



KEY RESULTS OF THE PLENARY TABLE

“FUSION TECHNOLOGY: ENERGY FOR A SUSTAINABLE FUTURE”

Panelists: Pietro Barabaschi (Iter Organization), Kimberly Budil (Lawrence Livermore National Laboratory), Constantin Häfner (Fraunhofer Institut for Lasertechnology ILT), Norbert Holtkamp (Moderation)(Hoover Institution), Peter Schroth (BMBF)

Fusion energy holds the promise of providing a virtually limitless, clean, and sustainable source of power for the world. Recent breakthroughs in fusion research have reignited global interest and investment, marking a pivotal moment in the pursuit of fusion as a practical energy source.

Significant advancements have been made in both magnetic confinement fusion and inertial confinement fusion. The International Thermonuclear Experimental Reactor (ITER) in France continues to make headway in magnetic confinement, developing new roadmaps to achieve maximal plasma currents and contributing to the global fusion supply chain. In the United States, the Lawrence Livermore National Laboratory achieved a landmark net energy gain through laser-induced fusion, marking a pivotal step in inertial confinement fusion research. Countries like Germany are investing strategically in fusion technologies, particularly in laser and optical systems, and are fostering collaboration between public institutions and private industry. Despite challenges in areas such as materials science, energy extraction, and scaling up technologies for commercial application, increased international cooperation and investment are accelerating the journey towards practical fusion energy solutions.

THE EXPERT PANEL ARTICULATES THE FOLLOWING CALLS TO ACTION:

Increase government investment and support.

1 — Increase government funding for both public and private fusion research initiatives to accelerate technological advancements, support large-scale projects, and foster innovation in emerging fusion technologies.

Foster international collaboration and partnerships.

2 — Balance competition with cooperation. Countries should collaborate on fusion research to share knowledge, resources, and infrastructure to overcome technical challenges and accelerate the development of fusion energy.

Support public-private partnerships.

3 — Encourage collaboration between government institutions, research laboratories, and private companies to bridge the gap between scientific research and commercial application.

CONTACT

Falling Walls Foundation gGmbH

Dr. Andreas Kosmider

Managing Director

andreas.kosmider@falling-walls.com

Phone: +49 30 609 883 97 28

Mobile: +49 172 273 75 77


Web: www.falling-walls.com


Falling Walls Foundation gGmbH


Kochstraße 6-7


10969 Berlin

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Invest in technology and workforce development.

4 — Prioritise investments in key technologies, such as advanced materials, laser systems, and magnetic confinement methods. Additionally, develop a diverse and skilled workforce through education and training programmes to ensure the necessary human capital to advance fusion research.

Create a supportive regulatory environment.

5 — Standardise government regulations related to fusion energy to facilitate research and development. A clear and supportive regulatory framework will encourage investment, streamline international collaboration, and help manage challenges related to dual-use technologies and proliferation concerns.

This event is supported by BMBF and assembled in the framework of the Falling Walls Science Summit 2024 in Berlin. The Falling Walls Science Summit is a leading international, interdisciplinary, and intersectoral forum for scientific breakthroughs. It commemorates the fall of the Berlin Wall and aims to promote dialogue between science and society.

CONTACT

Falling Walls Foundation gGmbH

Dr. Andreas Kosmider
Managing Director
andreas.kosmider@falling-walls.com






Phone: +49 30 609 883 97 28

Mobile: +49 172 273 75 77

Web: www.falling-walls.com

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Kochstraße 6-7
10969 Berlin

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