IAEA
International Atomic Energy Agency
Atoms for Peace and Development

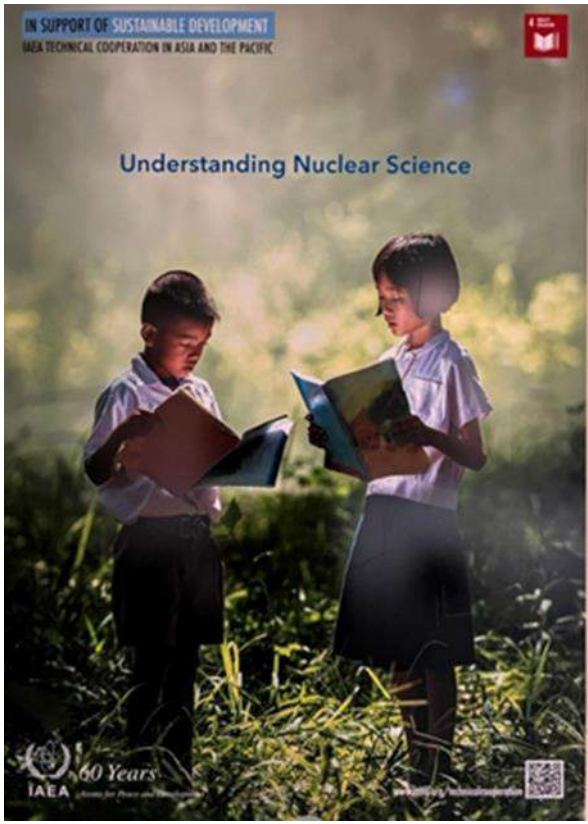
Technical Cooperation in Asia and the Pacific Region

RAS0091
Supporting Nuclear Science and Technology Education at the Secondary and Tertiary Level

Marina Mishar
Section Head 2, Division of Asia and the Pacific
Department of Technical Cooperation

9 October 2023

Focus on
FUTURE GENERATION
for
SUSTAINABILITY



Human Resources Development: the strategic enabler

- ✓ Focused according to the priorities of the MS
- ✓ Ensuring local application of knowledge to national development
- ✓ Ensuring sustainability

- ❑ **Increasing need for HR to correspond to technological progress**
- ❑ **Developing the minimum level of capabilities for some**
- ❑ **Limited resources, candidate and funds**



NST Secondary Education TC Projects

2012-2015 extended to 2017

RAS0065 Supporting Sustainability and Networking of National Nuclear Institutions in Asia and the Pacific Region

2018-2021 extended 2022

RAS0079 Educating Secondary Students and Science Teachers on Nuclear Science and Technology

2022-2025

TCP Cycle 2022-2023 – Comprehensive Education Project

RAS2020008
RAS0091

IAEA TC Project RAS/0/079 Educating Secondary Students and Science Teachers on Nuclear Science and Technology (NST)

Objective : to expand and sustain NST information, education and communication among secondary school students and teachers in Asia and the Pacific region.

Way Forward : Adequate, competent Workforce

IAEA

Teachers

- interest in science and engineering among the population (Outreach).
- Awareness – nuclear-aware
- Development of effective and innovative learning methods

Universities & Nuclear Institutions

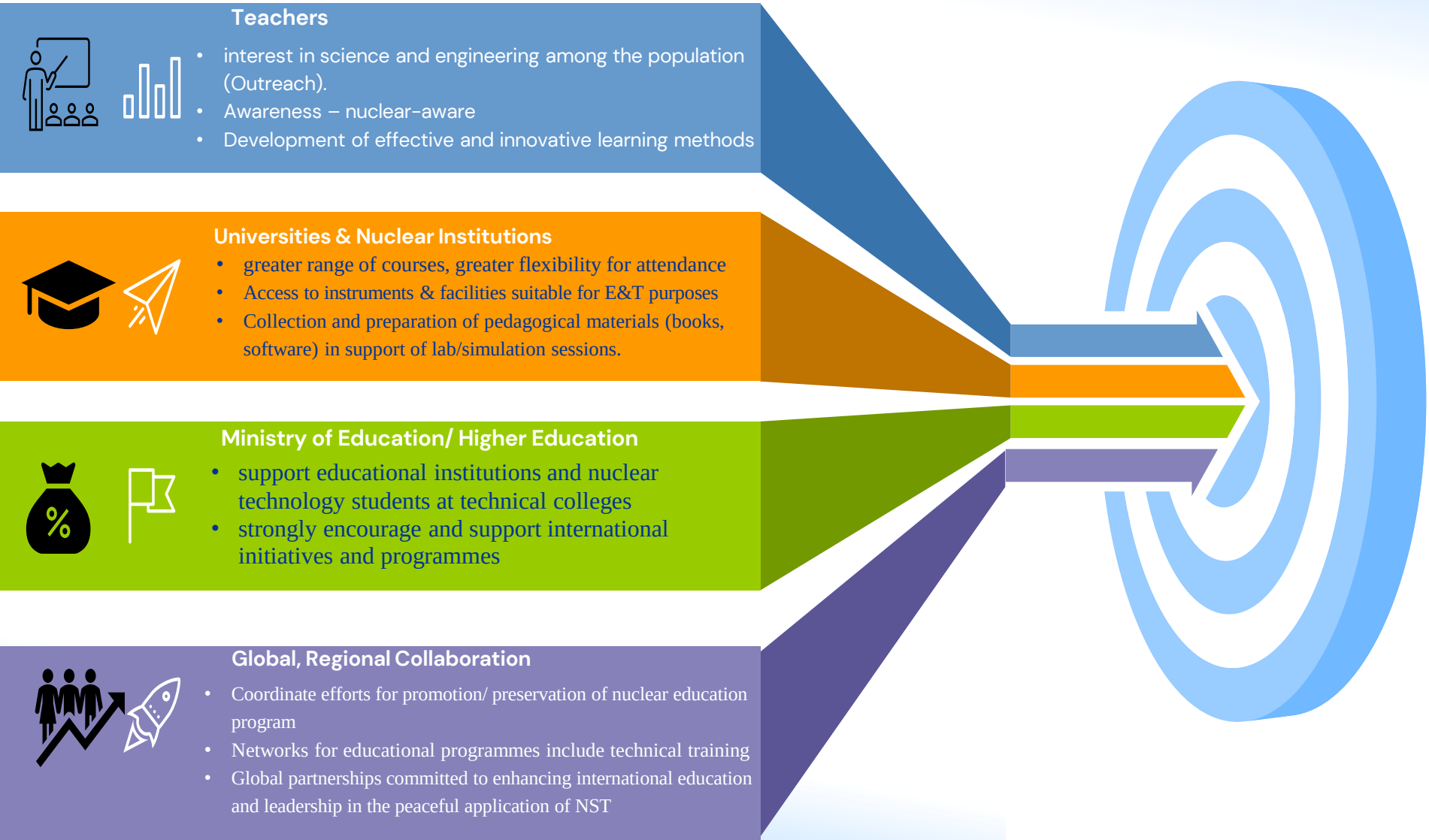
- greater range of courses, greater flexibility for attendance
- Access to instruments & facilities suitable for E&T purposes
- Collection and preparation of pedagogical materials (books, software) in support of lab/simulation sessions.

Ministry of Education/ Higher Education

- support educational institutions and nuclear technology students at technical colleges
- strongly encourage and support international initiatives and programmes

Global, Regional Collaboration

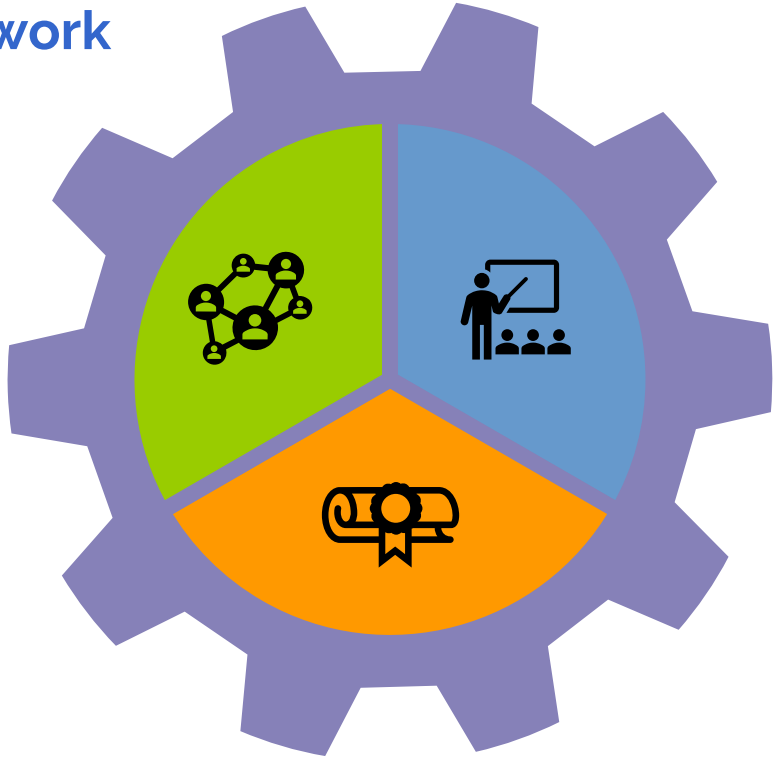
- Coordinate efforts for promotion/ preservation of nuclear education program
- Networks for educational programmes include technical training
- Global partnerships committed to enhancing international education and leadership in the peaceful application of NST



WAY FORWARD

RAS0091 - Supporting Nuclear Science and Technology Education at the Secondary and Tertiary Level 2022-2025

NST Education Network (ANENT)



NST Secondary Education

Expand to more Member States

NST Tertiary Education (INSTA)

RAS0091 Supporting Nuclear Science and Technology Education at the Secondary and Tertiary Level

Objective: To strengthen and sustain regional cooperation in NST education at the tertiary and secondary levels to ensure the training of the next generation of human resources in harnessing the power of NST.

Target Outcome: Enhanced cooperation in the area of nuclear education in the region.

Outputs

1. Regional collaboration for secondary, tertiary, and higher learning education on NST established.
2. Capacity for teaching NST topics, online teaching, and creating teaching and outreach media enhanced.
3. Understanding of NST for SDGs among students at secondary and tertiary level improved.
4. Knowledge and material sharing optimized and further enabled through the promotion and broader utilization of a regional network.

Progress and Activities Forward : Secondary Education

- Successful Completion of 2022/2023 NST Education Exhibition
  - Over 5,000 virtual visitors

NST Education Exhibition 24 January – 10 February 2023
(virtual exhibition opened until end June 2023)

2022/2023 NST Education Competition - NST Education Competition 2022/2023

Progress and Activities Forward : Secondary Education

- 2023 Video Competition Winners to join Study Tour to VIC in Oct 2023

Highlights of 2023 Study Tour

- Visits to IAEA SEIB Laboratories, Dosimetry Laboratory, Atom Institute, University of Vienna (Triga Research Reactor), Medical University of Vienna / AKH Wien,
- Virtual tour of IAEA SG NM laboratory
- Hands on workshop on nuclear detection and monitoring at the CTBTO
- Educational workshop on student and teacher views on NST and its communication
- NST career talk sessions & Career opportunities at the IAEA

Study Tour to VIC in Oct 2023

Progress and Activities Forward : Secondary Education

- Working Document for the NST Guidebook Series for Introducing NST into Secondary-Level Education launched during TCAP 2023 NLO Meeting in March 2023

Progress and Activities Forward : Secondary Education

- Capacity Building activities for Teachers, Curriculum Developers, MoE

- Update the Basic/Model Curriculum for Linking NST to Secondary Education
- Structured Trainings for Educators and the Supporting Partners
  - Decision Makers
  - Curriculum Developer
  - Science and Non-Science Teachers
  - Guidance Counsellor
  - Exhibition, National Science Centers, Nuclear Research Centers
- Draft strategy for building teacher's skills towards facilitating learning on NST topics in a sustained manner.

Australian Government

ANSTO
Science. Ingenuity. Sustainability.

Join ANSTO's

Free & Online

Teacher Professional Development

Training course

Book Now!

REGISTER

RSVP BY
30 May 2023

All participants will receive a certificate of completion from ANSTO

Attention

Secondary school science teachers

Complete the same training as thousands of Australian teachers –
our program is formally accredited by the NSW Education Standards Authority (NESA) and Teacher Quality Institute (TQI) of the ACT

You will learn:

PART 1 | Benefits and responsibilities of nuclear science

Teachers will hear from experts and scientists about:

- Current nuclear medicines: Properties and uses
- Other applications of nuclear science
- The responsibilities of nuclear: Environmental monitoring in Japan

PART 2 | Virtual tour of ANSTO

Teachers will participate in a tour of ANSTO's scientific facilities and learn how they are used to make nuclear medicines and manage waste from this process.

- Tour of OPAL research reactor
- Australian Centre for Neutron Scattering
- ANSTO Nuclear Medicine facility
- Waste management

PART 3 | Teaching about isotopes and radioactivity

Julie Mulholland and Bridget Murphy (ANSTO) and Prof. Takeshi Iimoto (University of Tokyo) will model teaching activities and resources that help students understand the basics of radioactivity.

- Using real data to understand isotopes
- Radiation in everyday life

Delivered in partnership with
International Atomic Energy Agency (IAEA) and
Asian Network for Education in Nuclear Technology (ANENT)

ANENT
Where We Learn and Share Nuclear Knowledge

PART 1
Wednesday
31 May 2023
7.00pm - 8.30pm*

PART 2
Wednesday
7 June 2023
7.00pm - 9.00pm*

PART 3
Wednesday
14 June 2023
7.00pm - 8.30pm*

* Sydney (AEST) time

IAEA

IAEA

SULTANATE OF OMAN
MINISTRY OF EDUCATION

IAEA
International Atomic Energy Agency

Regional Seminar

Good Practices in Linking **Nuclear Science Technology (NST)** into Secondary Education

29 Oct - 2 Nov 2023 | Muscat, Oman

INTERNATIONAL NUCLEAR SCIENCE OLYMPIAD

Meeting in Feb 2023
VIC
Experts from the region
With experience in Olympiads

INSO Roadmap

Co-Organize with IAEA
Supported by ANENT & INSTA

Establishment of NSO Steering Committee
Oct 2022

1st NSO & IJ Meeting
Feb 2023

- ToRs of SC & IJ
- Regulations of Olympiad
- Syllabus & Assessment Method

Website, Accounts
July 2023

- Logo Competition – May 2023
- Dev of Website – July 2023
- Organization Account and Bank Account – July 2023

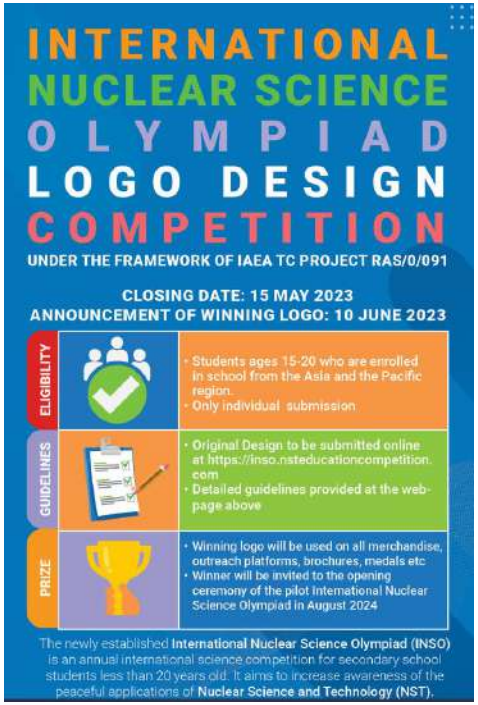
Announcement of 1st INSO
Sept 2023

- Final Registration May 2024

1st INSO
PHI, Aug 2024

Progress and Activities Forward : Secondary Education

- Preparation to pilot first International Nuclear Science Olympiad in Summer 2024 in the Philippines



Logo Competition

INSO
International Nuclear Science Olympiad

INSO Team Observe the International Biology Olympiad July 2023

Education Initiatives via TC Projects

INSO International Nuclear Science Olympiad

Piloting International Nuclear Science Olympiad – competition for secondary students

https://inso.science/

INSO Roadmap

Co-Organize with IAEA
Supported by ANENT & INSTA

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1st INSO PHI, Aug 2024

Collaborators

IAEA

Argonne NATIONAL LABORATORY | 75 1946–2021

Cost Free Experts
US : Bridget Carter
Japan : Koichi Watanabe

Australian Government | ansto Nuclear-based science benefiting all Australians

NPI NUCLEAR POWER INSTITUTE

EHS 東京大学環境安全本部 Environment, Health and Safety, UTokyo

Japan's Contribution toward "Atoms for Peace and Development"

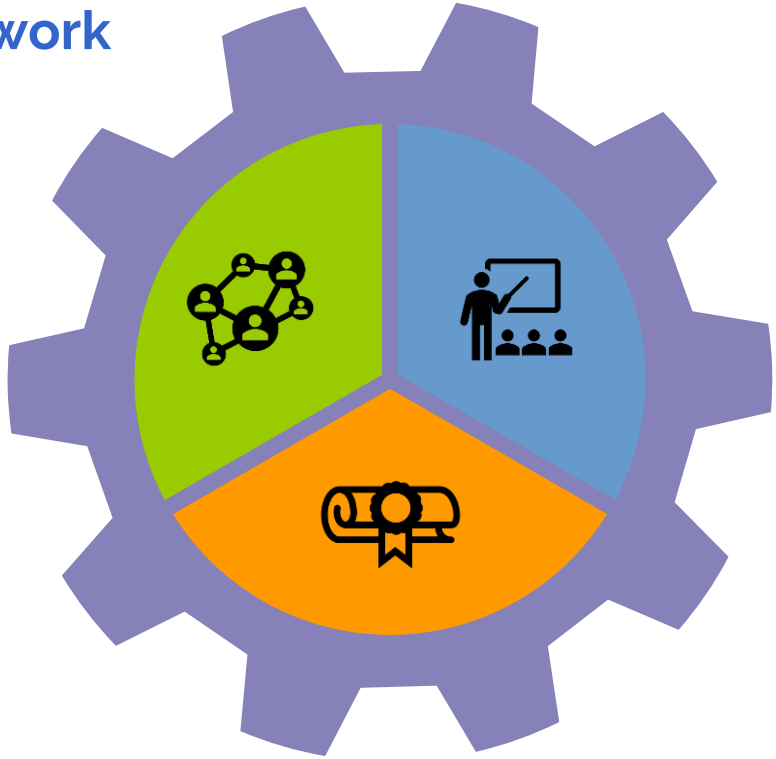
JN-HRD.NET 産学官連携 原子力人材育成ネットワーク Japan Nuclear Human Resource Development Network

Ministry of Foreign Affairs of Japan

WAY FORWARD

RAS0091 - Supporting Nuclear Science and Technology Education at the Secondary and Tertiary Level 2022-2025

NST Education Network (ANENT)



NST Secondary Education

Expand to more Member States

NST Tertiary Education (INSTA)

Education Initiatives via TC Projects

Celebrating 20 years in collaboration with Asian Network for Education in Nuclear Technology – sharing educational materials and latest technology for the practitioners

https://anentweb.net/Home

Supporting International Nuclear Science Academy Executive Education Programme

- Empowering Educators in the region on NST role in meeting the UN SDGs

INSTA

//insta-network.org

ANENT - Timeline of Activities

Select a period to highlight at right. A legend describing the charting follows.

ACTIVITY	PERSON RESPONSIBLE	DEADLINES						
		March	April	May	June	July	August	September
Launch New Web Portal	Sunrise, Raven, Lea	Mar-17						
Launch New LMS	Youngmi, Bob, PH	Mar-17						
ANENT LMS Learning Material Developed	Material in June 2023; Event in Sept/Oct 2023 - **Youngmi, Rod**							September/
ANENT LMS Utilization - https://pnridostgovph-my.sharepoint.com/:p:/g/personal/imgcervantes_pnri_dost_gov_ph/EdJ-t-dSVBNHmdvx1NFhC2MBUnq4kEztRwlCxqV6RPbXxA?e=fCLFOF	Hosting of INSTA-organized Step 1 (Virtual Mode) Executive Education Programme for Educators (partner with INSTA) - **Marina Q3 2023**							
	Partnership with Universities in MS (activity to utilize LMS e.g., co-organized activity) - **THA, PHI, INS, AUS Ready by Jan 2023**							
	Finalization of Guidance for ANENT's LMS and a Framework for its Governance - **Sudi**							

ANENT Special SC Meeting March 2023

IAEA GC 2023


20:21
Post
IAEA TC
@IAEATC
Follow
At #IAEAGC on 27 September, @anentweb, the International Nuclear Science Olympiad and the International Nuclear Science and Technology Academy concluded a partnership agreement to boost nuclear science education in the Asia and the Pacific region with @IAEAorg support
9:33 · 28 Sep 23 · 371 Views
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Sourced from across Twitter
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Past Webinar Series

1. Computer Security in NPP; 30 May 2023; Tsinghua University

2. The Invisible Revealed; 3 August 2023; ANSTO

3. Celebrating 20 years of Learning and Sharing Nuclear Knowledge; 27 September 2023; ANENT

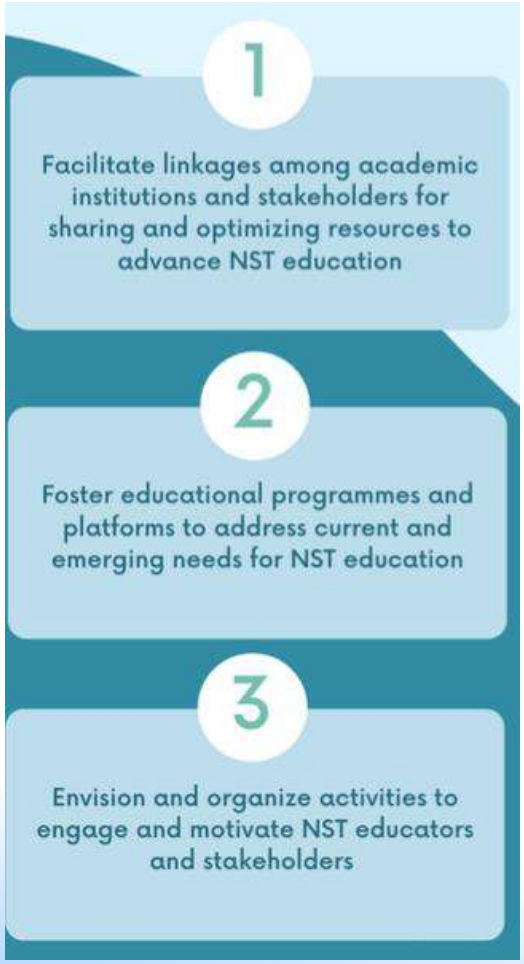
ABOUT US

A REGIONAL EDUCATIONAL INITIATIVE SUPPORTED BY THE INTERNATIONAL ATOMIC ENERGY AGENCY

We envision strong, growing, and empowered nuclear science and technology educators that advance the safe, secure, peaceful and beneficial use of unclear science and technology globally.

Progress and Activities Forward : Tertiary Education

- Working closely with INSTA – International Nuclear Science and Technology Academy



Vision

- INSTA envisions strong, growing, and empowered NST educators that advances the safe, secure, peaceful and beneficial use of nuclear science and technology globally

Mission

- INSTA contributes to the global nuclear manpower development through regional and inter-regional collaborations for empowering educators and advancing nuclear science and technology education programs in the tertiary level.

INSTA Executive Education Programme

INSTA Steering Committee

Chair : Prof Tong

Secretary: A/Prof Irman

WG 1: Dr Arcilla

Responsible for coordinating between academic institutions and nuclear stakeholders and optimizing the use of existing resources in the region to advance R&D in support of Nuclear Education

WG 2: A/Prof Pengvanich

Responsible for developing education programmes and platforms to address current and growing needs for qualified educators (curriculum development, education material, education platform etc

WG 3: Prof Iimoto

Responsible in planning and organizing special events and proposing TC projects with the goal of increasing involvement of educators in NST education programme

IAEA

ANENT 20

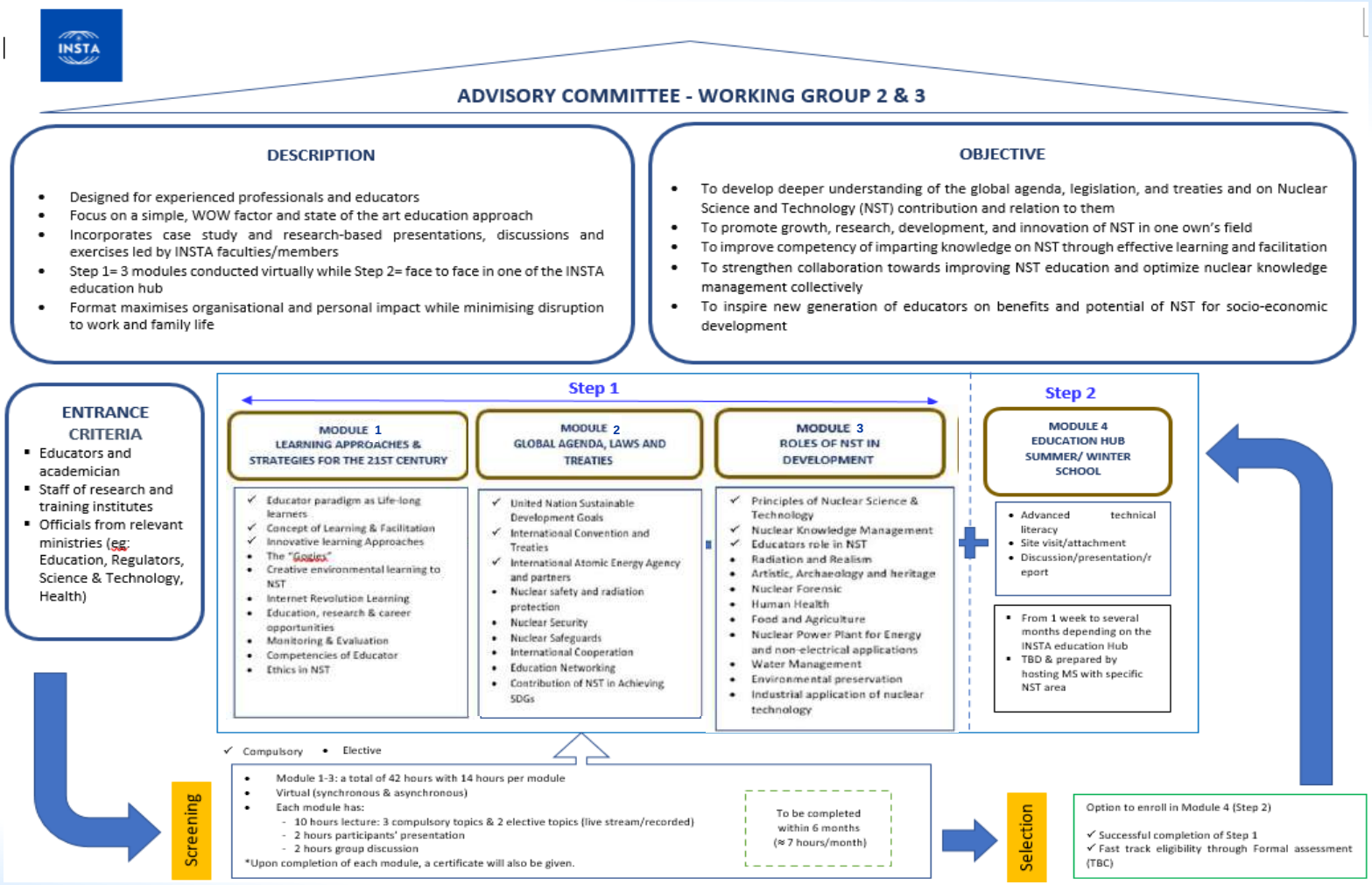
Where We Learn and Share Nuclear Knowledge

"A PROFESSOR OF NUCLEAR ENGINEERING MAY NOT QUALIFY AS A TEACHER, WHO KNOWS HOW TO MAKE STUDENTS LOVE THIS SUBJECT AND INVOLVED IN THIS FIELD AS THEIR FUTURE CAREER. "

MS JIEJUAN TONG

Vice Director of INET, Tsinghua University, Chair of INSTA

FRAMEWORK OF INSTA EXECUTIVE PROGRAMME FOR EDUCATORS



Programme Features

- Step 1 : Virtual
  - 3 thematic modules
    - Module 1: Learning Approaches & Strategies for the 21st Century
    - Module 2: Global agenda, laws and treaties
    - Module 3: Role of NST in development
  - 30 compulsory and Elective Lessons
  - Instructed by experts from each field from INSTA Member
- Step 2: Face to Face/Hybrid
  - Participants who completed the Phase 1 will be eligible for the INSTA School
  - Advanced technical literacy

Step 2: INSTA Schools in pipeline (based on members' identified needs

- Nuclear Engineering and Nuclear Safety – CPR (spring & autumn 2024)
- Nuclear Research Reactors Utilization– Iran (summer 2024)
- Comprehensive Radiation Medicine and Public Health Education and Clinical Training- Malaysia (autumn 2024)
- Advanced Radiation Protection under the concept of Risk Management– Japan (Spring 2025)

Where We Learn and Share Nuclear Knowledge

"BY EQUIPPING EDUCATORS WITH THE KNOWLEDGE AND TOOLS THEY NEED, YOU ARE NOT ONLY SHAPING THE FUTURE OF NUCLEAR SCIENCE BUT ALSO ENSURING THAT THE NEXT GENERATION OF LEARNERS RECEIVES THE HIGHEST QUALITY OF EDUCATION."

RAFAEL MARIANO GROSSI:
IAEA Director General