

Regional Workshop on the Management of National Dose Registries

Asia and the Pacific Regional ALARA Network

Presented by Qinjian Cao
Secretary of ARAN
(China Institute for Radiation Protection)

20 – 24 March 2023
Bangkok, Thailand



CONTENTS

➤ ARAN Background & Current Status

➤ ARAN Activities

- Annual activities in 2022
- Future Plan



ARAN Background & Current Status



History of ARAN



ARAN

- is a regional network initiated by the IAEA in 2007.
- was coordinated by Steering Committee (SC), IAEA and Regional Cooperative Agreement (RCA), comprising representatives from 21 countries.

Main objectives of ARAN were

- To maintain and enhance radiation protection competence in participating countries through information, findings and data exchanges and the effective use, exchange and integration of skills and expertise etc., with special emphasis on the implementation of the ALARA principle.
- To harmonize the objectives, standards and practices, particularly concerning ALARA, within participating countries.



Transition Period

- ARAN was operated until July 2014 and entered into a transition period. Since then, the ARAN has not been working, except an attempt in 2017 with an IAEA regional workshop.

Reactivation

- In consideration of its significance, IAEA helped the Asia and the Pacific Region with the reactivation process of ARAN network.
- On November 10, 2021, the Virtual Management Board Meeting of ARAN was organized by China Institute for Radiation Protection (CIRP) in collaboration with the IAEA :
 - To approve ARAN Terms of Reference.
 - To establish Steering committee.
 - To propose Working groups.
 - To nominate 21 country representatives as management board members.



Current Status

○ Steering Committee

Position	Name	Organization
Chairperson	Liu Liye	China Institute for Radiation Protection
Vice Chairperson	Chadia Rizk	Lebanese Atomic Energy Commission
	Kristine Romallosa	Philippine Nuclear Research Institute
Secretary	Cao Qinjian	China Institute for Radiation Protection
IAEA Representative	H. Burçin Okyar	



Current Status



21 countries: Australia, Bahrain, Bangladesh, China, Indonesia, Iraq, The Islamic Republic of Iran, Jordan, Kuwait, Lebanon, Malaysia, Nepal, Oman, Pakistan, Philippines, Republic of Korea, Sri Lanka, Syria, T.T.U.T.J of T. Palestinian A., Thailand, and Qatar.



Current Status

○ Working Groups

NO.	Name	Nominated WG Chairperson	Organization
WG1	Dose Assessment	Chadia Rizk	Lebanese Atomic Energy Commission
WG2	Medical Applications	Sun Quanfu	National Institute for Radiation Protection, CDC
WG3	Industrial Sources and Practices	Kiwon Jang	Korea Institute of Nuclear Safety
WG4	Natural Radiation Sources	Stephen Marks	Australian Radiation Protection and Nuclear Safety Agency
WG5	Emergency Preparedness and Response	Prasad Mahakumara	Sri Lanka Atomic Energy Board
WG6	Education and Training	Ahmad Hamdan	Jordan Atomic Energy Commission



Current Status

After reactivation, following **activities will be carried out by ARAN:**

- Once a year, the ARAN aims to co-organize a **Workshop** with the IAEA under the regional projects of occupational radiation protection.
- The ARAN aims to produce regular issues of the **ARAN ALARA Newsletter** at least once a year.
- An **ARAN website** will be maintained by CIRP with the support of the IAEA, to enable a broad public access to the ARAN information and publications such as the Newsletters, material and recommendations from the Workshops.



Current Status

- ARAN Website was established. Website address: <http://www.ap-alara.com>

ARAN Website Framework



- All representatives are supposed to contribute to the website contents.
- The Secretariat is in charge of website management.
- The Website will be updated every three months.

- The first Newsletter was issued on the website.



➤ ARAN Activities

- Annual activities in 2022
- Future Plan



• 1. Rapid development of nuclear energy

- ✓ The Asia Pacific region has become **the most growth vitality and development potential region** in the world, with a vast territory and a large population.
- ✓ Almost **70%** of the nuclear reactors under construction is in Asia-Pacific region.

	Africa	Asia	East Europe & Russia	North America	South America	West & Central Europe	Total
BWR		20		33		8	61
FNR			2				2
GCR						11	11
HTGR		1					1
LWGR			11				11
PHWR		24		19	3	2	48
PWR	2	99	40	61	2	98	302
Total	3	144	53	113	5	119	436

Operable nuclear power reactors, 2021

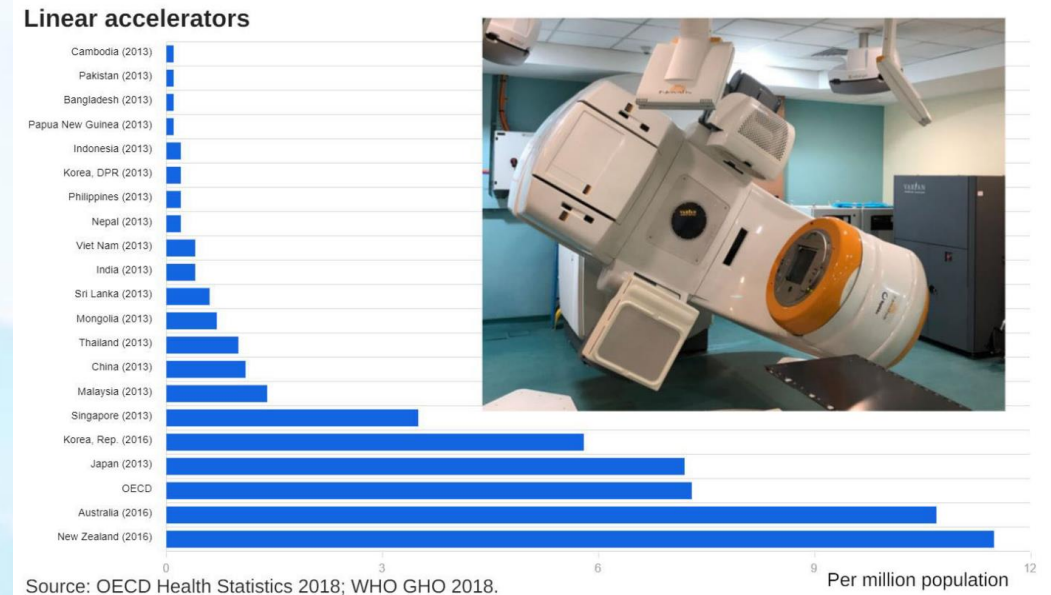
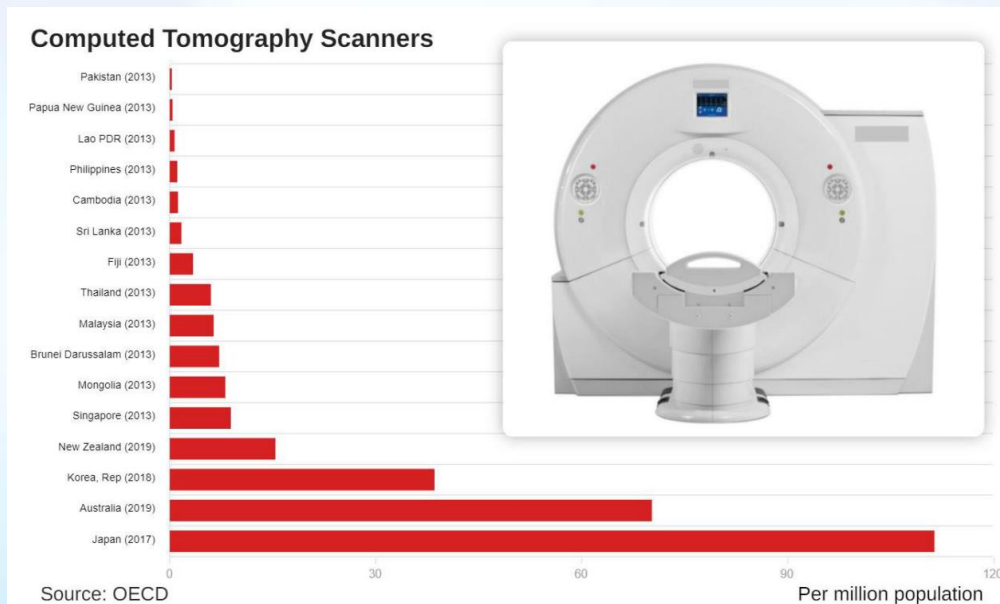
	BWR	FNR	HTGR	PHWR	PWR	Total
Asia	2	2		3	29	36
East Europe & Russia		1			6	7
North America					2	2
South America					2	2
West & Central Europe					6	6
Total	2	3		3	45	53

Units under construction by region, 2021



• 2. Huge gap in the scale of nuclear application among Asia-Pacific countries

- In some countries, the activities cover many fields such as uranium mining, nuclear power plants, industry irradiation, medical and agriculture, while in some countries, activities are limited.
- There is also a large difference in the number of medical equipments. For example, there is an almost 400-fold difference in the number of CT scanners relative to the population between the highest and lowest countries.



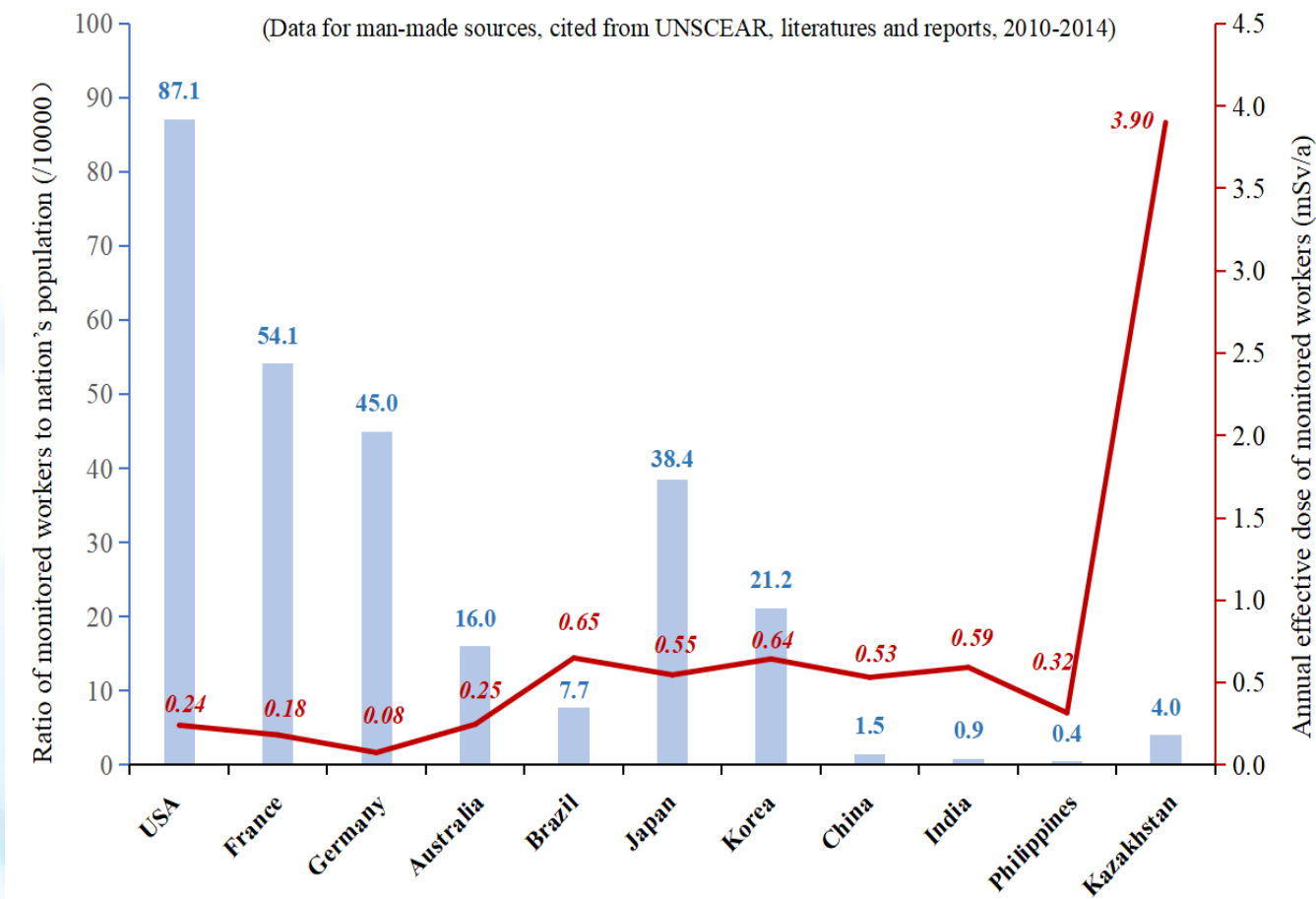
3. Great potential development space for number of occupational workers

- ✓ Noticing that the ratio of number of occupational workers to nation's population is 10-, even 100- times lower than that of developed countries (from man-made sources, mainly medical application).

Meanwhile,

Big gap in occupational protection level

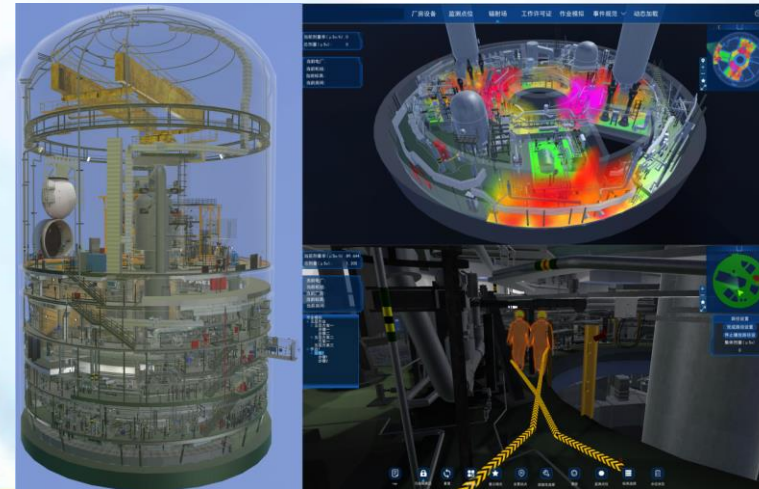
- ✓ Annual effective dose of monitored workers to man-made sources in Asia-Pacific region are relatively high, requiring more ALARA efforts.



- **4. Big diversity in the infrastructure and technical capacity of ALARA in different countries.**
 - Some countries have established complete radiation protection laws, regulations and management systems, while some countries have just begun to formulate radiation safety legal frameworks with the help of IAEA TC projects.
 - Some countries have accumulated a considerable number of good ALARA practices and developed several advanced ALARA tools, while in some countries, external exposure dose monitoring cannot cover all radiation workers, and the internal exposure dose monitoring has not yet started.



Malaysia's good practice on internationally recognized NDT system.



China's ALARA tool of a 3D VR radiation field simulation and person-dose calculation for NPP.

ARAN Activities:



1. Regional workshop on ALARA

- to share the overview of occupational exposure data and ORP in each country.
- to share the ALARA development status and good practice case by case.

2. Carry out intercomparison of individual monitoring

3. Develop, establish and strengthen regional ALARA infrastructures

- Through the provision of ALARA tools, technical visit, technical assistance, etc..



ARAN Activities:



4. Educations and trainings

- To promote the regional implementation and application of IAEA General Safety Requirements, GSR Part 3, and the Safety Guide on Occupational Radiation Protection.
- to improve the understanding of the specific requirements related to planned, emergency, existing exposure situations and the protection of workers in special cases.

5. Strengthen cooperation with other organizations or projects

- like other ALARA regional network, IAEA TC and RCA projects.

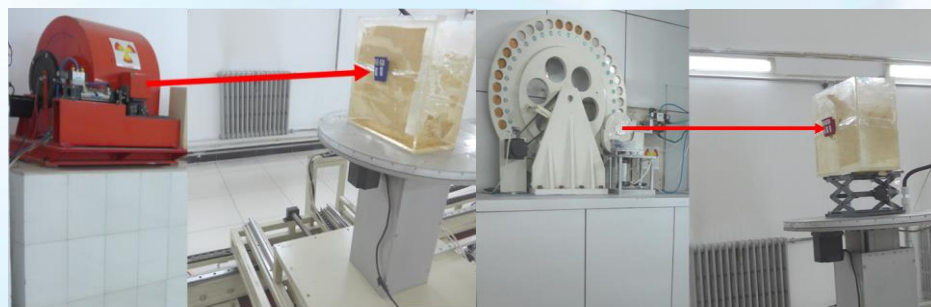
Surveys on ORP regulations and external monitoring

- to get information on current status, needs and gaps in each country.
- to build a strategy in order to improve the current situation.
- Received feedback from 13 countries.

Provisional conclusions:

- Requirement for monitoring, recording and assessment of occupational exposure are available in the majority of the participating countries;
- Qualified personnel are working in the laboratories;
- Quality systems, though established in the majority of the laboratories, needs to be implemented according to an international standard;

- Intercomparison of external and internal dosimetry



THANKS

