Equity, Capacity, and Opportunity: Rethinking scientific cooperation with the global South

Marcelo Knobel
Executive Director, TWAS

https://www.informationisbeautifulawards.com/showcase/827-map-of-scientific-collaboration

World´s shortest abstract

IOP FTC

FAST TRACK COMMUNICATION

Can apparent superluminal neutrino speeds be explained as a quantum weak measurement?

M V Berry[1], N Brunner[1], S Popescu[1] and P Shukla[2]

[1] H H Wills Physics Laboratory, Tyndall Avenue, Bristol BS8 1TL, UK
[2] Department of Physics, Indian Institute of Technology, Kharagpur, India

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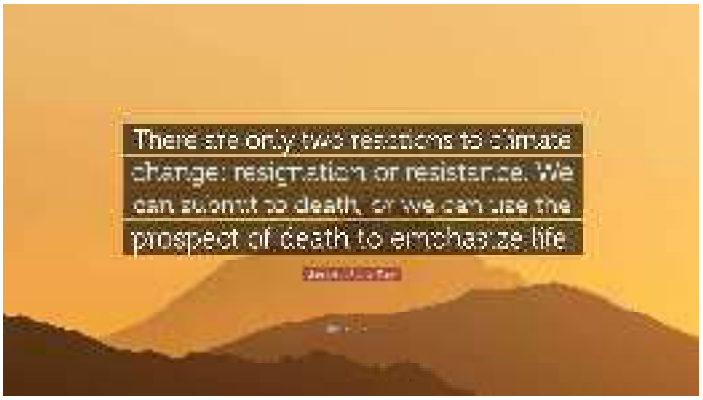
Online at stacks.iop.org/JPhysA/44/492001

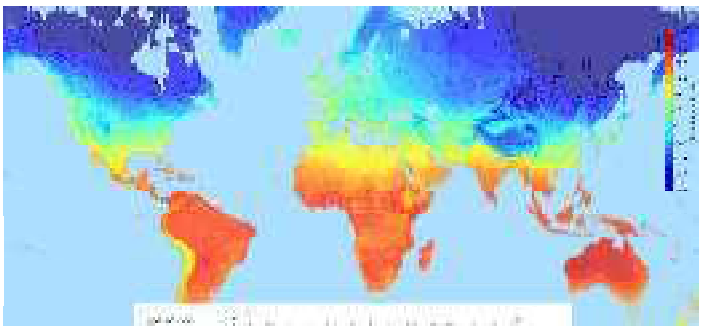
Abstract
Probably not.

PACS numbers: 03.65.Ta, 03.65.Xp, 14.60.Pq

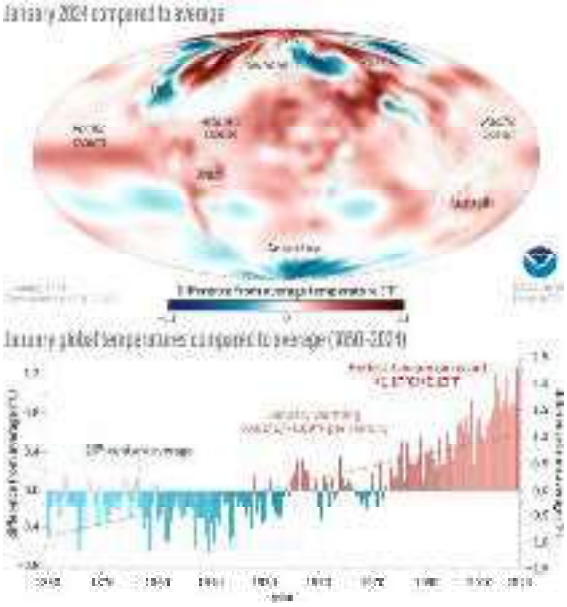
Shouldn't we be talking about something other than global warming?

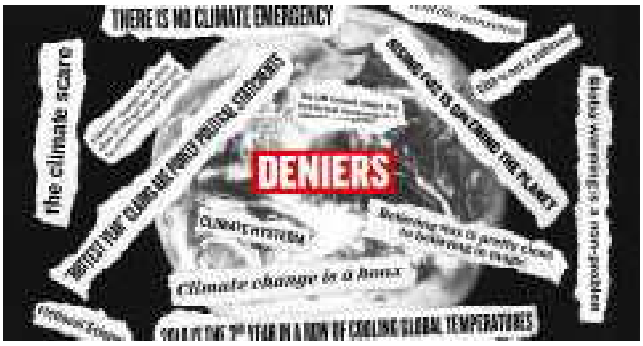
Abstract: Probably not!



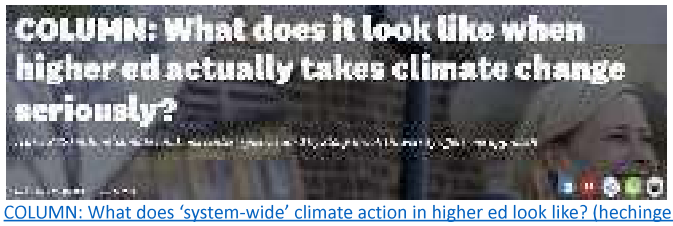


Rio de Janeiro Sets New Heat Index Record Of 62.3 Celsius(144 F)

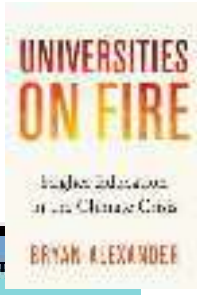




[Debunked: The Climate Denier Campaign - (scientistswarning.org)]



COLUMN: What does ‘system-wide’ climate action in higher ed look like? (hechingerreport.org)



https://fervuranoclima.com.br/

HIDS

Hub Internacional para o Desenvolvimento Sustentável

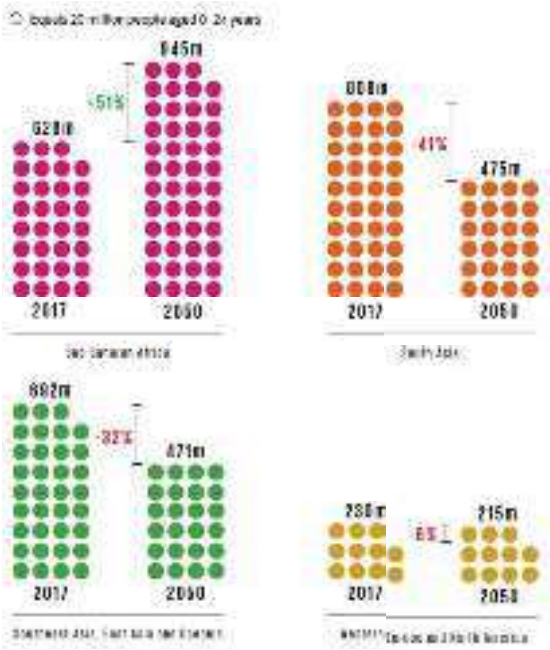
Climate Change is Increasingly Causing Mental Health Problems Among College Students (tufts.edu)

LATIN AMERICA

Are universities doing enough to address climate change?

A World in Transformation

- By 2050, 40% of the world's children will be in Africa
- The global North is facing aging populations and declining university enrollments
- Traditional North-South dynamics in higher education are undergoing profound transformation
- **The global South is no longer at the periphery—it is central to the future**



Some of the Major Challenges Facing Humanity

Critical issues requiring global cooperation and innovative solutions

Climate Change

- **1.1°C** global temperature rise
- **3–4°C** projected by 2100
- Rising sea levels
- Extreme weather events

Pandemics

- **7M+** COVID-19 deaths
- **$12.5T** economic cost
- New zoonotic disease risks
- Healthcare access inequity

Global Inequality

- **1%** owns **46%** of wealth
- **700M** in extreme poverty
- Education access gaps
- Widening digital divide

Wars & Conflicts

- **54** active conflicts
- **100M+** displaced people
- Humanitarian crises
- Scientific progress disruption

These interconnected challenges require coordinated global action and scientific innovation

Some transformative Innovations Shaping Our Future

Breakthrough technologies and discoveries transforming our world

Artificial Intelligence

Generative AI transforming creative fields

Machine learning advancing scientific discovery

AI-powered healthcare diagnostics

Ethical AI development frameworks emerging

Quantum Computing

1,000x faster than classical computing

Breakthrough in quantum error correction

Solving previously impossible problems

Transforming cryptography and security

Health Innovations

mRNA technology revolutionizing vaccines

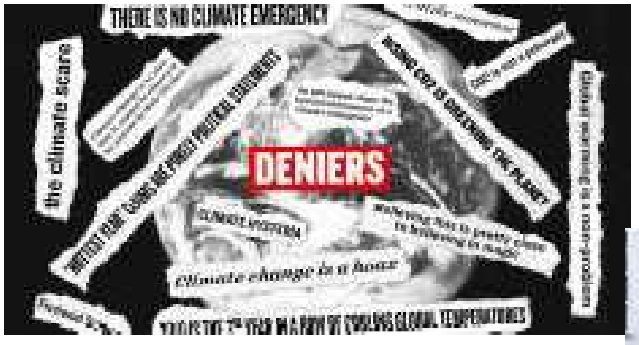
CRISPR gene editing treating genetic diseases

Personalized medicine through genomics

Digital health expanding global access

These transformative innovations offer powerful tools to address humanity's greatest challenges

Information Disorders



From Football Fields to Research Labs: The power of opportunity

- Countries with limited resources consistently produce world-class football players
- Key factors:
  - availability of opportunity
  - makeshift fields
  - networks of coaches
- **Shouldn't we do the same for science?**
- Every young person with a curious mind deserves a real chance to become a researcher

Gender Challenges in Science: The Long Journey

For women, the path to scientific careers is especially challenging

1. **Access to Education**
2. **Cultural Barriers**
3. **Economic Challenges**
4. **Gender Bias in STEM**
5. **Career Advancement**

129M girls worldwide are out of school

Women hold only **28%** of STEM jobs globally

3x more barriers for indigenous women in science

Supporting women in science is not just about equality—it's about unlocking the full potential of human knowledge

Not Charity, But Strategic Necessity

> “ Providing opportunities for scientists in the global south is not an act of charity. It is a strategic, forward-looking response to a more complex and demanding future


nature

To progress, science must be truly global

Not Charity, But Strategic Necessity

- Local researchers are best placed to address regional challenges
- Cultivating the full breadth of human potential equips us to face the future together

Environmental challenges require global solutions

Health crises demand local expertise and global coordination

Technological innovation benefits from diverse perspectives

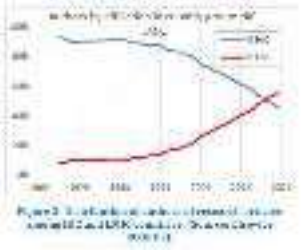
The Expanding Geography of Knowledge Production

- Despite difficulties, knowledge production geography is expanding
- In 2024, 60% of scientific articles included authors from Low- and Middle-income Countries (LMICs)
- Up from just 13% three decades ago

The Great Research Reversal: A 50-Year Transformation

A dramatic shift in global research geography has occurred over the past five decades:

In just 50 years, the geography of knowledge production has fundamentally transformed.
Low- and Middle-Income Countries now produce more than half of all research articles.



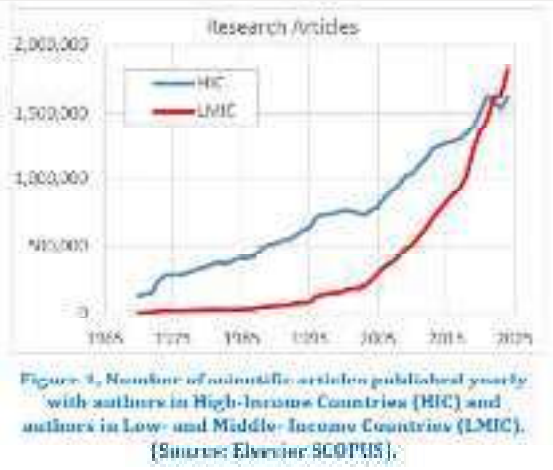


Figure 1. Number of scientific articles published yearly with authors in High-Income Countries (HIC) and authors in Low- and Middle- Income Countries (LMIC). (Source: Elsevier SCOPUS).

In **1970**, 94% of the research articles had authors in HIC and 7% in LMIC. In **2024**, the percentages changed to 54% (HIC) and 60% (LMIC).

The two sets of articles are not mutually exclusive, as there are many articles (approx. 14%) with authors in both categories of countries.

Source: Brito Cruz, C.H. (2025). How a Changing Geography of Research can accelerate the Advancement of the U.N. SDGs in Low- and Middle Income Countries. UN Multistakeholder Forum on Science, Technology and Innovation for the SDGs.

LMIC Research Growth: The numbers tell the story

Figure 2. Number of authors of scientific articles published yearly, according to the country where the affiliation institution informed by the authors in each publication is localized. (Source: Elsevier SCOPUS).

In 2024, there were 7,524,840 authors of research articles in the world. Of these, 3,458,228 (46%) worked in research entities in HIC and 4,184,095 (56%) worked in research entities in LMIC.

For LMIC the number of authors is growing at a rate of +11% per year (even excluding China the growth rate remains at +10% per year), while for HIC the growth rate is +4% per year.

One of the main drivers in the increase of the number of research articles published in the world is the growth in the number of researchers active in LMIC countries, as a result of **capacity building** efforts enacted for many years.

Source: Brito Cruz, C.H. (2025). How a Changing Geography of Research can accelerate the Advancement of the U.N. SDGs in Low- and Middle Income Countries. UN Multistakeholder Forum on Science, Technology and Innovation for the SDGs.

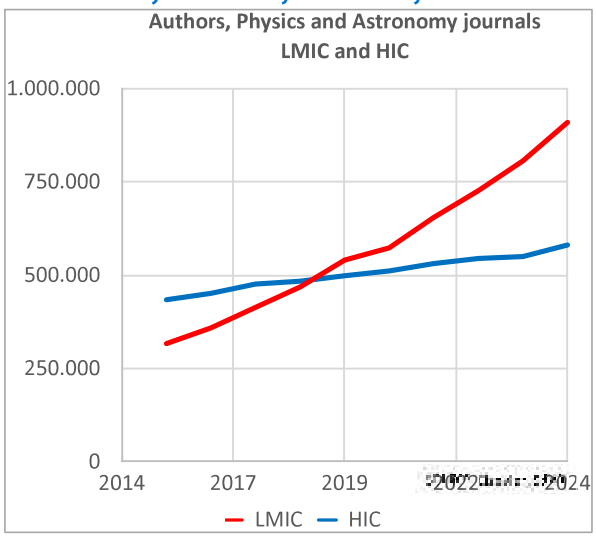
LMIC Research Growth: The numbers tell the story

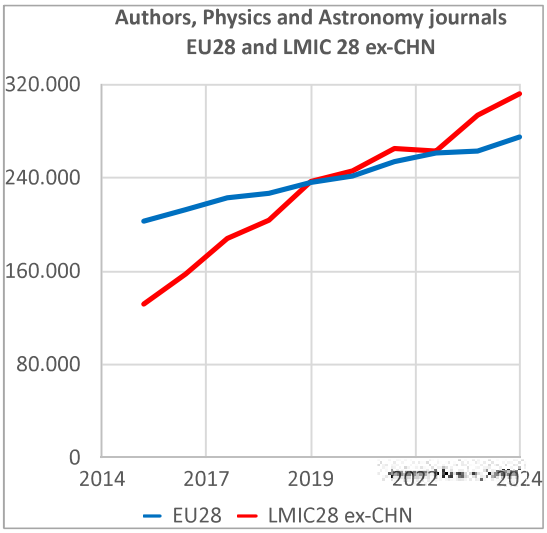
10.47M	8.40M	+11%	+10%
LMIC Authors (55.6% of world total)	HIC Authors (44.4% of world total)	LMIC Annual Growth (vs +4% for HIC)	LMIC Growth ex-China (still strong without China)

The momentum behind LMIC research is accelerating, with growth rates that far outpace HIC countries

Source: Brito Cruz, C.H. (2025). How a Changing Geography of Research can accelerate the Advancement of the U.N. SDGs in Low- and Middle Income Countries. UN Multistakeholder Forum on Science, Technology and Innovation for the SDGs.

Number of authors of articles in Physics and Astronomy journals HIC, LMIC; EU28, LMIC28 ex-CHN

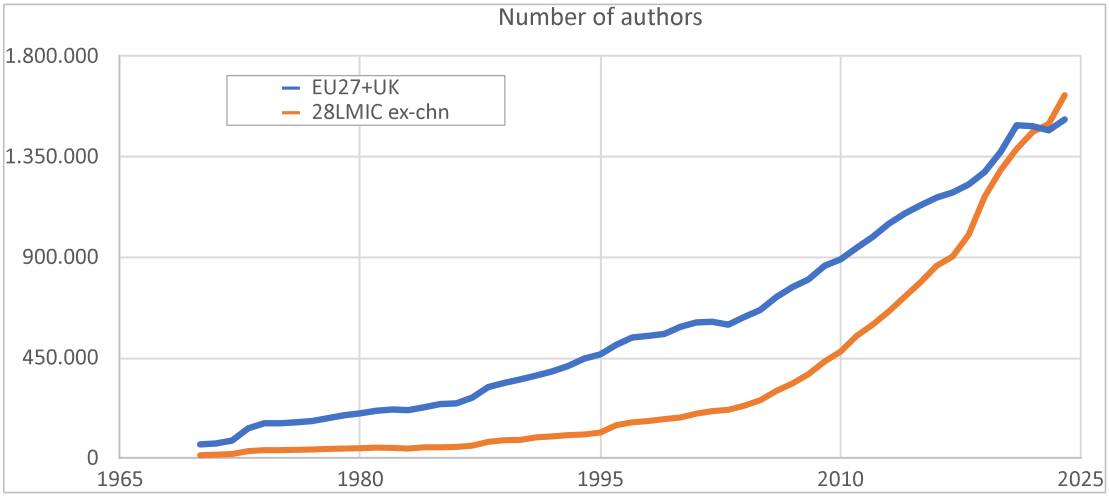




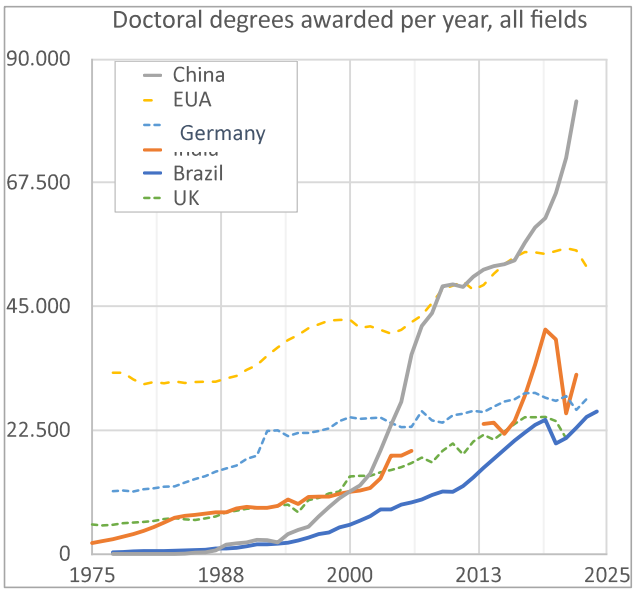
Courtesy of
C.H. Brito Cruz (Elsevier)

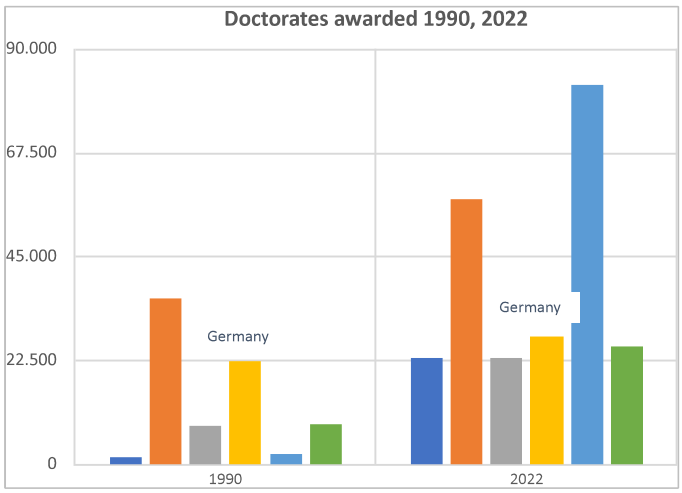
What about the Growth of China?

The phenomenon is not exclusively due to the growth in China
Authors in EU 27+UK and in 28 LMIC with largest number of researchers ex-CHN



Capacity building – e.g., training at the doctoral level





Capacity building requires developing research training institutions: Research universities, graduate courses and research infrastructure

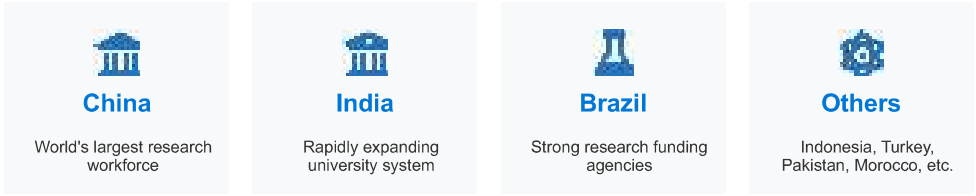
Quality Convergence: LMIC research reaching global standards

Interestingly, the percentage of each country-group articles that is among the 10% most cited is very similar, though articles with authors in LMIC do not appear as frequently as those with authors in HIC in the 10% most cited journals.

LMIC research is rapidly approaching global quality standards.
In some metrics, such as top 10% cited articles, LMIC research already exceeds HIC performance

Source: Brito Cruz, C.H. (2025). How a Changing Geography of Research can accelerate the Advancement of the U.N. SDGs in Low- and Middle Income Countries. UN Multistakeholder Forum on Science, Technology and Innovation for the SDGs.

The Research Infrastructure Revolution



Over the last 50 years, LMICs have built comprehensive research ecosystems:

- Universities
- Research Institutions
- Funding Organizations
- Industry R&D

These countries are creating their own path while learning from countries with longer scientific experience.

Some Examples

Sirius at CNPEM (Brazil)

Extremely Large Telescope (Chile)

Stellenbosch University's Biomedical Research Institute BMRI (South Africa)

Sesame (Jordan)

TWAS: Catalyzing Global Scientific Equity

> “ With man's recent mastery of science and technology, there is no physical reason left for the existence of hunger and want for any part of the human race

Abdus Salam
Nobel Prize Laureate 1979, Founder of TWAS

TWAS: Catalyzing Global Scientific Equity

A UNESCO Programme Unit

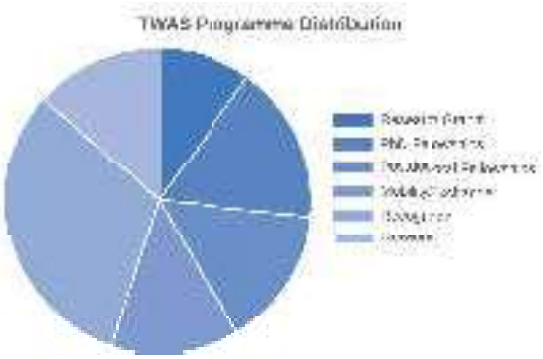
- Building research capacity
- Supporting early-career scientists
- Promoting research links
- Recognizing scientific excellence

Modest Investments, High-Impact Outcomes

3,000	+60	+600	$20-70K
grants since 1986	distinct programmes	opportunities annually	grants range

TWAS Programme Portfolio:

- Research Grants (6 programmes)
- PhD Fellowships (10 programmes)
- Postdoctoral Fellowships (9 programmes)
- Mobility/Exchange (8 programmes)
- Recognition (19 awards programmes)
- Networks (Young Affiliates, TYAN, Regional Partners)



EXAMPLE OF TWAS-SUPPORTED INNOVATION IN SENEGAL

Batteries from peanut shells (Balla Diop Ngom)

EXAMPLE OF TWAS-SUPPORTED INNOVATION IN SENEGAL

Rapid dengue diagnostics (Ndeye Sakha Bob)

OWSD: Uniting Women Scientists from the Developing World

Founded in 1987 and based at the offices of The World Academy of Sciences (TWAS) in Trieste, Italy

Mission

First international forum to unite eminent women scientists from developing and developed worlds

Strengthen women's role in the development process

Promote representation in scientific and technological leadership

Provide research training, career development, and networking opportunities

Over 5,000 members worldwide

OWSD Programs: Building Scientific Capacity for Women

OWSD provides support to women scientists throughout their careers, from undergraduate science through PhD research to leadership positions

PhD Fellowships

Scholarships for women from least developed countries to study for PhD degrees in another developing country

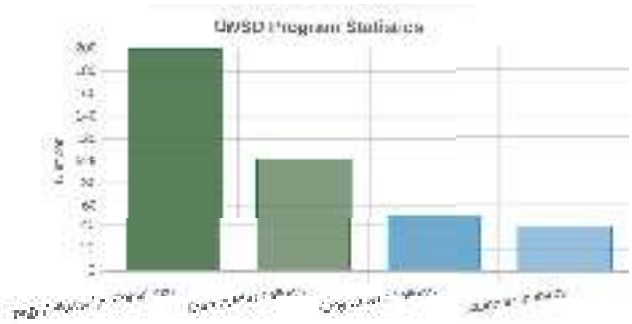
340+ fellowships funded since 1997 I 50 awarded annually

Early Career Fellowships

Grants for equipment and research expenses to establish research groups and foster innovation

Awards & Recognition

Celebrating early-career women scientists who have made significant contributions to research and education

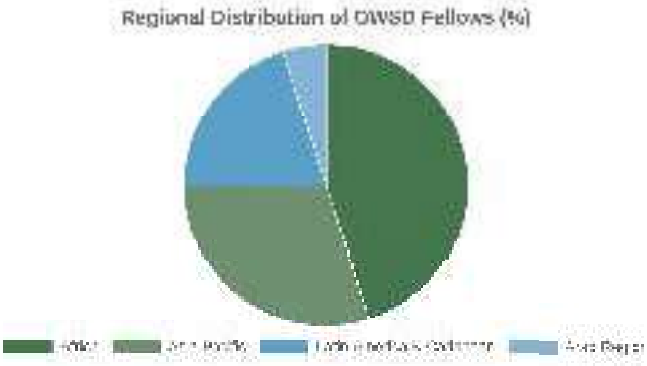


OWSD Impact: Transforming Lives and Science

OWSD has been working on behalf of women scientists in the developing world for over a quarter of a century

5,000+
Members Worldwide

100+
Countries Represented



Key Achievements

Increased representation of women in scientific leadership positions

Created a global network of women scientists in developing countries

Established sustainable research groups led by women scientists

"The future of science depends on tapping into the entire human potential, including the brilliant minds of women scientists in the developing world."

IAP: The Global Network of Science Academies

The InterAcademy Partnership (IAP) harnesses the expertise of the world's leading scientific minds to advance sound policies, improve public health, promote excellence in science education, and achieve other critical development goals.

Mission

- Support the vital role of science in seeking evidence-based solutions to the world's most challenging problems
- Provide independent and authoritative advice to national governments and inter-governmental organizations
- Amplify academies' impact at the international level
- Strengthen the ability of member academies to take on advisory roles

Key Characteristics

- Independent and free of vested political and commercial interests
- Merit-based membership from leading scientists
- Credible source for informing public and policy-makers

"IAP provides a collective mechanism for academies to further strengthen their crucial roles as providers of evidence-based policy and advice."

IAP Network: Uniting 150+ Academies Worldwide

Under the umbrella of the InterAcademy Partnership, more than 150 national, regional and global member academies work together to support the vital role of science.

150+
Member Academies

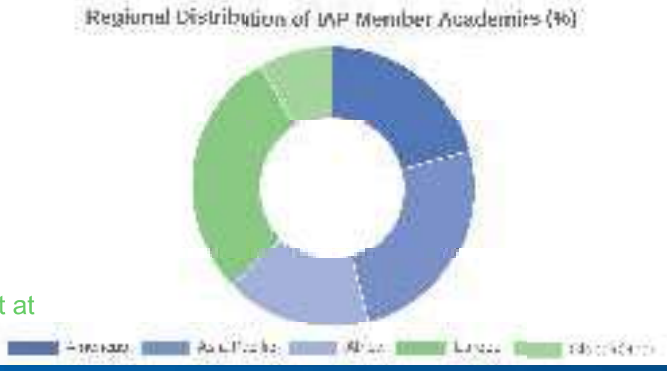
100+
Countries

30,000+
Leading Scientists, Engineers & Health Professionals

IAP's unified voice of academies aims to amplify academies' impact at the international level.

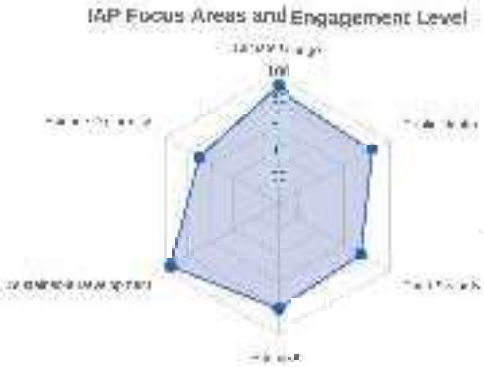
Network Structure

- Regional networks covering Americas, Asia, Africa, and Europe
- Secretariat offices hosted by National Academy of Sciences (Washington, DC) and TWAS (Trieste, Italy)
- Collaborative partnerships with UN organizations and other international bodies



IAP Impact: Science-Based Solutions for Global Challenges

IAP produces evidence-based statements and reports examining major priorities for sustainable development, and provides independent and authoritative advice to governments and international organizations.



Key Impact Areas

Policy Advice

Providing evidence-based policy recommendations on critical global issues including climate change, health, and food security

Capacity Building

Strengthening the ability of new and less-experienced member academies to take on advisory roles in their nations

Global Collaboration

Fostering international scientific cooperation to address complex challenges that transcend national boundaries

IAP provides a collective mechanism for academies to strengthen their crucial roles as providers of evidence-based policy and advice

The Four Pillars of Global Scientific Cooperation

Building a truly global scientific ecosystem requires strategic action in four key areas:

1 Protecting Academic Freedom

Safeguard against censorship and ideological interference

Preserve budgets for research and higher education

Promote evidence-based policymaking

2 Supporting Capacity-Building

Fund fellowships, research grants, and training

Foster cross-border partnerships, especially South-South

Develop sustainable scientific infrastructure

3 Ensuring Equitable Partnerships

Embrace shared governance and mutual respect

Include scientists from all backgrounds in agenda setting

Prioritize equity and diversity, including gender

4 Embracing Science Diplomacy

Reforming evaluation metrics to recognize diverse contributions

Foster international relationships through science

Develop common language rooted in evidence and reason

Toward a Truly Global Scientific Ecosystem

The future of science depends on:

Demographic Shifts

Embracing the youth potential of the Global South

Adapting to changing global talent distribution

South-South Collaboration

Establishing new paradigms for scientific cooperation

Building regional networks of excellence

Technology Access

Enabling inclusive, accessible education

Democratizing research tools and data

Equitable Systems

Use scientific collaboration to address shared challenges

Ensuring fair access to funding and publication

TWAS at the center of this transformation

The Future of Science Depends on All of Us

- Dismantle outdated cooperation hierarchies
- Strengthen science diplomacy
- Protect academic freedom as a fundamental right
- Engage all regions and peoples in pursuit of knowledge

Together for Global Scientific Excellence

Marcelo Knobel

mknobel@twas.org

TWAS Programmes

Building research capacity and scientific strength in the global South

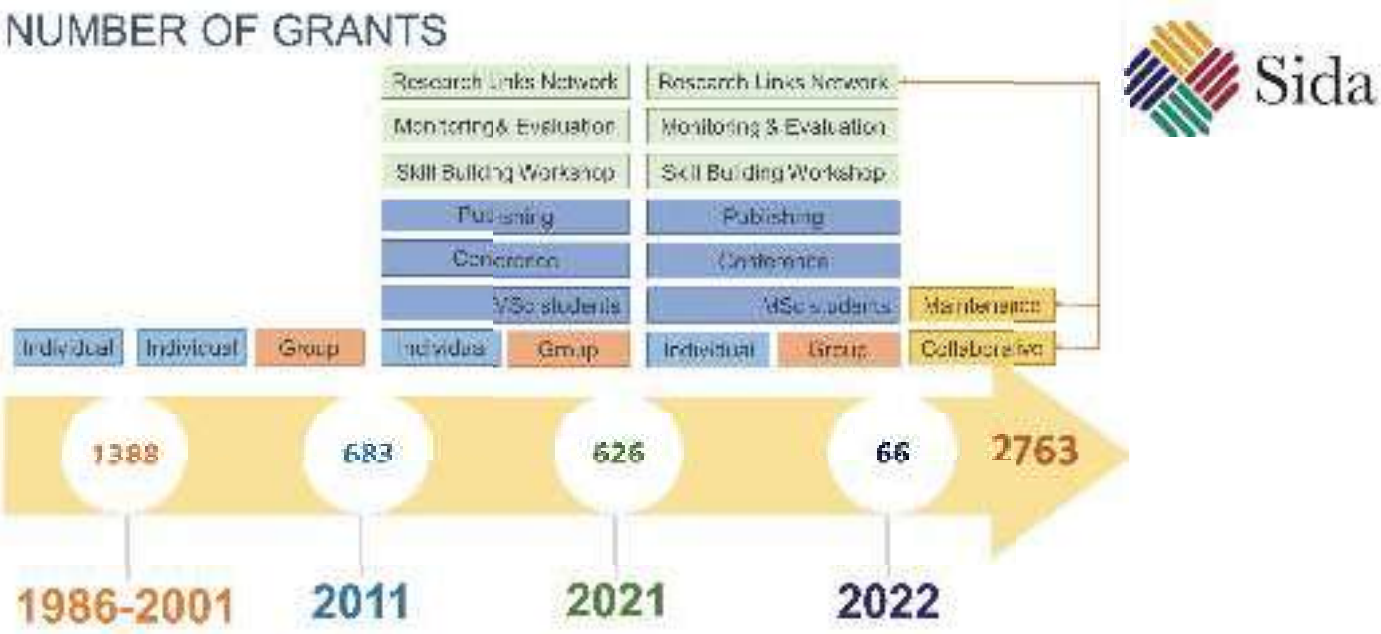
- Increase research skills
- Improving research infrastructure
- Support early-career scientists
- Promote and catalyze research links
- Rewards scientific excellence

PROGRAMME TYPE	DISTINCT PROGRAMMES
Research or Project Grants	4 funded by Sida 1 funded by BMBF 1 funded by IsDB 1 funded by Elsevier Foundation
PhD Fellowships	9 programmes with 9 partners 1 Sida-funded PhD for Climate
Postdoctoral Fellowships	9 programmes with 9 partners 1 IsDB-funded
Mobility/Exchange Schemes	8 programmes
Prizes/Awards	19 programmes
Young Affiliates & TYAN	3 programmes
Science Diplomacy	1 programme
Regional Partners	3 programmes per Regional Partner
TOTAL no. of PROGRAMMES: 60 **TOTAL no. OF OPPORTUNITIES/AWARDS OFFERED py: 600+**	

Research Grants Programme

Sida

- Longest standing programme at TWAS
- Research projects in the **basic sciences**
- Core grant for **equipment** and **consumables**
- Support for **international conference** and **open access publishing**
- **2 schemes:** *Individual Grants* for early-career scientists
  Group Grants for established researchers
- Group Grants also include funds for **MSc student training**
- **2,763 grants awarded** between 1986-2022 period thanks to Sida
- Among awarded scientists, many **African LDCs** have benefited


NUMBER OF GRANTS
Research Links Network
Monitoring& Evaluation
Skill Building Workshop
Publishing
Conference
MSc students
Individual
Group
Research Links Network
Monitoring & Evaluation
Skill Building Workshop
Publishing
Conference
MSc students
Individual
Group
Maintenance
Collaborative
1388
683
626
66
2763
1986-2001
2011
2021
2022
Sida

Visiting Professors			
Programme	Sponsor/donor	Partner	Mechanism
TWAS Visiting Expert	Italian Government	___	South-South North-South
TWAS Research Professors in LDCs	Italian Government	___	South-South North-South
Visiting Researchers			
UNTBLDC-TWAS-ICGEB South-South Programme for Exchanges and Collaborations	United Nations Technology Bank for Least Developed Countries	International Centre for Genetic Engineering and Biotechnology	South-South
UNTBLDC-TWAS-ICGEB South-North Programme for Exchanges and Collaborations	United Nations Technology Bank for Least Developed Countries	International Centre for Genetic Engineering and Biotechnology	North-South
TWAS-SISSA-Lincei Research Cooperation Visits Programme	Italian Ministry of Foreign Affairs and International Cooperation, Italian Agency for Development Cooperation	Accademia Nazionale dei Lincei, Scuola Internazionale Superiore di Studi Avanzati	South-North
TWAS-DFG Cooperation Visits Programme	German Research Foundation (DFG)	German Research Foundation (DFG)	South-North
TWAS-UNESCO Associateship Scheme	Italian Government	___	South-South
TWAS Fellowships for Research and Advanced Training	Italian Government	___	South-South

Exchange Programmes

- Research training and transfer of skills
- Collaboration and interdisciplinary research
- Possibility of long-lasting links
- Internationalization, ideas, innovation
- Inspiration and capacity building

TWAS Mobility Programmes

Example of impact: **Gaston Mandata N'Guerekata**
School of Computer, Mathematical
and Natural Sciences
Morgan State University, Baltimore, MD 21251, USA

visited:
Department of Mathematics, Faculty of Science
University of Bangui
Bangui, Central African Republic

- **25 May - 27 June 2017**
- 16 March - 18 April 2018

Professor N'Guerekata teaching a class at the University of Bangui

Professor N'Guerekata at the Faculty of Science, University of Bangui

From: Gaston Nguerekata <nguerekata@gmail.com>

Subject: **Re: TWAS Research Professor_Prof. N'Guerekata**

To: washington@twas.org

Reply | Reply All | Forward | More

29/01/2019, 18

Dear Colleagues

As a result of my nomination as Research Professor at the University of Bangui., I am happy to inform you that my Ph. D. student Roger Enock Oueama Guengai has his second paper published (cf attached) and is now writing his dissertation. He might defend the dissertation sometime this summer in Bangui. He will be the first Ph.D. in mathematics who graduated from the University of Bangui.
Thank you for TWAS support.

Cordially

Gaston M. N'Guerekata, Ph.D.
Associate Dean
University Distinguished Professor of Mathematics
The World Academy of Sciences Fellow
The African Academy of Sciences Fellow
School of Computer, Mathematical and Natural Sciences
Morgan State University
Baltimore, MD 21251 USA
Gaston.N'Guerekata@morgan.edu

Libertas Mathematica (new series)
Volume 38(2018), No. 2, 111-121

S-asymptotically ω-periodic mild solutions to some fractional integro differential equations with infinite delay

Enock R. Oueama-Guengai and Gaston M. N'Guérékata

Abstract: Under appropriate conditions and using the Krasnosel'skii's fixed point theorem, we prove that the semilinear fractional integro-differential equation in a Banach space X $u'(t) = \frac{1}{\Gamma(\alpha-1)}\int_0^t (t-s)^{\alpha-2}Au(s)ds + F(t,u_t)$, $t \geq 0$, and $u_0 = \phi$, possesses S-asymptotically ω-periodic mild solutions when $1 < \alpha < 2$, $A \in B(D(A), X)$, $X \to X$

SPECIAL ISSUE PAPER

WILEY

On S-asymptotically ω-periodic and Bloch periodic mild solutions to some fractional differential equations in abstract spaces

Ernest B. Cuevas-Cubergel | Gaston M. N'Guérékata

We are concerned with the existence and uniqueness of S-asymptotically ω-periodic and Bloch periodic mild solutions to the semilinear fractional differential equation of the form $D^{\alpha}u(t) = Au(t) + f(t, u(t))$, where D^{α} is the Riemann-Liouville derivative, $1 < \alpha < 2$, and A is assumed to be an infinitesimal generator of a strongly continuous cosine family on a Banach space X. Some new classes of functions are introduced and their basic properties are established. The results obtained are applied to study the existence of S-asymptotically ω-periodic and Bloch periodic mild solutions to a class of fractional partial differential equations.

KEYWORDS

COMPORTEMENT ASYMPTOTIQUE DES SOLUTIONS DE CERTAINES EQUATIONS DIFFERENTIELLES FRACTIONNAIRES AVEC OU SANS RETARD DANS LES ESPACES DE HARDY

TWAS Programmes to support science in the developing world

- Research Grants and Project Grants
- PhD and Postdoctoral Fellowships
- Exchange/Mobility Schemes
- Recognizing scientific achievements: Awards
- Science Diplomacy
- Young Affiliates and TYAN
- Climate Action


10
REDUCED
INEQUALITIES

TWAS key priorities:

•Capacity Building in S&T
• Basic Sciences
•LDCs
•Young Scientists
•Women in Science
•Science Diplomacy
•Interdisciplinary Collaborations
•Sustainable Development/SDGs


Sida


ITALIAN AGENCY
FOR DEVELOPMENT
COOPERATION


REGIONE AUTONOMA
FRIULI VENEZIA GIULIA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Deutsche
Forschungsgemeinschaft


UN
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Federal Ministry
of Education
and Research


the David &
Lucile Packard
FOUNDATION


IsDB
Islamic Development Bank


THE ELSEVIER FOUNDATION

The InterAcademy Partnership (IAP)

Visit of BAST delegation to TWAS, Trieste, June 2025




Why do we need a global network?

The world's academies
must work together
to support the vital role of science
in seeking
evidence-based solutions
to the world's most challenging
problems.

Membership

- 150 member academies
- 4 regional networks
- +30,000 leading scientists, engineers and health professionals in over 100 countries

Members include

- Chinese Academy of Science
- Chinese Academy of Engineering

Strategic Priorities (2024-2025)

1. Build the capacity of and **empower** academies, including young academies and global or regional networks of academies, to provide reliable, independent, **authoritative advice** on global, regional and national issues

Strategic Priorities (2024-2025)

2. Promote education, research, science literacy, public discourse and engagement in science, engineering and medicine to **support global sustainability**

Strategic Priorities (2024-2025)

3. Partner with international scientific and other organizations in addressing important **global issues** and to respond in a timely manner during crises

Strategic Priorities (2024-2025)

4. Expand visibility, accessibility, outreach and **impact** of reports, statements and other activities of the IAP, its regional networks, and its member academies

IAP Statements

- Short (4-6-page) documents that provide a synthesis of the latest research findings on topical issues and provide advice and recommendations to policy-makers

Released 11 October 2021
And targeted at COP26

Parallel release with extra details in the peer-reviewed journal 'Stem Cell Reports'

Presented at International Conference on Urban Health, October 2022

IAP Statements

- Prepared by a working group of nominated experts
- Released only when endorsed by majority of member academies

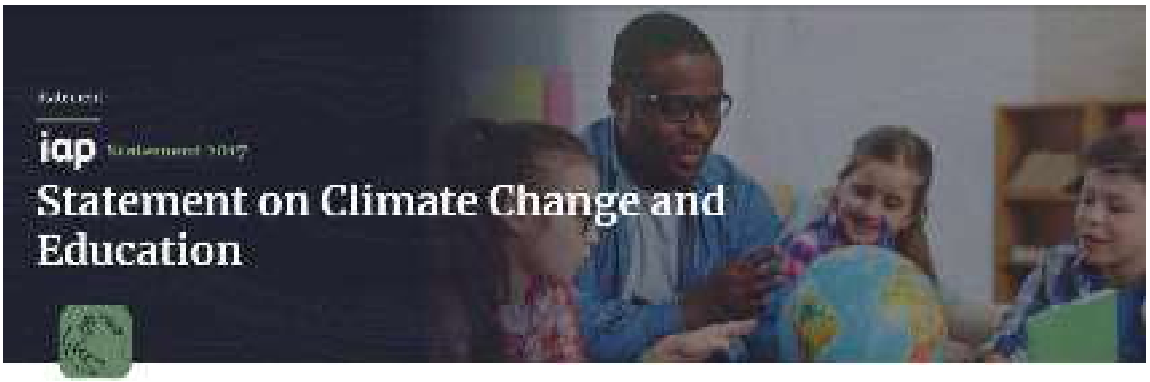
Released 11 October 2021
And targeted at COP26

Parallel release with extra details in the peer-reviewed journal 'Stem Cell Reports'

Presented at International Conference on Urban Health, October 2022

IAP Statement on Climate Change Education

- Fed into discussions to establish the Office for Climate Education in Paris, now a UNESCO Category II Centre



IAP Biosecurity Working Group

- Launched in 2003, designed especially to link with the Biological and Toxin Weapons Convention (BWC)
- Activities include the promotion of responsible research practices and links with the Organization for the Prohibition of Chemical Weapons (OPCW)

IAP Biosecurity Working Group

Towards a Scientific Advisory Board (SAB) for the Biological and Toxin Weapons Convention (BWC): IAP and partners tested a proposed mechanism for the input of scientific advice into the BWC

Two reports were produced:

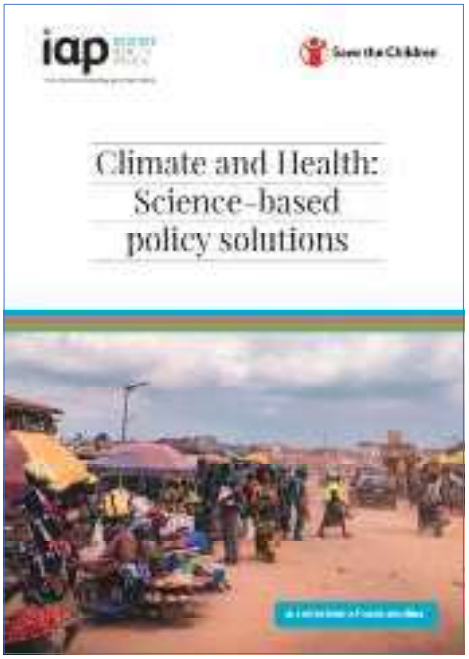
1. ‘Exploring the possible impact of AI on Biosecurity and International Cooperation in the BWC’ (technical report)
2. ‘Proof of Concept Meeting on a BWC Scientific Advisory Body Procedural Report’

Climate Change and Health

In a three-year global project, IAP has worked together with its regional networks in Africa, Asia and the Americas to capture diversity in evaluating evidence from their own regions to inform policy for collective and customised action at national, regional and global levels.

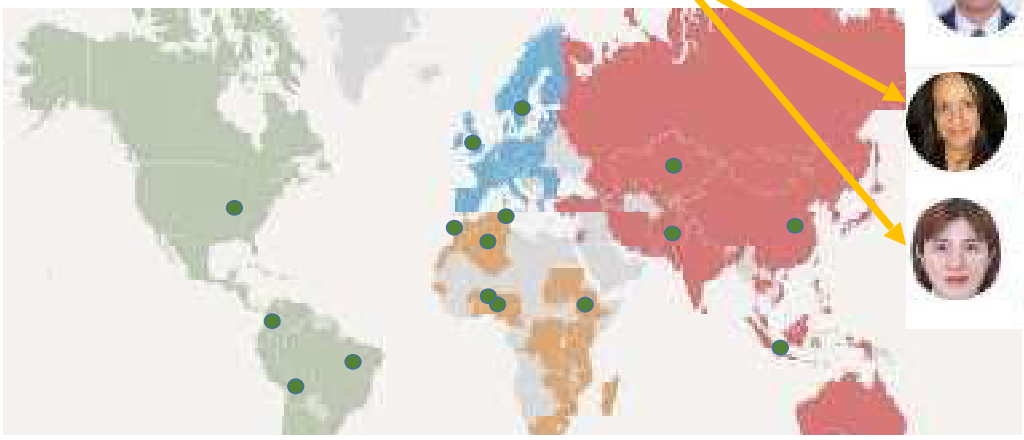
Two recent publications:

- a book of case studies: ‘Climate and Health: Science-based policy solutions’
- an associated book chapter in ‘Building Resilient Cities: Adapting to the health impacts of climate change’ published by the Observer Research Foundation and presented at COP29 in Azerbaijan



IAP Science Education Programme

Led by a Global Council of experts, including:



Mahfoud Ziyad
Chair, Morocco

Carol O'Donnell Vice chair
Director, Smithsonian Science Education Center (SSEC)
USA

Yang Deng
Chinese Association Of Science And Technology (CAST)
China

IAP Science Education Programme

- Providing ongoing support to help establish three science centres/museums in sub-Saharan Africa
- Small grants provided to academies in Benin, Ethiopia and Ghana

IAP Science Education Programme

IMPACT

The centre at the Université d'Abomey-Calavi in Benin has opened its doors!

IMPACT

The centre at the Ethiopian Academy of Sciences next aims to establish a FabLab that will provide printed parts to schools and other centres in the country

IAP Young Physician Leaders (YPL) Programme

Annual leadership training course in association with the World Health Summit in Berlin, Germany

ypl YOUNG PHYSICIAN LEADERS

IAP Young Physician Leaders (YPL) Programme

Alumni network now features more than 280 YPLs from more than 75 countries

3 YPL alumni from China

IMPACT

YPL alumnus Paramdeep Singh (India) honoured with National Best Medical Teacher Award at NATCON 2024

Science In Exile

- Aims to enhance the work and lives of at-risk, displaced and refugee scientists globally

IAP Webinar Series

- Aims to foster collaboration, knowledge sharing and engagement among member academies and networks.
- Recent topics include:
  - safeguarding scientific data in times of crisis
  - explaining the IPCC calls for nominations of authors
  - unpacking UN Pact for the Future and its implications for science

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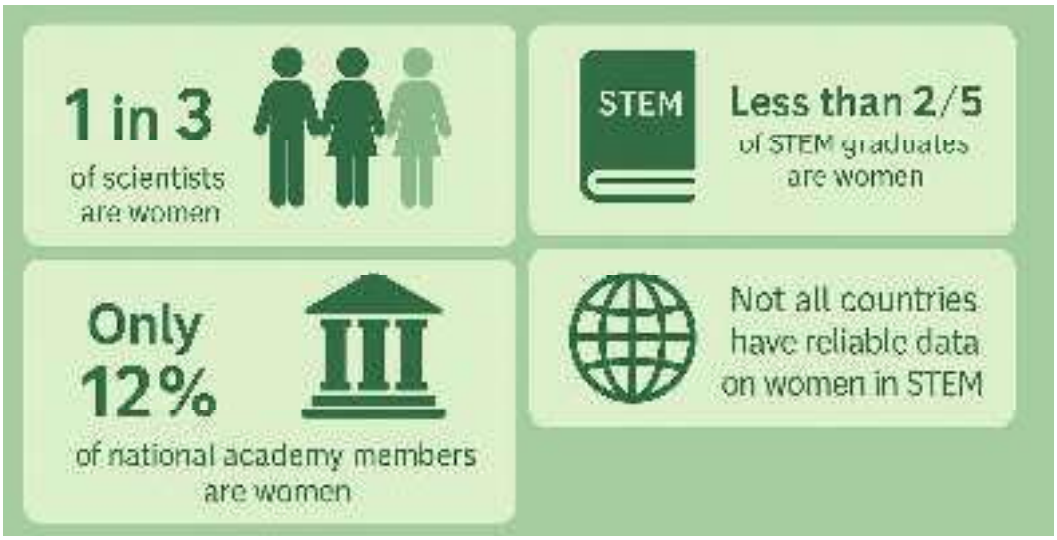
Organization for Women in Science for the Developing World (OWSD)

Visit of BAST delegation to TWAS, Trieste, June 2025

ORGANIZATION FOR WOMEN IN SCIENCE FOR THE DEVELOPING WORLD




Why supporting women in science?



OWSD response to UNESCO Call to Action

UNESCO's 2024 "Call to Action"

Empower and encourage women and girls to pursue STEM careers.

Dismantle systemic barriers to ensure gender equity in STEM fields.

INDIVIDUAL
Empowering women scientists through fellowships, scholarships, and leadership programs.

INSTITUTIONAL CHANGE
through National Chapters, research collaborations, and global partnerships.

OWSD Long-standing commitment: supporting individual women scientists for institutional change

Flagship programmes:

Impact of PhD fellowships

92%
of fellows

75%
of respondents

48%
of fellows

25%
of fellows

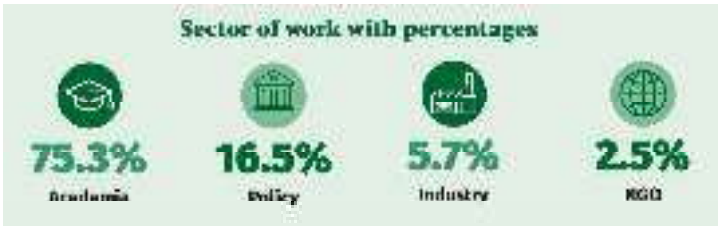


Figure 3. CURRENT JOB TITLES OF FELLOWS

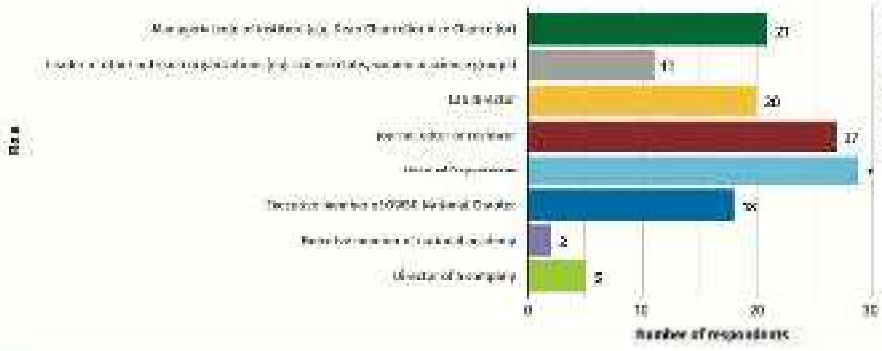
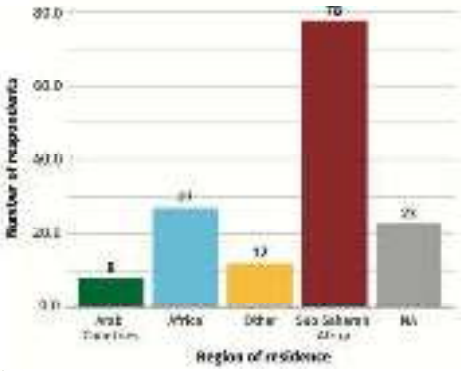


Figure 2. PHD ALUMNAE BY REGION OF RESIDENCE



"There is no reproduction without science. There is no electricity without science. There is no water without science... Life is science, science is life."

"We're waiting to get new opportunities for our future... We stay in our country, we try our best."

"As a scientist, it will affect me if I just sit without thinking.. when you keep your mind busy, you will feel better."

"The fellowship helped me upgrade my status from being a scientist to an industrialist. I am a national figure now, with 11 media coverages, including an interview by Nature magazine"

Hema Kafle, 2015 Early Career Fellow from Nepal and Chair, OWSD Nepal National Chapter

Impact of Early Career fellowships

Responses to survey question:
"Since receiving the OWSD Early Career Fellowships I ..."

Was promoted
41%

Received an increase in salary at my institute
31%

Received more authority and/or responsibilities within my institute
69%

Received more recognition outside of my institute
67%

Was successful in being awarded additional grant funding or fellowships
46%

11
new laboratories
set up in 2023

71%
of fellows
used their fellowship funds
[illegible] to set up
or upgrade laboratories

153
outreach activities
implemented

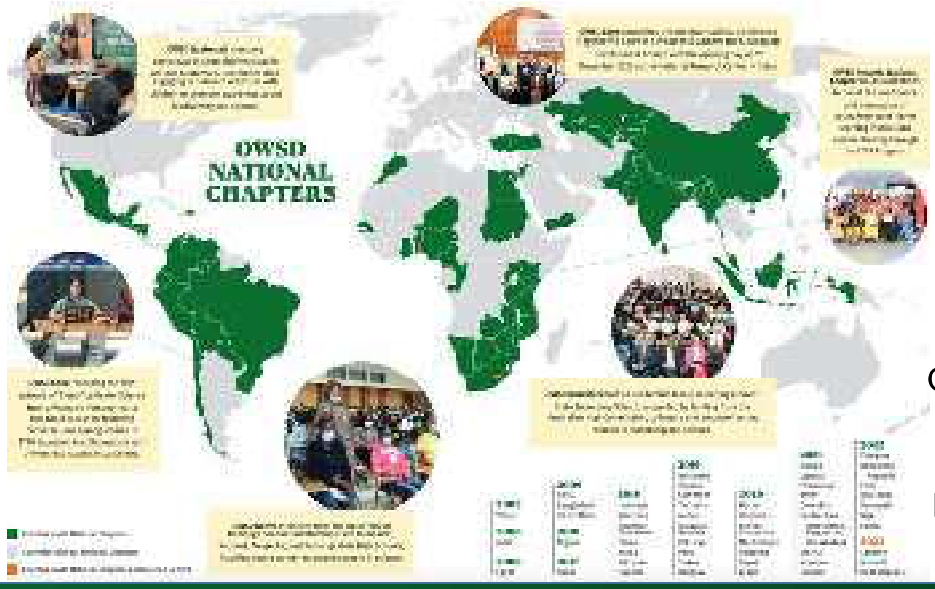
453
beneficiaries of activities
[illegible]

OWSD Network and National Chapters as catalysts of institutional reform

11,000 members worldwide

OWSD's 57 National Chapters bridge the gap between individual scientists and national priorities

They provide outreach, advocacy, mentorship, and fundraising opportunities.



Pilot project on mapping and data collection on women in STEM leading to a new project

Collaboration with National Science Granting Councils to shsape research funding criteria and promoting women's leadership in STEM

A sustainable vision for women in science

Impact beyond individuals
Empowered women scientists contribute to stronger research agendas, policies that address real-world challenges, and more inclusive educational pathways for future generations.

Sustainable Development

Investing in women scientists is a **powerful tool** for **transforming science**, **building gender equity**, and **fostering sustainable development** worldwide. When women succeed in STEM, **entire communities thrive.**

OWSD's collaboration with China: a strategic partnership

Institutions like Chinese Academy of Sciences (CAS) and University of Chinese Academy of Sciences (UCAS) have played a pivotal role in hosting **PhD women scientists** from developing countries.

OWSD's collaboration with China: a strategic partnership

- OWSD and **Chinese universities** are developing a **new fellowship scheme** designed to increase **international collaboration** and promote **gender equality in STEM**.
- This partnership with **UCAS** aims to offer **20 fellowships per year**, supporting women from **developing countries** in pursuing **PhD studies** in **natural and engineering sciences**.
- OWSD's collaboration with Chinese institutions presents a **unique opportunity** for **capacity building** and **leadership** in **global science**, especially for **women scientists** from **underrepresented regions**.

OWSD's collaboration with China: a strategic partnership

A **Memorandum of Understanding (MoU)** between OWSD and UCAS is in the works, aiming to formalize the fellowship programme and increase China's role in global STEM education.

The collaboration will not only benefit individual fellows but also support Chinese institutions in building inclusive and gender-equal educational environments.

Looking for additional partners in China!

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