

# IAEA STRATEGIC APPROACH TO EDUCATION AND TRAINING IN RADIATION, TRANSPORT AND WASTE SAFETY

Andrea LUCIANI

*Division of Radiation, Transport and Waste Safety*

*Department of Nuclear Safety and Security*

*International Atomic Energy Agency*

[A.Luciani@iaea.org](mailto:A.Luciani@iaea.org)



**IAEA**

International Atomic Energy Agency

# Outline

## IAEA Strategic Approach to E&T in rad., transp. and waste safety

- *Principles of IAEA's support to Member States in the field of E&T*

## National Strategy for E&T in rad., transp. and waste safety

- *The guidance on a methodology to establish the national strategy*

## IAEA support to build education and training infrastructures

- *Cooperation projects to promote the establishment of the national strategy*

# IAEA STRATEGIC APPROACH 2011- 2020

## *“IAEA Strategic Approach to Education and Training in Radiation, Transport and Waste Safety 2011–2020”*

*Submitted to the IAEA Policy Making Organs in 2010,  
where it was endorsed by the General Conference*



**Steering Committee**



الوكالة الدولية للطاقة الذرية  
国际原子能机构  
International Atomic Energy Agency  
Agence internationale de l'énergie atomique  
Міжнародне агентство з атомної енергії  
Organismo Internacional de Energía Atómica

Vienna International Centre, PO Box 100, 1400 Vienna, Austria  
Phone: (+43 1) 2600 • Fax: (+43 1) 26007  
Email: [Official.Mail@iaea.org](mailto:Official.Mail@iaea.org) • Internet: <http://www.iaea.org>  
In reply please refer to:  
Dial directly to extension: (+43 1) 2600-22696

2010/Note 44

### **Note by the Secretariat**

#### **Strategic Approach to Education and Training in Radiation, Transport and Waste Safety 2011–2020**

**(Continuation of the Strategic Approach 2001–2010)**

A ten-year strategy for education and training in radiation and waste safety was developed<sup>1</sup> by an Advisory Group of experts from Member States, and subsequently noted by the 2001 General Conference in GC(45)RES/10 which urged the Secretariat to implement the aforementioned strategy. A steering committee, comprising experts from regional and collaborating centres in Member States, international organizations and the Secretariat, was established to advise the Agency on the implementation of the strategy and to make recommendations as appropriate.

Subsequent General Conference Resolutions GC(46)RES/9, GC(47)RES/7, GC(48)RES/10, GC(49)RES/9, GC(50)RES/10, GC(51)RES/11, GC(52)RES/9 and GC(53)RES/10 have underlined or emphasized the importance of sustainable programmes for education and training in nuclear, radiation, transport and waste safety, and have also welcomed the ongoing commitment of the Secretariat and Member States to the implementation of the strategy.

Towards the end of the ten-year period, the steering committee made an analysis of the overall achievements based on the effectiveness of the various components of the 2001–2010 strategy. The steering committee, noting the achievements of the 2001–2010 strategy, revised and updated it and recommended that it be continued for the period 2011–2020.

<sup>1</sup> Note by the Secretariat 2001/Note 20

# MAIN ELEMENTS OF THE IAEA STRATEGY

## ■ Vision

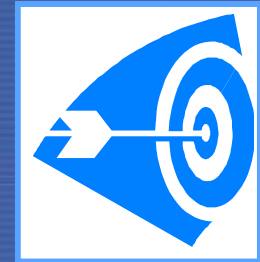
*Education and Training infrastructures  
for building and maintaining national competence in radiation,  
transport and waste safety,  
are in place in Member States,  
consistent with IAEA safety standards*



# MAIN ELEMENTS OF THE IAEA STRATEGY

## ■ Objectives

- To *strengthen* radiation, transport and waste safety infrastructures through building competence in MSs
- To *ensure* that E&T programmes in MSs address the requirements of the IAEA safety standards
- To *facilitate* the establishment of a national strategy for E&T in rad., transp. and waste safety in MSs



↳ **Output**



*Guidance on the establishment and implementation of a **national strategy** for E&T*

# IMPLEMENTATION OF THE IAEA STRATEGY

## ■ Key players

- IAEA
- Member States
- Regional Training Centres (RTCs)



# IMPLEMENTATION OF THE IAEA STRATEGY

## Regional Training Centres





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Education and Training Appraisal Service EduTA

Emergency preparedness reviews

Engineering safety reviews

Integrated regulatory review services

Nuclear security advisory services

Operational safety reviews

Radiation safety appraisals

RR and FCF safety reviews

Safety assessment reviews

Safety culture reviews

Site & seismic safety reviews

Transport safety appraisals

Waste safety appraisals

▸ Special projects

▸ Training

▸ Meetings

**Education and Training Appraisal (EduTA)**

**Background** - The International Atomic Energy Agency has a statutory function to establish standards of safety for the protection of health, life and property against ionizing radiation and to provide for the application of these standards. Education and training in radiation protection is one of the mechanisms and primary strategies through which the Agency assists Member States in the application of these standards, and numerous General Conference resolutions have emphasized this role.

The Division of Radiation, Transport and Waste Safety has developed many education and training programs over several years and has published a number of technical documents to support training in the area. Furthermore, it also assists Member States to build competence in radiation protection and the safety of sources.

In order to effectively provide assistance to Member States and to design training activities, it is essential to evaluate and identify the Member States training needs in a systematic manner and to assess their education and training infrastructure. The EduTA service was developed to fulfill this purpose.

**Scope**

The EduTA service includes:

- Carrying out a detailed appraisal of the status of the provisions for education and training in radiation protection and the safety of radiation sources, including the identification of the national education and training needs
- Identifying areas in education and training, where the provisions should be improved (i) to cope with national education and training needs, (ii) to comply with IAEA safety standards, (iii) to adopt best practices
- Making recommendations on actions to be taken to cope with the education and training recommendations as stated in the IAEA Safety Guide RS-G-1.4, *Building Competence in Radiation Protection and the Safe Use of Radiation Sources* and the IAEA Safety Report Series No. 20 *Training in Radiation Protection and the Safe Use of Radiation Sources*.

**Resources**

[Education and Training home](#)

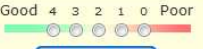
[Completed EduTA Missions](#)

**Page links**

[Methodology](#)

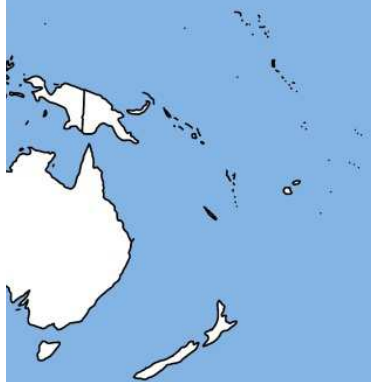
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# IMPLEMENTATION OF THE IAEA STRATEGY

|             | Stage I:<br>Preparation                                                                                                      | Stage II:<br>Promotion                                                                             | Stage III:<br>Implementation                                                  |
|-------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Activities  | Preparation of the competence building tools and <u>guidance to establish a national strategy</u> for education and training | Dissemination and promotion of tools and <u>guidance</u> at regional level among the Member States | Development and implementation of <u>national strategies</u> in Member States |
| Key-players | IAEA                                                                                                                         | RTCs                                                                                               | Member States                                                                 |

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- *The guidance on a methodology to establish the national strategy*

## IAEA support to build education and training infrastructures

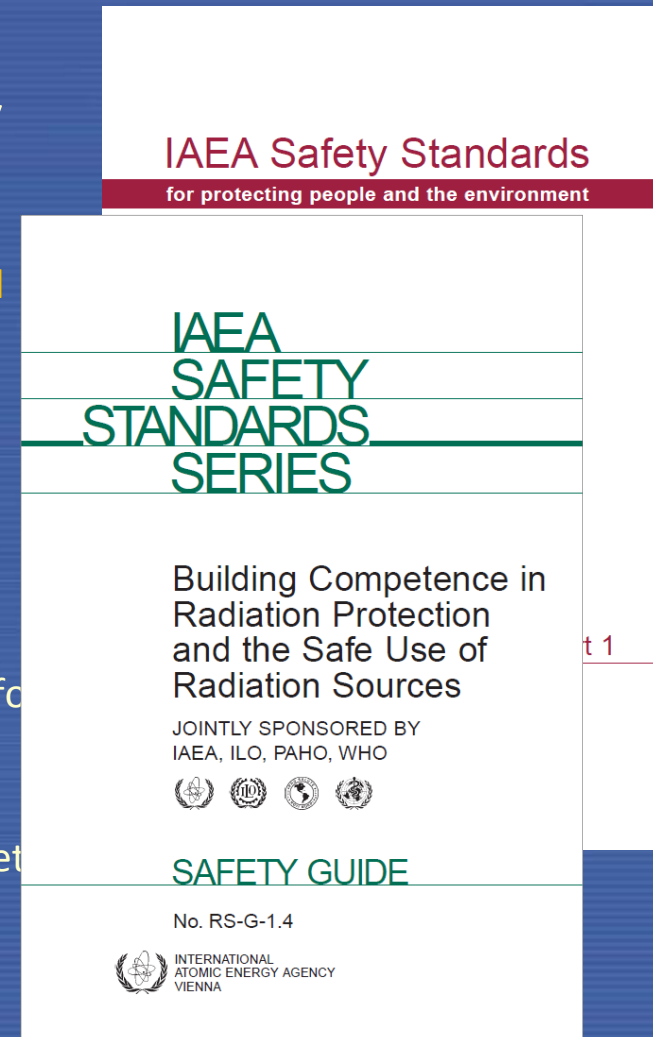
- *Cooperation projects to promote the establishment of the national strategy*

# GENERAL FRAMEWORK ON NAT. STRAT. FOR E&T

## ■ Requirement 1

### National policy and strategy for safety

- The government shall establish a **national policy and strategy** for safety..
- In the national policy and strategy, account shall be taken of the following:
  - .... The need and provision for **human resources**
- The governmental, legal and regulatory framework for safety includes:
  - .... Provision for **acquiring and maintaining the necessary competence** nationally for ensuring safety



# NATIONAL STRATEGY FOR E&T



# GUIDANCE NAT. STRAT. ON E&T

- A practical tool for assisting Member States to establish a national strategy for education and training in radiation, transport and waste safety

***A METHODOLOGY FOR  
ESTABLISHING A NATIONAL  
STRATEGY FOR EDUCATION AND  
TRAINING IN RADIATION,  
TRANSPORT AND WASTE SAFETY***

*Draft Safety Report No.*

# GUIDANCE NAT. STRAT. ON E&T

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## Annex I:

- illustrates the practical application of the guidance for a hypothetical country
- helps to visualize the implementation of the various steps of the process in a practical way.

# GUIDANCE - ANNEX I

| Practices using radiation sources                          | Number of facilities |                    |        | Qualified Expert (QE) |                        |                   | Radiation Protection Officer (RPO) |                         |                     | Operator |                              |                         | Health Professionals (HP) (****) |                        |                   |
|------------------------------------------------------------|----------------------|--------------------|--------|-----------------------|------------------------|-------------------|------------------------------------|-------------------------|---------------------|----------|------------------------------|-------------------------|----------------------------------|------------------------|-------------------|
|                                                            | Existing             | Foreseen (< 5 yrs) | Total  | Existing              | Estimated QEs required | QEs to be trained | Existing                           | Estimated RPOs required | RPOs to be trained* | Existing | Estimated Operators required | Operators to be trained | Existing                         | Estimated HPs required | HPs to be trained |
| <b>INDUSTRIAL and RESEARCH</b>                             |                      |                    |        |                       |                        |                   |                                    |                         |                     |          |                              |                         |                                  |                        |                   |
| Industrial radiography                                     | 11                   | 2                  | 13     |                       |                        |                   | 3                                  | 13                      | 10                  | 88       | 104                          | 16                      |                                  |                        |                   |
| Industrial irradiator facilities (industrial and research) | 2                    |                    | 2      |                       |                        |                   | 2                                  | 2                       | 0                   | 3        | 4                            | 1                       |                                  |                        |                   |
| Industrial gauges and well logging                         | 38                   | 7                  | 45     |                       |                        |                   | 38                                 | 45                      | 7                   | 152      | 180                          | 28                      |                                  |                        |                   |
| Research activities: use of sealed and unsealed sources    | 12                   | 3                  | 15     | 0                     | 7**                    | 7                 | 12                                 | 15                      | 3                   | 75       | 90                           | 15                      |                                  |                        |                   |
| Research accelerators or reactors                          | 2                    |                    | 2      | 0                     | 2                      | 2                 | 2                                  | 2                       | 0                   | 10       | 13                           | 3                       |                                  |                        |                   |
| Mineral extraction and processing companies (NORM)         | 10                   | 2                  | 12     | 0                     | 6**                    | 6                 | 10                                 | 12                      | 2                   | 250      | 300                          | 50                      |                                  |                        |                   |
| <b>MEDICAL</b>                                             |                      |                    |        |                       |                        |                   |                                    |                         |                     |          |                              |                         |                                  |                        |                   |
| Dental radiology (alone)                                   | 500                  | 200                | 700*** | 0                     | 0                      | 0                 | 0                                  | 0                       | 0                   | 300      | 400                          | 100                     | 700                              | 900                    | 200               |
| Diagnostic and interventional radiology                    | 620                  | 120                | 740*** | 0                     | 37**                   | 37                | 225                                | 270                     | 45                  | 400      | 740                          | 340                     | 800                              | 1100                   | 300               |
| Radiotherapy and brachytherapy                             | 3                    | 1                  | 4      | 1                     | 4                      | 3                 | 3                                  | 4                       | 1                   | 20       | 28                           | 8                       | 10                               | 14                     | 4                 |
| Nuclear medicine                                           | 13                   | 3                  | 16     | 0                     | 16                     | 16                | 13                                 | 16                      | 3                   | 60       | 70                           | 10                      | 26                               | 32                     | 6                 |
| <b>OTHER PRACTICES</b>                                     |                      |                    |        |                       |                        |                   |                                    |                         |                     |          |                              |                         |                                  |                        |                   |

# GUIDANCE NAT. STRAT. ON E&T

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# GUIDANCE - ANNEX II

| Stakeholders                         | Policy framework     | Output 1:<br>National strategy for E&T established | Assessment of education and training needs | Output 2:<br>E&T needs assessed | Design of the national E&T programme | Output 3:<br>Schedule of activities to meet the E&T needs | Development and implementation of the national E&T programme | Output 4:<br>infrastructures<br>Competence built in support of national radiation safety | Evaluation of the national E&T programme | Output 5:<br>date<br>National E&T programme continuous to be effective and up to date |
|--------------------------------------|----------------------|----------------------------------------------------|--------------------------------------------|---------------------------------|--------------------------------------|-----------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------|---------------------------------------------------------------------------------------|
| Government                           | Action 1<br>Action 3 |                                                    | Action 4                                   |                                 |                                      |                                                           | Action 16                                                    |                                                                                          |                                          |                                                                                       |
| Regulatory body                      | Action 2             |                                                    | Action 4<br>Action 7                       |                                 |                                      |                                                           | Action 12<br>Action 13<br>Action 14                          |                                                                                          |                                          |                                                                                       |
| Professional bodies and associations | Action 2             |                                                    | Action 6                                   |                                 | Action 9                             |                                                           | Action 15                                                    |                                                                                          |                                          |                                                                                       |
| Education and training providers     | Action 2             |                                                    | Action 5                                   |                                 | Action 9                             |                                                           | Action 15<br>Action 17                                       |                                                                                          |                                          |                                                                                       |
| National Committee                   | Action 2             |                                                    | Action 8                                   |                                 | Action 10<br>Action 11               |                                                           |                                                              |                                                                                          | Action 18<br>Action 19                   |                                                                                       |
| Action 20                            |                      |                                                    |                                            |                                 |                                      |                                                           |                                                              |                                                                                          |                                          |                                                                                       |



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# COOPERATION PROJECTS

## Technical Cooperation Regional Projects on E&T *“Strengthening the Education and Training Infrastructure and Building Competence in Radiation Safety”*

**Africa : RAF9048**



**Europe : RER9109**



**Asia and the Pacific : RAS9066**



**Latin America : RLA9070-9075**



# Regional Workshops on National Strategies 2012 -2014



| Stakeholders                         | Policy framework     | Output 1:<br>National strategy for E&T established | Assessment of education and training needs | Output 2:<br>E&T needs assessed | Design of the national E&T programme | Output 3:<br>Schedule of activities to meet the E&T needs | Development and implementation of the national E&T programme | Output 4:<br>Competence built in support of national radiation safety infrastructures | Evaluation of the national E&T programme | Output 5:<br>National E&T programme continuous to be effective and up to date |
|--------------------------------------|----------------------|----------------------------------------------------|--------------------------------------------|---------------------------------|--------------------------------------|-----------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------|
| Government                           | Action 1<br>Action 3 |                                                    | Action 4                                   |                                 |                                      |                                                           | Action 16                                                    |                                                                                       |                                          |                                                                               |
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| Education and training providers     | Action 2             |                                                    | Action 5                                   |                                 | Action 9                             |                                                           | Action 15<br>Action 17                                       |                                                                                       |                                          |                                                                               |
| National Committee                   | Action 2             |                                                    | Action 8                                   |                                 | Action 10<br>Action 11               |                                                           |                                                              |                                                                                       | Action 18<br>Action 19                   |                                                                               |
|                                      |                      |                                                    |                                            |                                 | Action 20                            |                                                           |                                                              |                                                                                       |                                          |                                                                               |



19 Regional workshops; > 300 participants from 90 Member States

- *The guidance to establish a National Strategy for E&T has been disseminated among MSs*
- *Preliminary information collected by MSs*
- *Action Plans were drafted to establish a National Strategy for E&T*



## *Take home points*

- The establishment by Member States of a **national strategy for E&T** in radiation safety is one of the key factors **to build sustainable capacity**, in compliance with relevant **IAEA Safety Standards**
- For that purpose IAEA has developed a guidance and supports MSs through technical cooperation projects.
- Future work of IAEA will include monitoring the **progress made** and **analysing challenges** faced and **difficulties** encountered, in order to identify possible solutions to be rendered to MSs (e.g. **new workshops** planned for **2014**)

# E&T - Division of Radiation, Transport and Waste Safety

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## Nuclear Safety & Security

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### Education and Training in Radiation, Transport and Waste Safety



Building competence through education and training in radiation safety is fundamental to the establishment of a comprehensive and sustainable national infrastructure for radiation safety, which in turn is essential for protecting people from the harmful effects of radiation. In order to establish a sustainable education and training infrastructure in radiation, transport and waste safety, Member States should develop a national strategy for building competence through education and training, based on the approach provided in the Safety Guide "Building Competence in Radiation Protection and the Safe Use of Radiation Sources".



The national strategy is based on 4 interlinked phases, where the outcome of one phase is the starting point for the next phase. The design and development of an education and training programme for a national strategy requires the organization of training courses in radiation protection. IAEA Safety Reports Series No. 20 "Training in radiation protection and the safe use of radiation sources" provides trainers and training organization with information on and examples of training methods and materials that have proven to be effective in use with appropriate target audiences.



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