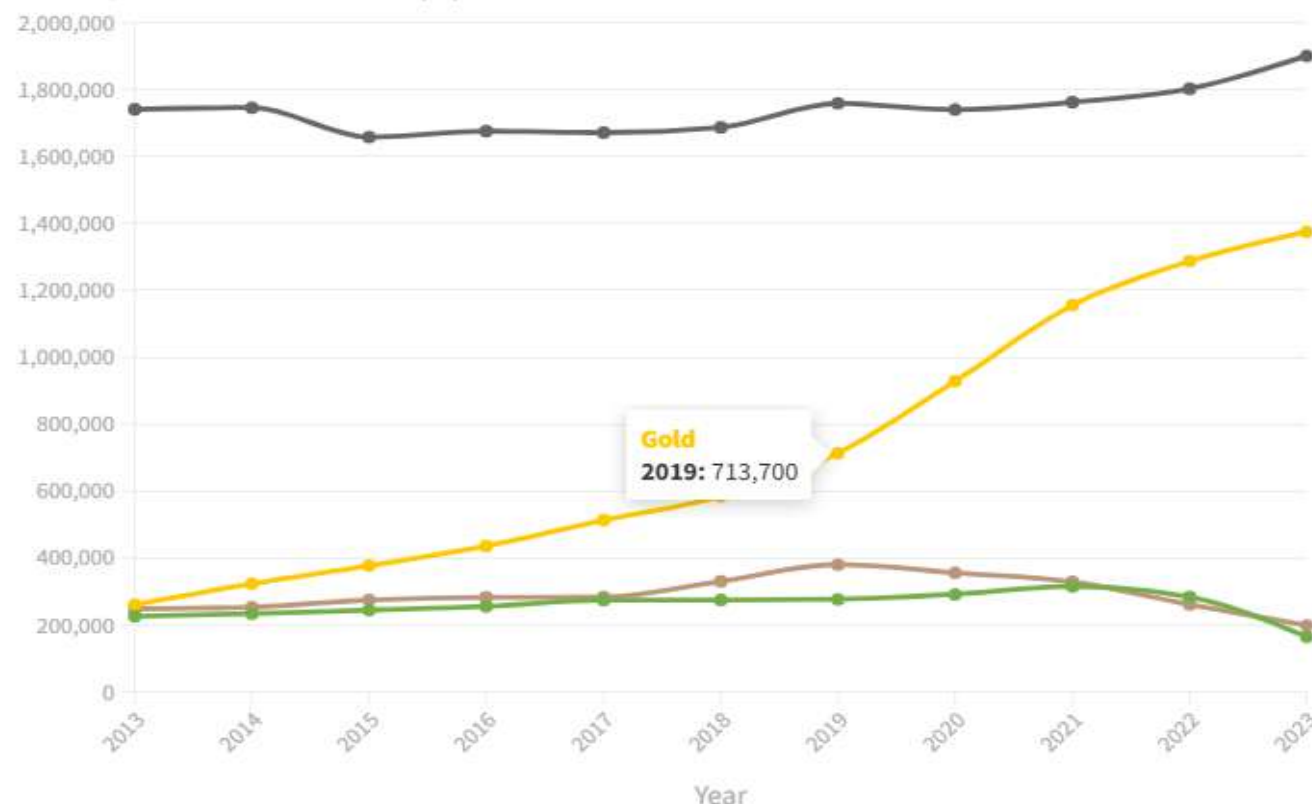
Research

Open Access refers to a publishing model for scholarly research that makes information immediately available to readers at no cost. This research is also free to reuse for scholarly purposes

Global scholarly publishing by access type, number of publications

Gold Green Bronze Subscription-only

Articles, reviews and conference papers



Source: Scopus, 2024

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STM, Advancing trusted research
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- Between 2013 and 2023, the **percentage of global articles, reviews and conference papers made available via gold has increased from 11% to 38%.**
- In contrast, the percentage of journal articles, reviews, and conference papers available to read via subscription-only fell from 70% (2013) to 52% (2023).
- Springer Nature reported that 44% of its primary research articles were published as open access in 2023, up from 38% in 2022.
- Similarly, Oxford University Press anticipated publishing over 33,000 open access journal articles and more than 100 open access books in 2024.
- Open access sales reached \$2.1 billion in 2024, up from \$1.9 billion in 2023, and are

Open Access In

Timeline

History of Open Access in India

India has a long history of engaging with Open Access. Here is a brief history of Open Access in India, which we'll expand upon further below:

- 2004: The S. Swaminathan Research Foundation hosted a workshop on OA recognising that, because of rising subscription costs, "Open Access will be of much greater advantage to India than to western countries". Presentations focused on setting up institutional open archives like arXiv.
- 2006: A thinktank established to inform the prime minister on educational policy released the National Knowledge Commission recommendations, suggesting that providing access to knowledge will increase opportunities and promote innovation.
- 2011: This was an important year for Open Access in India:
 - The Council of Scientific and Industrial Research (CSIR), among the largest publicly funded R&D organisations in the world, mandated that all papers supported by the CSIR must be made OA by depositing in an institutional repository.
 - Open Access India This is a platform for advocating OA and influencing policymakers, researchers, and the scholarly community in India.
 - Shodhganga, a digital repository for theses and dissertations submitted to Indian universities, was launched. This was in response to the 2009 University Grants Commission mandating that theses and dissertations must be made OA via repositories.
- 2013: The Indian Council of Agricultural Research (ICAR), the largest network of agricultural research and education institutes in the world, adopted a policy requiring all ICAR publications be made OA by depositing in institutional repositories.
- 2017: Open Access India submitted a draft OA policy to the government calling for a national OA policy.
- 2018: Led by Open Access India, the Delhi Declaration of Open Access showed solidarity in the Global South by advocating the practice of open science, particularly through repositories.
- 2017 and 2019: The launch of the agRxiv and IndiaRxiv preprint repositories by the Open Access India community.

India Open Access statistics

Despite the growth of an Open Access culture in India, its percentage of subscription-only articles remains high (calculated according to the number of papers with corresponding authors based in India).

[Here are some statistics](#) from Scopus:

- 2012: 80% of articles were subscription-only, 6% were green Open Access, and 8% were gold Open Access.
- 2016: 71% of articles were subscription-only, 5% were green Open Access, and 18% were gold Open Access.
- 2022: 70% of articles were subscription-only, 5% were green Open Access, and 19% were gold Open Access.

Surprisingly, much of India's research output remains closed access. Researchers often face cost barriers for publishing OA and [the Indian system for evaluating researchers relies heavily on Impact Factors](#), which may influence them to submit to older, more-established journals.

Current Open Access laws in India

Currently, there is [no dedicated system for funding Open Access publications and no nationwide Open Access mandate](#) like in many other countries.

Researchers receiving funding and support from specific organisations, like the ICAR and CSIR, must deposit their work into repositories. Specific requirements vary between organisations.

However, there is government-level motivation to go further than green OA and create a centralised system.

<https://blog.mdpi.com/2024/04/29/open-access-in-india/>

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Gov. of India Key Initiatives to Promote and Support OA

<https://web.archive.org/web/20221128103507/https://openaccessindia.org/national-open-access-policy-of-india-draft-ver-3/>

<https://zenodo.org/records/1002618>

National Open Access Policy of India

Proposers:

Open Access India Community

<<http://openaccessindia.org/>>

To be submitted to:

Ministry of Human Resource Development

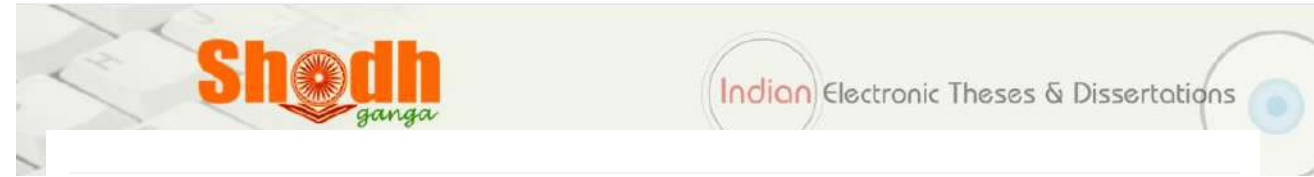
and

Ministry of Science and Technology,

Government of India.

aims to make all publicly funded research freely accessible to the global academic community. The policy encourages all researchers and institutions funded by the government to publish their findings in open access journals and deposit their research in open repositories. The Science, Technology, and Innovation Policy 2020 reflects India's commitment to centralising its research infrastructure to improve access for all.

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THESES	SYNOPSIS	MRPs/PDFs/Fellowships Reports
590040	15402	83

The Shodhganga@INFLIBNET Centre provides a platform for research students to deposit their Ph.D. theses and make it available to the entire scholarly community in open access Repository of Research in Progress & PG Dissertations



TOTAL	SYNOPSIS	MRPs	PDFs	Fellowship	PG Dissertations
15909	15402	27	51	5	424

"ShodhGangotri", research scholars/research supervisors in universities are requested to deposit an electronic version of the approved synopsis submitted by research

Gov. of India Key Initiatives to Promote and Support OA

<https://www.indiascienceandtechnology.gov.in/archive>



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Data for all: Promoting open source data utilisation in India

AUTHOR : TANYA AGGARWAL

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thereby simplifying access for users across sectors. In 2022, NITI Aayog started the [National Data and Analytics Programme](#) (NDAP) to improve access to government and ministry data. In the same year, the Ministry of Electronics and Information Technology drafted the [India Data Accessibility & Use Policy 2022](#), which proposes the India Datasets Programme to help the public sector with access to data with the goal of social transformation.

<https://www.indiarxiv.org/>



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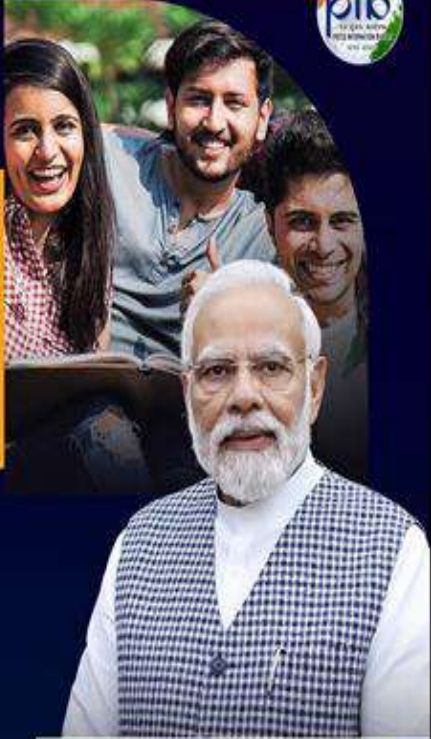
Indiarxiv follows an open-access model, meaning that all the research uploaded to the platform is freely accessible to anyone with an internet connection

The Indian Science and Technology Archive of Research (ISTAR) is an initiative aimed at preserving and promoting access to India's vast body of scientific and technological research output. The project serves as a digital repository for scholarly works, research papers, articles, and other academic materials related to science, technology, and

One Nation One Subscription

CABINET DECISION
25TH NOVEMBER, 2024

One Nation One Subscription



- Benefits to be managed through a national subscription coordinated by the **Information and Library Network (INFLIBNET)**, an autonomous inter-university centre of the **University Grants Commission (UGC)**
- Scheme to benefit nearly **1.8 crore students** in **6300 institutions**
- Department of Higher Education to have a unified portal "**One Nation One Subscription**" through which the institutions will be able to access the journals

A total of 30 major international journal publishers have been included in One Nation One Subscription. All of the nearly 13,000 e-journals published by these publishers will now be accessible to more than 6,300 government Higher Education Institutions and central government R&D institutions

Access to journals will be provided through a national subscription coordinated by the Information and Library Network (INFLIBNET), an autonomous inter-university centre of the University Grants Commission (UGC) through an entirely digital process

A total of almost ₹ 6,000 crore has been allocated for One Nation One Subscription for 3 calendar years, 2025, 2026 and 2027 as a new Central Sector Scheme

One Nation One Subscription is a timely step towards establishing India in the global research ecosystem by bringing ease of doing research to the doorstep of all students, faculty and researchers in the government institutions

Posted On: 25 NOV 2024 8:42PM by PIB Delhi

Prof. Ajay Kumar Sood, Principal Scientific Adviser (PSA) to the Government of India stated that the scenario of Diamond OA and Green OA in India, have been taken into consideration in the three-pronged vision for bringing about open access transformation in India.

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One Nation One Subscription

- ONOS scheme will be coordinated by the Information and Library Network (INFLIBNET), which is an autonomous inter-university center under the University Grants Commission (UGC).
- Traditional academic publishing relies on a 'pay to read' model, where libraries and institutes pay fees to access published research.
- ONOS aims to democratise access to high-quality academics for students and researchers across India, particularly benefiting those in tier-2 and tier-3 cities.
- ONOS will provide access to over 13,000 high-impact journals from 30 leading international publishers, significantly improving the availability of academic resources for students and researchers.
- The initiative targets over 6,300 institutions, benefiting around 1.8 crore students, faculty, and researchers, and enhances access to international journals, boosting India's visibility in global research communities.

- 1.Elsevier Science Direct
- 2.Springer Nature
- 3.IEEE-IEL Online Complete
- 4.Wiley Blakwell Publishing
- 5.Taylor & Francis
- 6.Lippincott Williams & Wilkins (Wolters Kluwer)
- 7.Institute of Physics
- 8.American Chemical Society
- 9.Cambridge University Press
- 10.American Physical Society
- 11.Oxford University Press
- 12.BMJ Journals

- 16.Indianjournals.com
- 17.ASME
- 18.Bentham Science
- 19.Cold Spring Harbor Laboratory Press
- 20.ACM Digital Library
- 21.Annual Reviews
- 22.ICE Publishing
- 23.American Society for Microbiology
- 24.American Association for the Advancement of Science (AAAS)
- 25.American Institute of Aeronautics and Astronautics (AIAA)
- 26.American Mathematical Society
- 27.Emerald Publishing
- 28.Sage Publishing
- 29.SPIE Digital Library
- 30.Thieme Medical

Anusandhan Research Foundation (ANRF)

अनुसंधान नेशनल रिसर्च फाउंडेशन
Anusandhan National Research Foundation

<https://serb.gov.in/page/english>



- The **Anusandhan Research Foundation (ANRF)** is a prominent research and development (R&D) organization in India, focusing on advancing scientific knowledge and technological innovations across various disciplines.
- It is dedicated to fostering high-quality research and creating solutions that address critical challenges faced by society, industry, and academia.
- The Anusandhan National Research Foundation (ANRF) aims to receive funds amounting to Rs. 50,000 crore during 2023-28 in the form of ANRF Fund, Innovation Fund, Science and Engineering Research Fund, Special Purpose Funds.
- A budgetary provision of Rs. 14,000 crore is made from the Central Government and remaining amount will be sourced through donations from any other source, including

Anusandhan Research Foundation



Anusandhan National Research Foundation (ANRF)

The National Research Foundation (NRF) stands as a cornerstone of research excellence, spearheading groundbreaking initiatives that contribute to the advancement of knowledge and technology. Established with a clear vision, the NRF plays a crucial role in supporting and funding innovative projects across various disciplines.

By cultivating a dynamic research ecosystem that encourages collaboration among academia, industry, and government entities, the NRF ensures that the outcomes of research extend beyond theoretical realms, directly impacting industries and society. Through strategic investments and a commitment to fostering emerging talent, the NRF continues to be a driving force in propelling the nation towards scientific and technological leadership.

The Anusandhan National Research Foundation Act, 2023 is an Act of the Parliament of India. It seeks to regulate all research and development in the fields of natural sciences establishments in India. It repeals the Science and Engineering Research Board Act, 2008 and dissolves the SERB.

The Act would define India's status in 2047 and open the door for India to join the exclusive club of developed nations, according to the Union Minister for Science and Technology.

The Act seeks to establish a culture of research and innovation throughout India's educational institutions, research institutes, and R&D laboratories by playing a significant role in supporting, developing, and promoting R&D activities throughout the nation.

"The challenge of ANRF is to introduce changes so that research makes a tangible impact on society and prioritise quality and relevance over quantity, rather than the current focus on generating research output," Dr Gupta, Secretary of SERB said at the online talk titled Changing Landscape of Research Funding in India: Anusandhan National Research Foundation: India's vision to Achieve Global Leadership.

At the heart of the NRF's mission is the pursuit of solutions to contemporary challenges on both a national and global scale. The foundation actively engages in international collaborations, recognizing the interconnected nature of many issues. By facilitating knowledge exchange and leveraging collective efforts, the NRF contributes to a shared pool of expertise aimed at addressing pressing global concerns.

The Union Minister of State (DST) Dr Jitendra Singh emphasised that the ANRF, envisaged by the Prime Minister Shri Narendra Modi will catapult India to the league of developed nations pioneering new research in new frontiers.

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ANRF's Contribution to Open Access Research in India



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Open access publishing, ANRF support can make India a research superpower, says Springer Nature CPO Jegadeesan

Updated – October 01, 2024 11:46 am IST – MUMBAI



LALATENDU MISHRA

Compared with the spending globally, India spends 0.7 or 0.6% of its GDP on research, compared with 2-4% of the GDP by China, U.S. or even South Korea. “Just to give that in context, India’s research spending overall per year is \$40 billion while it is \$400 billion by China,” he said.

Emphasising on the need for open access publishing, he said it would create a level-playing field and “make the world flatter”, and will increase participation rate of researchers. “And within 5 to 10 years, if India has to be a \$10 trillion economy, research is going to be fundamental and open access will help it get there,” he said.

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NEWS / OPINION / COLUMNS / The Anusandhan National Research Foundation aims to make India a knowledge-driven economy

 **Opinion** by Ajai Chowdhry

The Anusandhan National Research Foundation aims to make India a knowledge-driven economy

It aims to create an ecosystem where high-risk, cutting-edge research can flourish within academic institutions

- ANRF recognises that early career researchers are committed to produce research of the highest quality, bringing in new skills, breakthrough ideas and the zest to explore new frontiers, thereby expanding the boundaries of knowledge.
- Prime Minister’s Early Career Research Grant with a flexible budget and progressive initiatives for ease of doing

ANRF's Contribution to Research in India

- APC Ranging for USD 7.5 to 5000 (2010-2014)
- Average APC paid by Indian researchers: 1lakh per paper
- APC paid by Indian researchers from research grant - 8.8 MN USD (current science vol 112 no 4, 2017)

Inclusivity Research Grants (IRG)

This program specifically targets researchers from marginalized communities, providing them with funding to conduct research and publish their findings openly, promoting equity in scientific discourse.

PAIR Program:

By facilitating collaborations between established research institutions and universities with limited research capabilities, ANRF helps bridge the gap in access to research resources, enabling wider

- Funding for Open Access Publication Costs
- ANRF supports **open-access publishing** by advocating for making research outputs freely available to the public.
- **Promoting India's Open Science Movement:** Through its support for open-access publishing, ANRF can contribute to the larger **Indian open science movement**. This helps increase the visibility and accessibility of Indian research on global platforms.
- Creating **Indian Open Access Journals and Repositories:**
- **Advocacy for Open Access Policy**
- **Alignment with National Education Policy (NEP):**
- ANRF's initiatives are designed to align with the NEP's goals, which emphasize open access to knowledge and promoting

Integration with NEP 2020 and ANRF

1. Alignment with Educational Policies:

- ONOS complements NEP 2020 by reinforcing the importance of quality education and resources.
- Provides access to high quality academic journals, enhancing educational experiences.

2. Support for Research and Innovation:

- ONOS supplements the objectives of the Academic National Research Framework (ANRF).
- Promotes a culture of research and innovation across Indian institutions.

3. Collaborative Framework:

- Ensures that ONOS is integrated into a broader strategy for enhancing India's academic and research landscape.



Conclusion

- India has a strong community-driven Open Access community and serves as a leader in the Global South. Interestingly, the primary thrust of India's Open Access requirements have been for Green OA, which requires the depositing of preprints or complete manuscripts into repositories. This likely reflects the greater financial burden of other publishing models for Indian institutions and scholars.
- There is no national policy for OA like in many other countries. However, there is government-level motivation to go further than green OA and create a centralised system. The Science, Technology, and Innovation (STI) Policy 2020 reflects an impulse to centralise its research infrastructure and create access through alternative means before mandating any particular approach.
- The Anusandhan Research Foundation (ANRF), by promoting open access research, plays a crucial role in advancing India's research ecosystem.
- Its advocacy, infrastructure development, and capacity-building initiatives contribute significantly to India's broader efforts to become a global leader in open-access science.
- ANRF's work supports Indian researchers in making their findings freely available, fostering collaboration, and ensuring that knowledge is