Capacity Building in Preparation for an Expanded Nuclear Programme

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Considerations on how to:

1. Attract
2. Prepare
3. Select for key positions
4. Motivate
5. Collaborate
How many and by when?

Local differences - Models need to be adapted

External factors can change significantly the project plan

People change, evolve, improve, get more experience, or not.

Direct employment peaking at 800,000, should 1000 GWe of new nuclear be built by 2050.
New professionals coming in, others leaving
Sharing a bright vision on nuclear to ATTRACT the best

- Economic development
- Research and Innovation
- Electricity generation
- High tech jobs
- Multidisciplinary tasks
- International networking
- Long term perspectives
- Clear objectives
Potential of Electricity

- Traditional use
- Transport
- Desalination
- Radiopharmaceutical production
- Industrial Processes
Demand for electricity continues to rise and must be met cleanly

Source: 1945-1979, International Energy Agency databases and analysis
1980-2012, Energy Information Administration
New nuclear reactors start-ups 2016-2018

South Korea: Shin-Kori-3
China: Ningde-4
China: Hongyanhe-4
USA: Watts Bar-2
China: Changjiang-
China: Fangchenggang-2
Russia: Novovoronezh 2-1
India: Kundakulam-
China: Fuqing-3
China: Yangjiang-4
Pakistan: Chasnupp-3
Pakistan: Chasnupp-4
China: Fuqing-4
China: Tianwan-3
Russia: Rostov-4
Russia: Leningrad 2-1
Nuclear industry brings jobs

The average US nuclear plant generates:

- **$470 million** in economic output per year
- **$35 million** labour income
- **$16 million** in taxes

Source: Nuclear Energy Institute

*Jobs per 1,000-megawatts of capacity*

- Nuclear: 500
- Coal: 220
- Wind: 90
- Natural Gas: 60

*Sources: Ventyx and U.S. Department of Energy*
Increasing the interaction with the industry - R&D is key for advancing nuclear technology, for better design of the research projects, funding, staff training on new technologies, among other advantages.

Engaging young professionals in complex projects at an early stage. Attract and retain students and researchers for the nuclear field must be a continuous effort given the long time required.

Improve leadership and communication skills - to reach out and provide factual basis to better policy decision making at all levels.

Continuous professional development - given the fast technology evolution. Timely certification of personnel.

Local and global context.
New skills

• Multidisciplinary view
• Work in a virtual network, with social intelligence
• Self-driven to results
• Face new challenges with courage and resilience
• Filter, analyze and process important information
• Critical thinking and proposal of new solutions
Selecting for key managerial positions

- Considering long and complex projects, what are the required skills?
- Previous experience with updated strategic information and global networking
- Engage and influence stakeholders (inside and outside the company)
- Anticipate and mitigate situations that can impact the project plan
- Local expert: legal, commercial and political familiarity
- Trade off: local autonomy and central coordination
- Able to prepare effective teams
Good managers build effective teams that will build effective teams.
Why motivation?
Keeping motivation

• Provide clear roadmap
• Provide useful challenges
• Recognise potential and achievements
• Keep healthy work environment
• Attention to global (group) belief
• Now is the moment

“Impossible is not a fact. It’s an opinion.
Impossible is not a declaration. It’s a dare.
Impossible is potential. Impossible is temporary.
Impossible is nothing.”

Muhammad Ali
International cooperation

- Models, technical support:
  - IAEA milestones
  - App Nuclear energy capacity building
- Timely exchange of information
- Intercultural long term projects – Nuclear English
- Mobility – moving abroad
According to Darwin’s Origin of Species (hoping NPP expansion does not take that long...),

*It is not the most intellectual of the species that survives; it is not the strongest that survives; but the species that survives is the one that is able best to adapt and adjust to the changing environment in which it finds itself.*
Thank you

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