



FUSION INDUSTRY ASSOCIATION

The Voice
of a new
Industry

The Fusion Industry Association is an international coalition of companies working to electrify the world with fusion - the unparalleled power of the stars. Energy from fusion will provide clean power for everyone that's safe, affordable, and limitless.

The FIA: *Building the Fusion Economy*

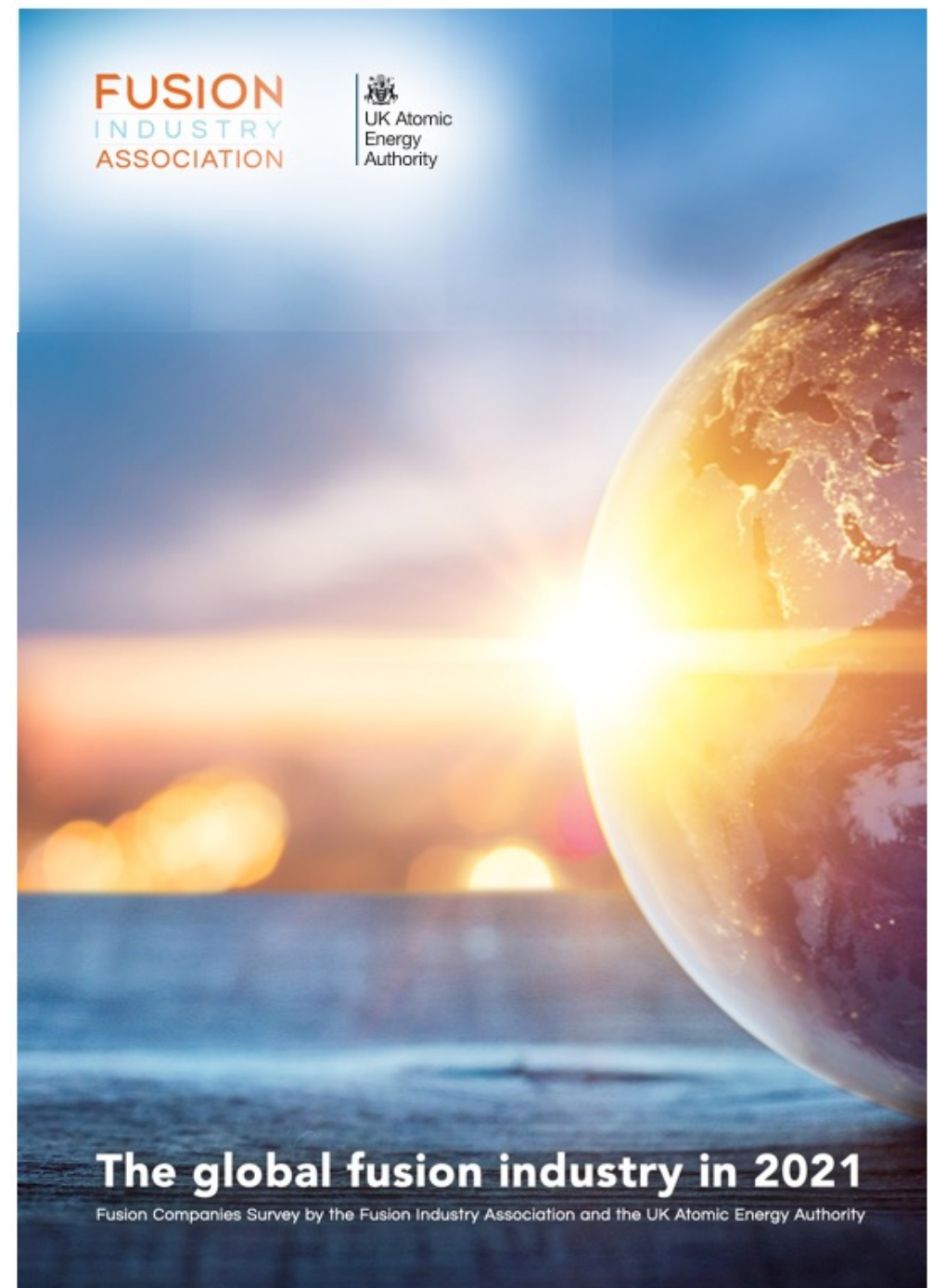
Fusion energy will revolutionize the global energy system. It can solve the climate crisis while providing abundant and secure energy, anywhere.

- The Fusion Industry Association is **accelerating commercially viable fusion energy** by advocating for policies and regulations that support our 27 member companies as they develop commercial fusion power.
- The FIA is showing the world how important clean, safe, affordable, and secure fusion will be to the future energy system. The FIA is educating key stakeholders in the private, public, and philanthropic sectors about the importance of tomorrow's fusion power economy.

The FIA is seeking affiliate members to expand operations and accelerate efforts to support the transition to clean, safe, sustainable fusion energy.

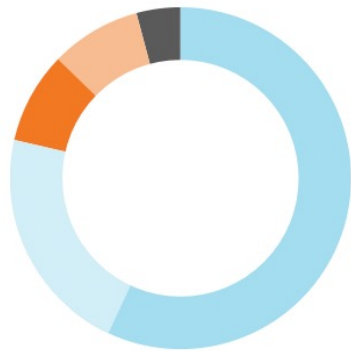
The global fusion industry in 2021

- Survey from Q2 2021
- 31 verified private fusion companies
 - 18 responded
 - 27 Members of the FIA, 20 American
- \$1.87 Billion (++++)
- Focused on electricity generation (96%) by the 2030s or before (83%)



The global fusion industry in 2021

6. TECHNICAL APPROACH TAKEN BY GLOBAL FUSION COMPANIES



General approach

- 13 Magnetic confinement
- 5 Magneto-inertial
- 2 Hybrid electrostatic confinement
- 2 Inertial confinement
- 1 Non-thermal laser fusion
- 0 Cold fusion/LENR
- 0 Muon-catalysed fusion



Specific approach

- 3 Field Reversed Configuration
- 3 Tokamak
- 2 Spherical tokamak
- 2 Stellarator
- 2 Z-pinch
- 1 Dense plasma focus
- 1 Direct laser-driven pB11
- 1 Inertial-electrostatic confinement
- 1 Laser-driven inertial confinement (quantum enhanced)
- 1 Magnetic-electrostatic confinement
- 1 Magnetized target fusion
- 1 Plasma jet driven magneto-inertial fusion
- 1 Plectoneme
- 1 Shock-driven inertial confinement
- 1 Spheromak
- 1 undeclared
- 0 Laser-driven inertial confinement

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UK Atomic
Energy
Authority

The global fusion industry in 2021

Fusion Companies Survey by the Fusion Industry Association and the UK Atomic Energy Authority

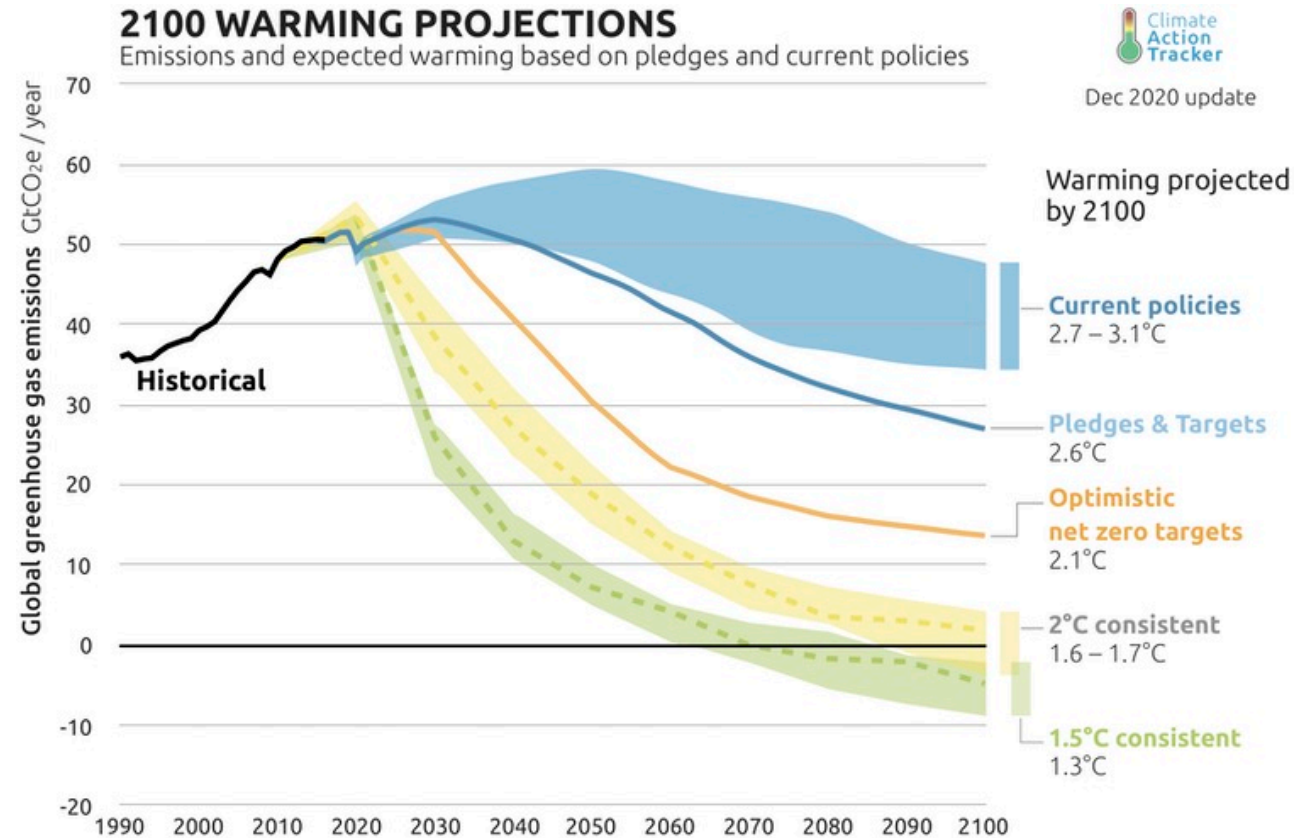
Why Fusion?

Fusion is a Climate Solution

Meeting the world's climate goals are almost impossible without massive deployment of zero-emissions dispatchable power.

With investment, fusion can be ready for rapid, widespread adoption at scale in the next decade to disrupt and displace fossil fuels.

Fusion will *finish the job* that renewables start.



Source: Climate Action Tracker

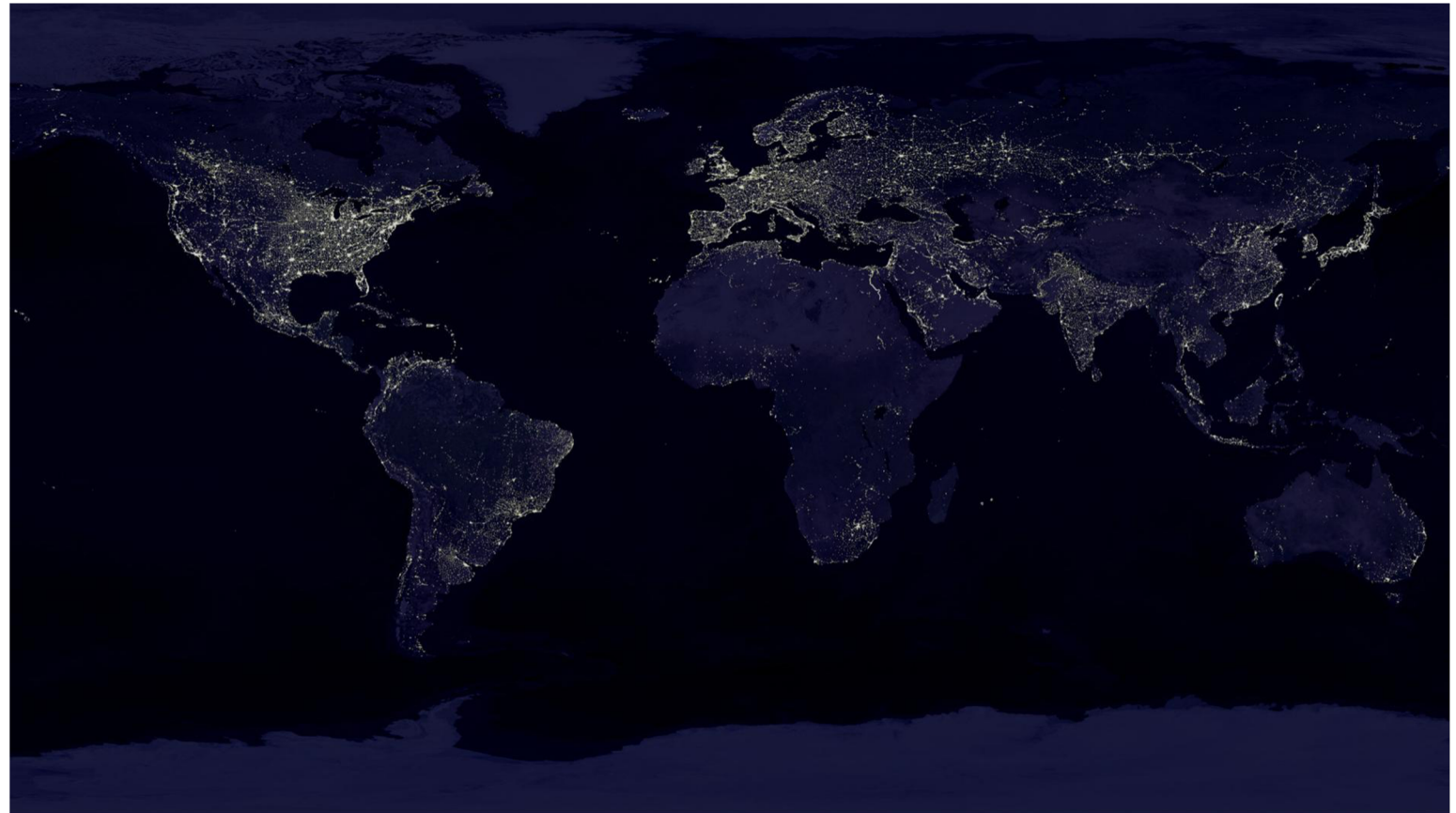
Why Fusion?

Clean, Sustainable Energy for All

Clean, safe, affordable, and inexhaustible fusion energy will power the economy of the future.

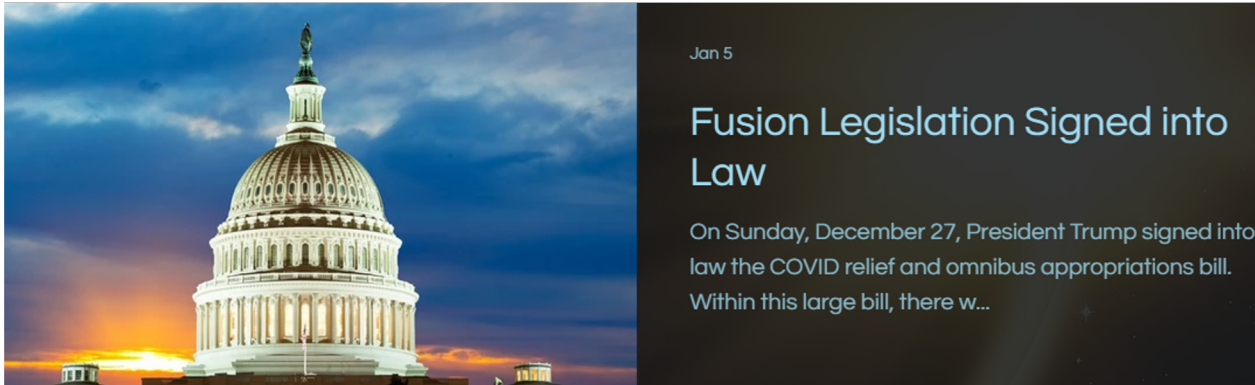
It will **raise living standards** and meet growing global energy demand without environmental sacrifices.

It will **break the geopolitics of energy**, so a country's destiny is not determined by the size of its hydrocarbon deposits.



Why Now?

Government, science, business, and investors are getting organized for accelerated fusion development and deployment



project portfolio operations technology  sustainability investors about

press release

Chevron Invests in Nuclear Fusion Start-up

Technology Ventures Team Identifies Zap Energy

Houston, Texas, August 12, 2020 — Chevron Corporation (NYSE: CVX) today announced a Series A investment in Zap Energy Inc., a Seattle-based start-up

Claiming a landmark in fusion energy, TAE Technologies sees commercialization by 2030

The company has raised nearly \$1 billion to harness the power of the sun

The New York Times

Compact Nuclear Fusion Reactor Is 'Very Likely to Work,' Studies Suggest

A series of research papers renews hope that the long-elusive goal of mimicking the way the sun produces energy might be achievable.

By Henry Fountain
Sept. 29, 2020

Energy & Science

Bezos-Backed Fusion Startup Picks U.K. to Build First Plant

Canada's General Fusion plans to start testing a \$400 million pilot facility outside London by 2025.

By Jonathan Tirone
June 16, 2021, 7:01 PM EDT

Helion passes 100 million degrees Celsius

23 June 2021

Fusion energy developer Helion Energy said yesterday it has become the first private company to announce exceeding 100 million degrees Celsius in its sixth fusion generator prototype, Trenta. It also announced its Trenta prototype recently finished a 16-month testing campaign, completing almost 10,000 high-power pulses.

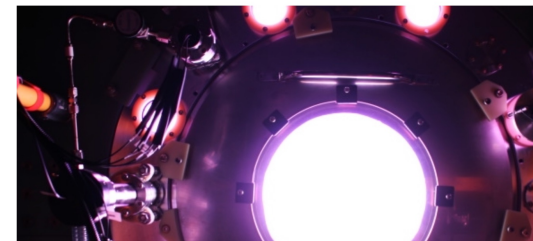
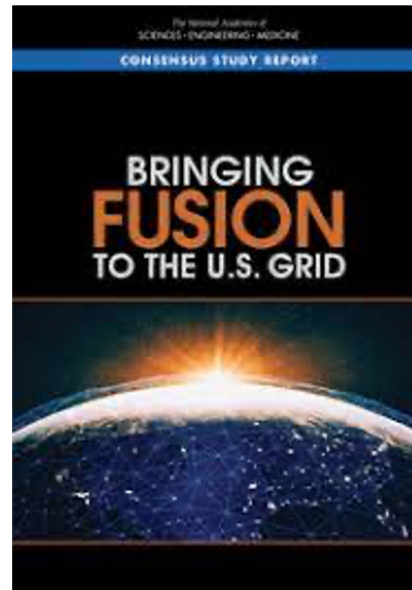
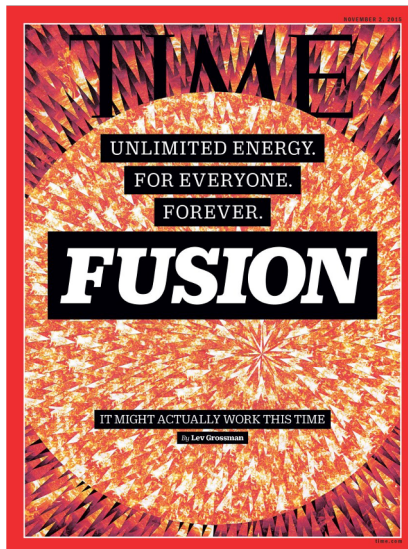
Share

China's Fusion Research Is Heating Up

The EAST reactor in Hefei broke records last month as it edges toward the sustained stellar temperatures needed to generate fusion energy.

THOMAS CORBETT and PETER W. SINGER | JUNE 28, 2021

A Community Plan for Fusion Energy and Discovery Plasma Sciences
Report of the 2019–2020 American Physical Society Division of Plasma Physics Community Planning Process



Membership

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INDUSTRY
ASSOCIATION



**Commonwealth
Fusion Systems**

generalfusion®

tae  TECHNOLOGIES



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SuperOx



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WRIGHT



INNOVATIVE SOLUTIONS
ABSOLUT
SYSTEM

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SIGMA

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TVA



AMPECON

NIAGARA
ENERGY PRODUCTS



STELLAR
ENERGY FOUNDATION

PATRIOT
FORGE CO.



BILFINGER
NOELL GMBH

pillsbury

Hogan
Lovells

K&L GATES

Morgan Lewis



CLEARPATH



Energy for the Common Good
Soon enough to make a difference



CleanTech Alliance™



COSYLAB

How does the Fusion Industry Association advance fusion?

Three strategic priorities for accelerating fusion energy

FIA Strategy

1. Partnering with Governments

The private sector should have access to the scientific research that governments have pursued for decades. *Public-Private Partnerships* that include government support to private fusion companies can rapidly accelerate fusion development by driving private financial support.

2. Ensuring Regulatory Certainty

Fusion research, development, and deployment should be subject to appropriate, risk-informed regulation when experiments are built and sited.

3. Communicating the Benefits of Fusion

The world should know how important clean, safe, affordable, and secure fusion will be to the future energy system. FIA is educating key stakeholders in the private, public, and philanthropic sectors about the importance of tomorrow's fusion power economy.

Ongoing Activities:

1. Partnering with Governments

Proposal: Government Cost-Share with Private Fusion

Modeled on the successful [NASA COTS](#) and [DOE SMR](#) cost-share programs, this new program would directly reimburse private companies for the development of new US-based fusion capabilities over a 5-year period.

Government dollars would be leveraged with at least a 50% private sector cost share. Payments would be based on performance

STATUS:

PASSED BY CONGRESS, Awaiting DoE Action and Congressional Appropriations

- Plan is a 5-year program, funded up to \$1 billion

Infrastructure & Reconciliation

- \$325m of \$885m in House-passed Reconciliation bill for FIA's PPP
- Fusion funding changed in the Senate draft bill. There is an effort to increase funding for National Lab Infrastructure
- Senate outlook remains unclear

FY22 Annual Appropriations

- The Biden Administration Budget for Fusion of \$675m includes no funding for PPP, similar to Senate bill. The House-passed bill includes \$698m with \$45 million in initial funding for PPP.
- FIA working closely with Senate Appropriations to show support for fusion funding.

Ongoing Activities:

2. Ensure Regulatory Certainty

- Working with the US Nuclear Regulatory Commission to inform regulatory plans
- Publishing and convening legal experts to determine the proper posture for regulatory action.
- Working with the IAEA to inform a global fusion regulatory structure.

IGNITING THE FUSION REVOLUTION IN AMERICA

Leveraging the Lessons of the Atomic Age to Build a Regulatory Framework that Supports the Safe and Efficient Development of Fusion Energy Systems

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June 2020

Ongoing Activities:

3. *Communicating the Importance of Fusion*

- **Publications**
 - Fusion Industry Annual Survey
 - More to come...
- **Fusion Investors Series**
 - Worldwide series of events aimed at bringing fusion experts together with possible investors in an informal forum
- **Social Media**
 - Growing presence throughout social media
 - Sustained interest from traditional media
- **Earned Media**
 - Over 75 “Story Lines” in 2021



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Thank You

<https://www.fusionindustryassociation.org/>

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