

The Future of Nuclear Energy

Mikhail Chudakov

IAEA Deputy Director General

Head of the Department of Nuclear Energy

SES Conference 2019, 18 November 2019

Energy access



1.5°C Challenge

TODAY

70%

of electricity
comes from
burning fossil fuels



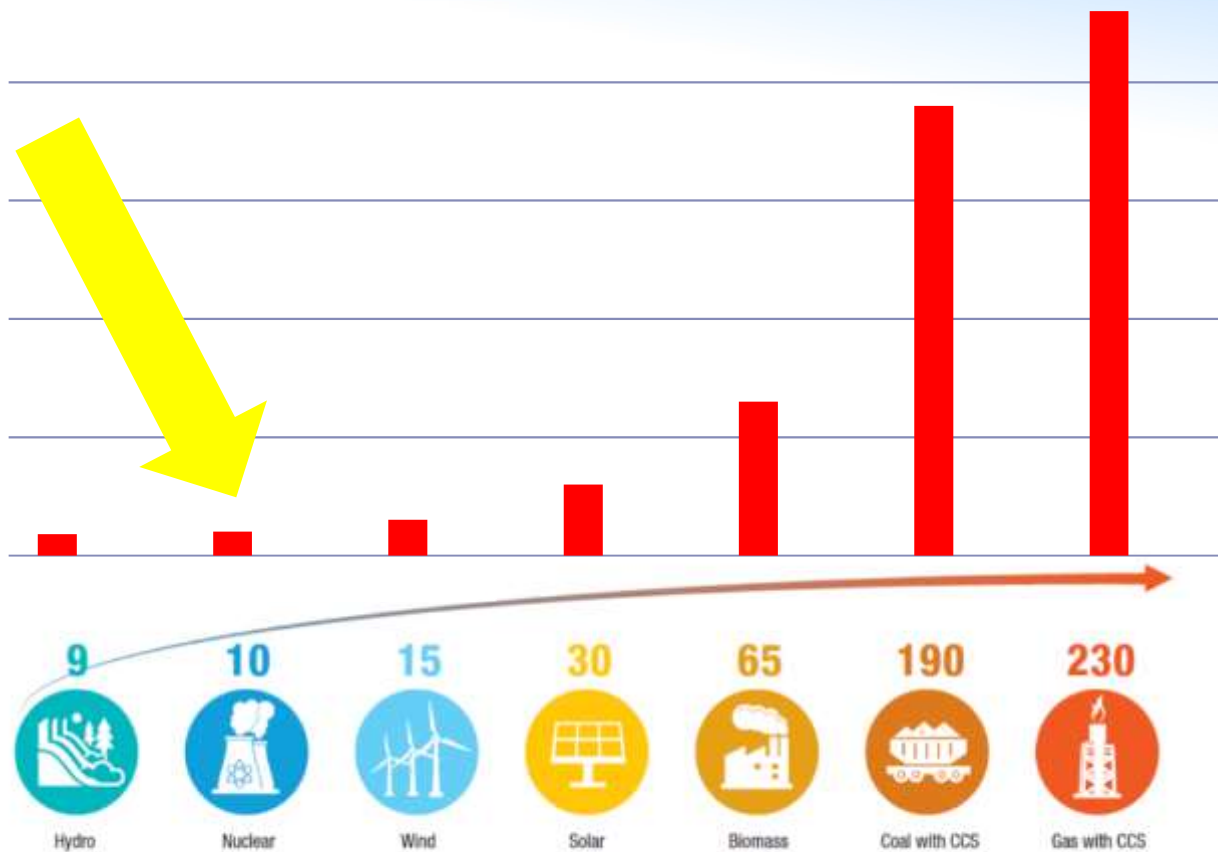
2050

≈ **90%**

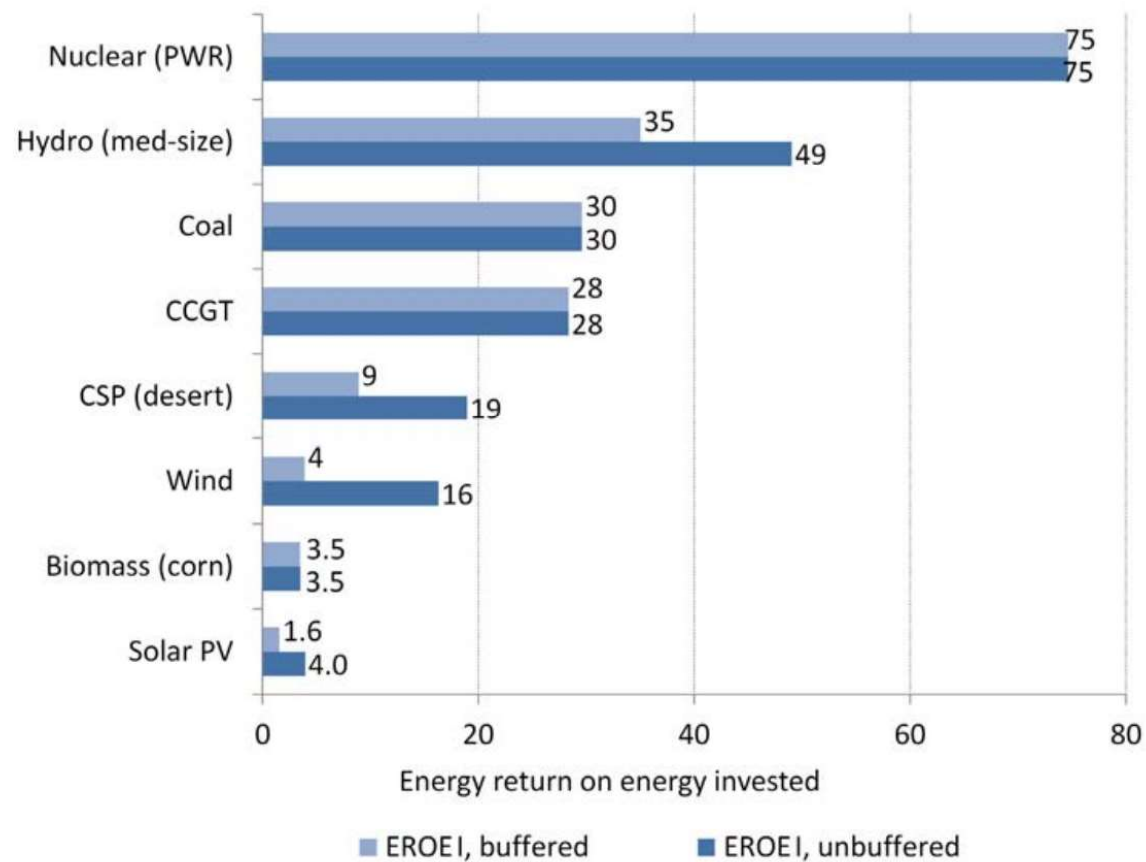
of electricity
will need to be
low carbon



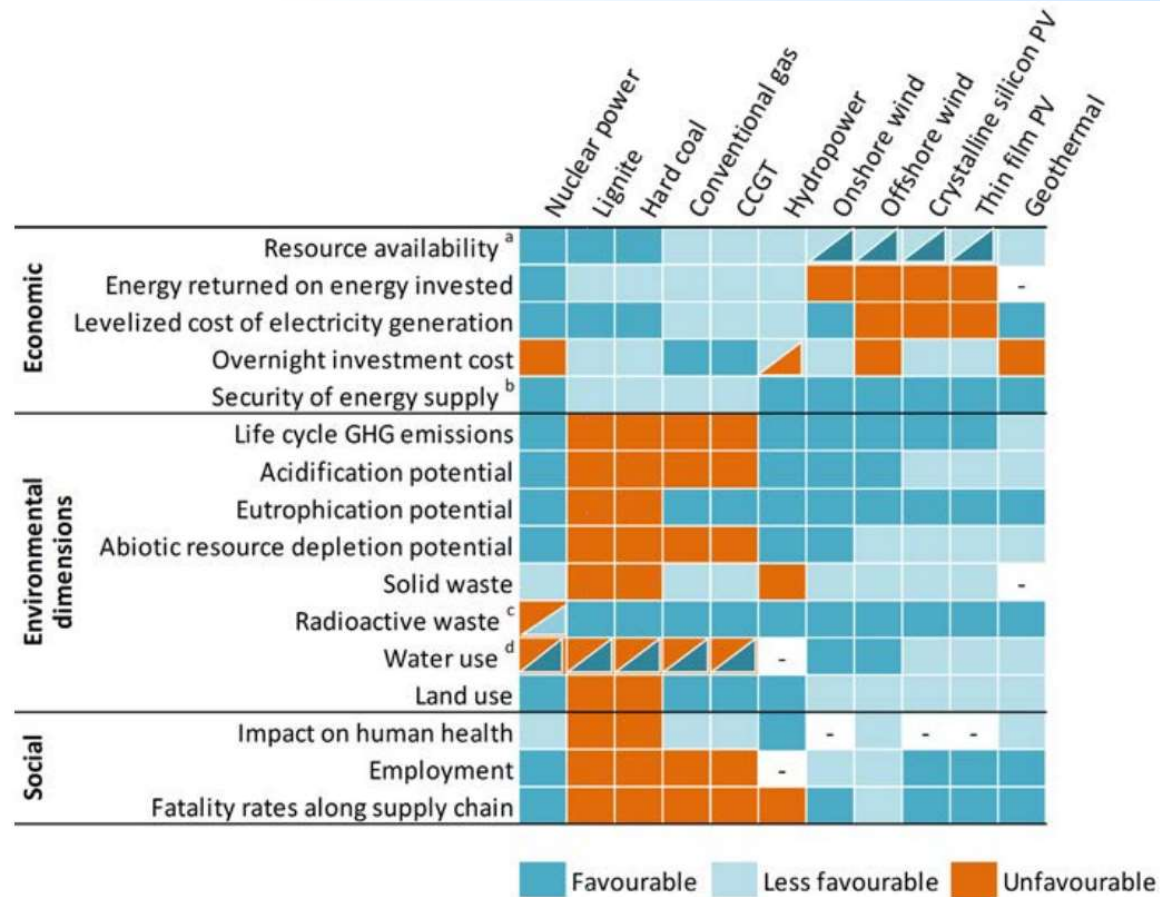
Life cycle GHG emissions



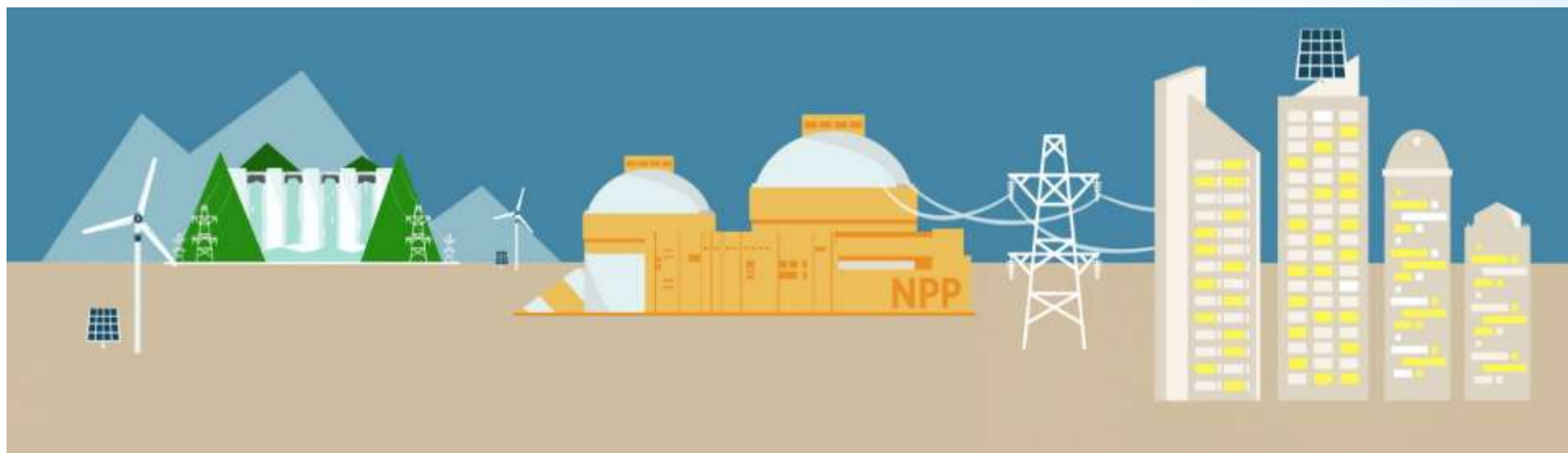
Energy return on energy invested



Performance indicators



Low carbon mix



Nuclear Power Reactors

(17 November 2019)



449 in operation



398.8 GW(e)



53 under construction



Nuclear power today

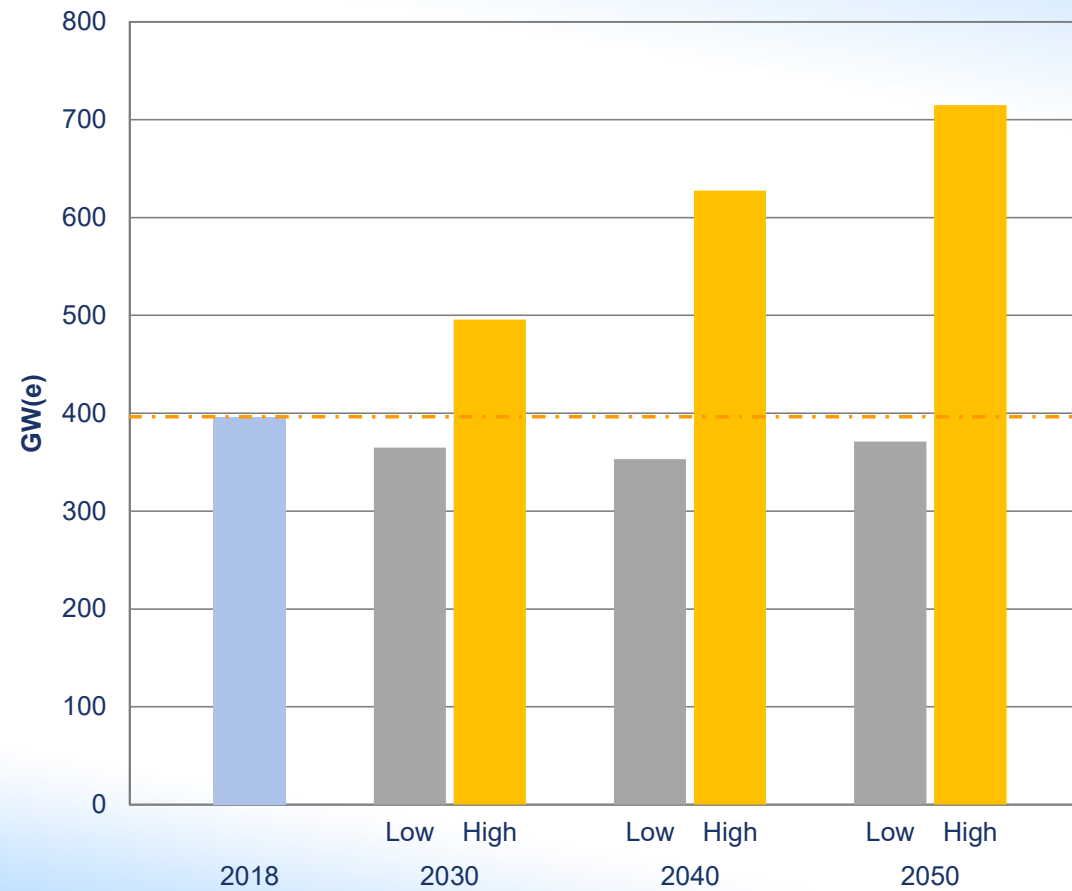


Every third low
carbon kWh
is nuclear

Every third kWh generated
worldwide is low carbon;
The carbon footprint of
electricity generation in
30 nuclear
countries is
19% below
the global
average

19%

IAEA Projections





International Conference on

Climate Change and the Role of Nuclear Power

7–11 October 2019, Vienna, Austria



Organized by the



#Atoms4Climate

06-278

Intl. Conf. on Climate Change & the Role of Nuclear Power

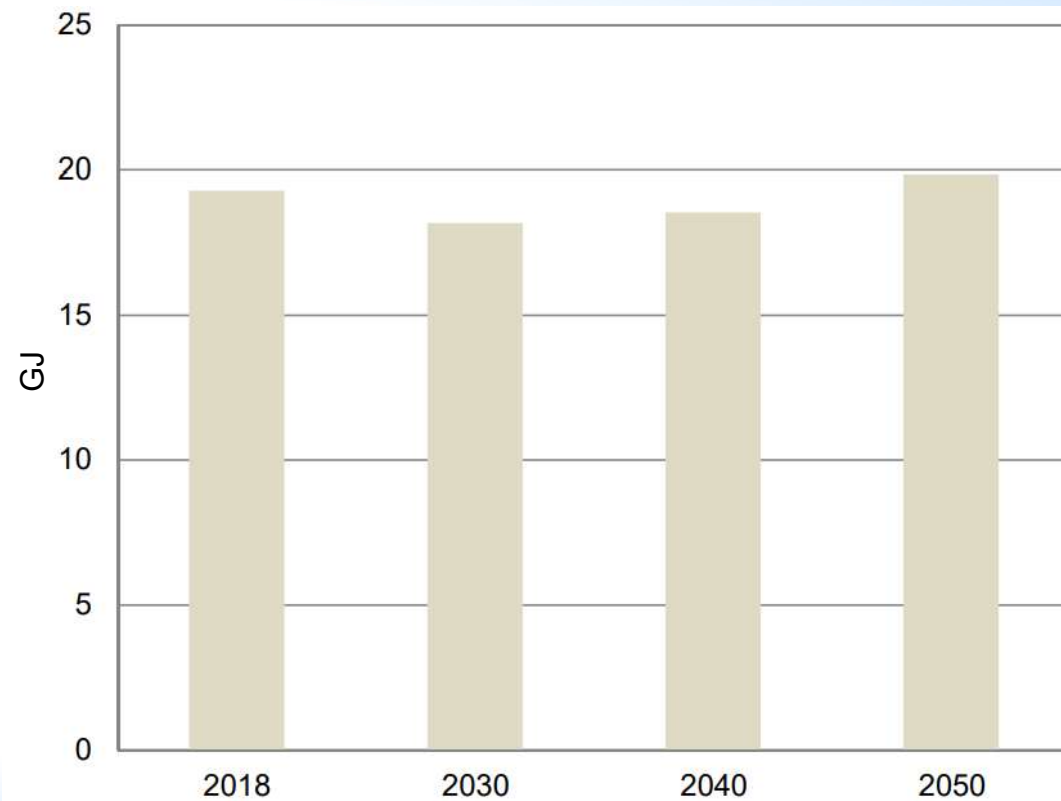


#Atoms4Climate



The full value of nuclear power, the only energy source along with hydropower that has demonstrated the capability to decarbonize electricity supply on a national scale, needs to be fully recognized if the world is to solve its climate challenge.

Sustainable development



Africa: per capita final energy consumption

Influential Factors



1

Safety

2

Funding & Financing

3

**Electricity Markets &
Nuclear Policies**

4

**Innovation: Advanced
Reactors & Fuel Cycles**

5

Waste Management

6

Capacity Building

7

Public Acceptance

What can we do better?



1 Safety

- Review missions - improve harmonization
- Operational experience - more open information access
- Emergency Preparedness - better exchange of technical information
- Severe Accident Management - more use of IAEA and int. experience
- Management and culture for safety - more multilateral cooperation



2 Funding & Financing

- Innovative schemes emerging
- Incentives, enabling conditions?



3 Electricity Markets & Nuclear Policies

- Support to newcomers / new operators
- Plant Life Management - operation beyond 60 years



4 Innovation: Advanced Reactors & Fuel Cycles

- FRs, HTGRs, SMRs, co-generation...



5 Waste Management

- Radioactive waste management - public reassurance that we have managed programmes for the whole lifecycle
- Cooperation in ARTEMIS missions



6 Capacity Building

- Capacity building - HR development for existing operators and the new generation



7 Public Acceptance

- Stakeholder involvement – reinforce social and economic benefits

Partnerships



Looking Ahead



International Conference on Research Reactors: Addressing Challenges and Opportunities to Ensure Effectiveness and Sustainability

25–29 November 2019, Buenos Aires, Argentina



Organized by the
 IAEA
International Atomic Energy Agency

Hosted by the
Government of Argentina
through the
National Atomic Energy Commission (CNEA)

09-277

International Conference on Nuclear Knowledge Management and Human Resources Development: *Challenges and Opportunities*

15–19 June 2020
Moscow, Russian Federation



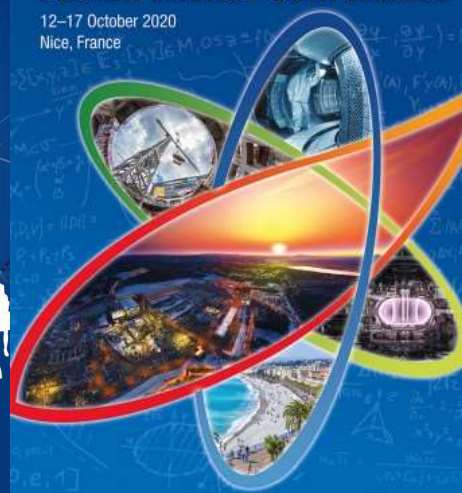
#NKMHRD #NUCLEARCAREERS

Organized by the
 IAEA
International Atomic Energy Agency
Agency for Peace and Development

hosted by the Government of the Russian Federation
through the
State Atomic Energy Corporation
Rosatom

28th IAEA FUSION ENERGY CONFERENCE

12–17 October 2020
Nice, France



Organized by the
 IAEA
International Atomic Energy Agency

Hosted by the Government of France
through the
French Alternative Energy Agency
Commissariat à l'Énergie Atomique
et aux Énergies Nouvelles
CEA

Co-organized by the
European Union
through the
European Atomic Energy Community
EAEC

International Conference on Management of Naturally Occurring Radioactive Material (NORM) in Industry



19–23 October 2020
Vienna, Austria

IAEA
International Atomic Energy Agency

#NORM2020


IAEA

Nuclear
Energy

7 AFFORDABLE AND
CLEAN ENERGY



9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE



13 CLIMATE
ACTION



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