

Warum das Militär die zivile Atomkraft braucht



Dr. Eva Stegen
Video-Konferenz
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5. März 2021





Behauptung:

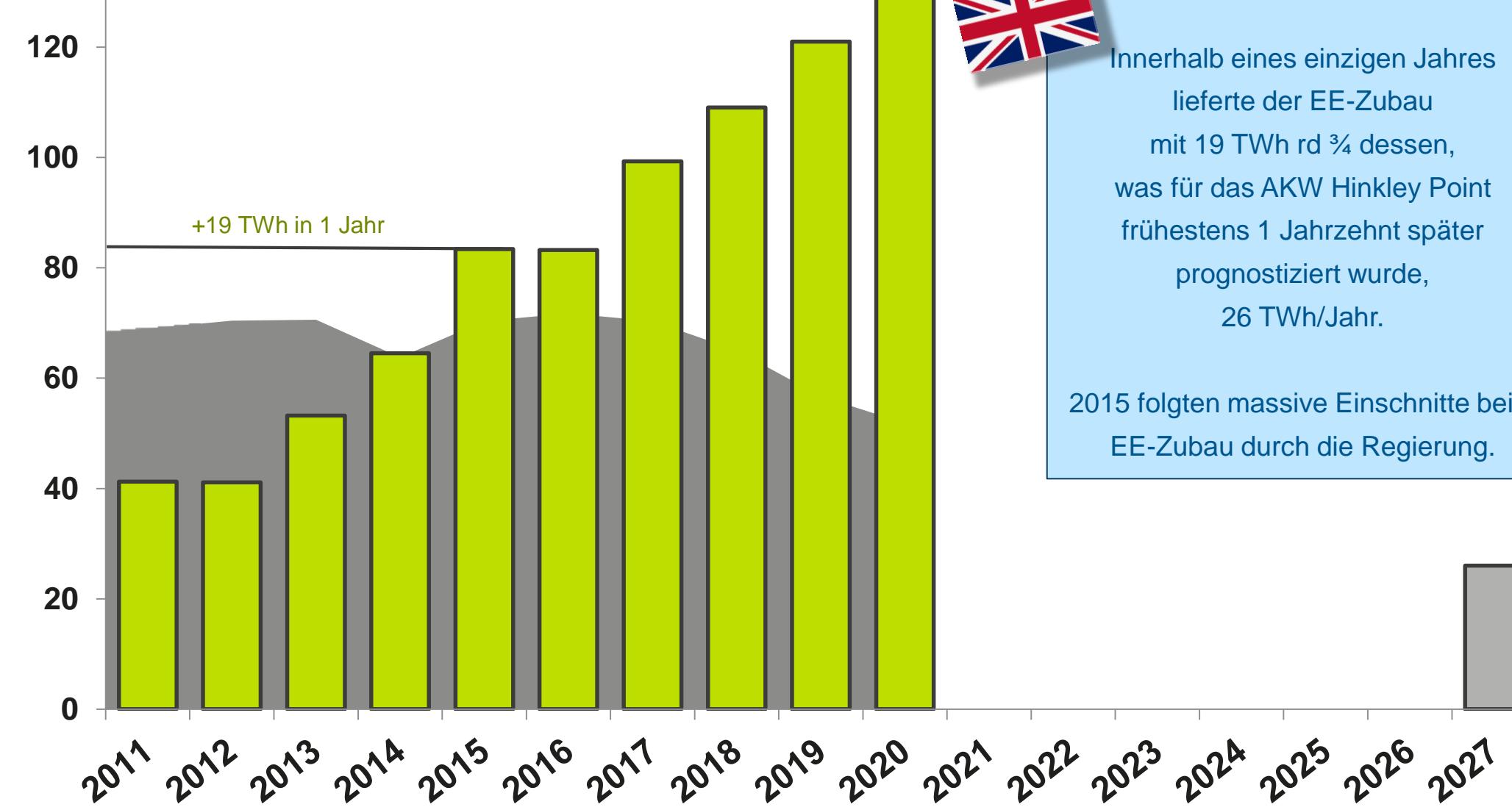
„Hinkley Point ist ein Militärprojekt“

Welcher Aussage stimmst Du zu?

- A) „Das war mir längst klar“**
- B) „Das klingt nach Verschwörungstheorie.“**
- C) Weiß nicht / k.A.**

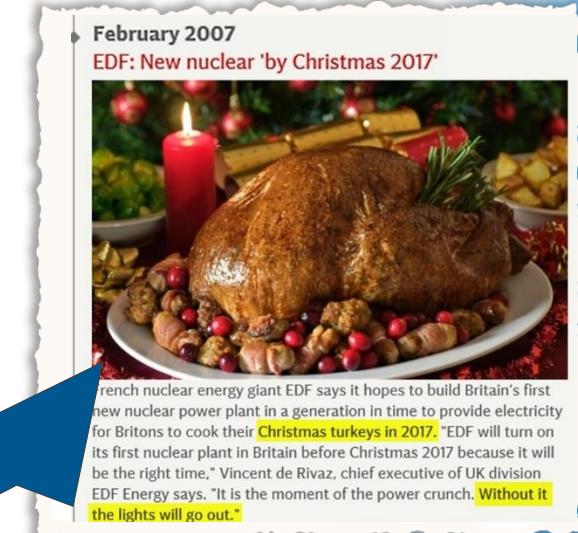
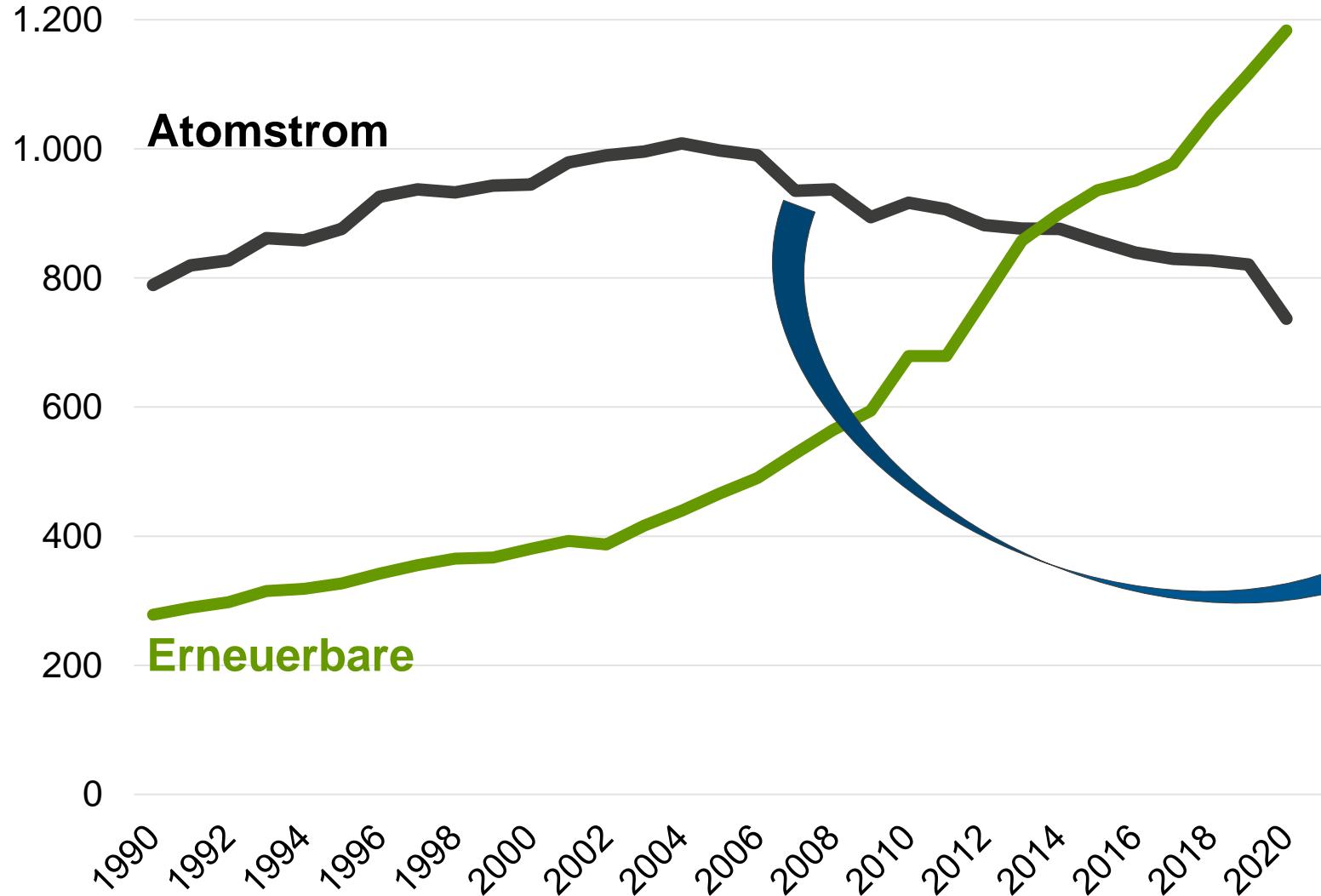
Erneuerbare: billiger und viel schneller

TWh/a





EU28 Brutto-Stromproduktion [TWh]



Teure Versprechen: „keine Subventionen“

Opinion Green politics

guardian

Nuclear energy is cheaper than gas, and needs no taxpayers' subsidy

Modern reactors, unlike the old ones, are built with decommissioning in mind, says Robert Davies

Robert Davies

Tue 23 May 2006 00.04 BST

Experience in Finland and France has proven that the costs of building and operating a new generation of nuclear power stations can be borne by the

Die Erfahrung in Finnland und Frankreich hat gezeigt, dass die Kosten für den Bau und Betrieb einer neuen Generation von Kernkraftwerken vom privaten Sektor getragen werden können. Wenn sich das Vereinigte Königreich für einen nuklearen Neubau entscheidet, wird der Geldbeutel des Steuerzahlers nicht in Anspruch genommen, und es ist **keine staatliche Subvention erforderlich**.



Robert Davies:
25 Jahre Kriegsschiff-
Kommandant Royal Navy

im Verteidigungs-Ministerium
für die Budgetplanung
zuständig.

2004 -2016 Areva UK,
zuletzt als CEO
(Reaktorneubau).

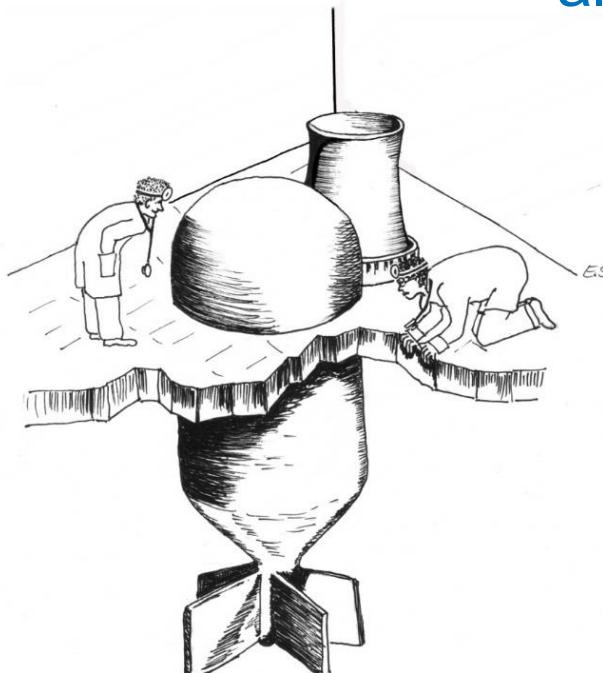
Bis 2017 Verwaltungsrat
der Atom-Kaderschmiede
National Skills Academy
for Nuclear,

bevor er zum chinesischen
Hinkley Point-
Konsortialpartner
CGN UK wechselte, Chief
Operation Officer.



Bombenstoff und atomarer Kriegsschiff-Antrieb

“ In der öffentlichen Wahrnehmung werden diese Dinge oft durcheinander gebracht – nicht zuletzt deshalb, weil Anlagen wie Sellafield ursprünglich entwickelt wurden, um waffenfähiges Material zu extrahieren, als Nebenprodukt der Stromerzeugung ... ”

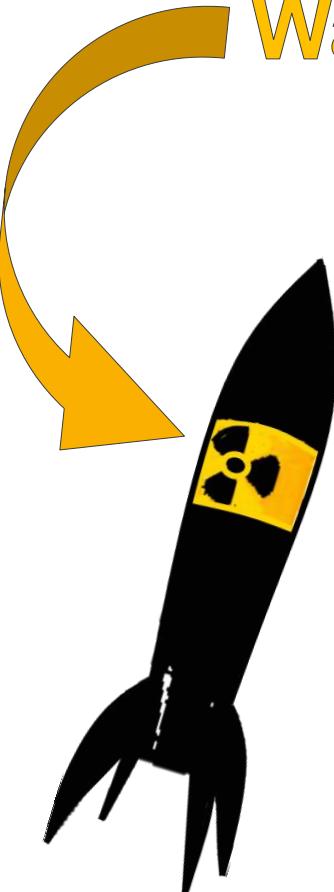


The overlap between the power sector and the military

41. The military sector has two main applications of nuclear technology—propulsion of submarines and large warships and the nuclear deterrent.
42. In the public mind these are often confused with nuclear power generation—not least because facilities like Sellafield were originally developed to extract weapons grade material for the military as a by-product of power generation. Governments, over the years, have been ambiguous of the linkages between the two industries.
43. Plans for a new generation of nuclear power stations are likely to move the two industries further apart and there will be greater demarcation between power generation and nuclear decommissioning on the one hand, and nuclear deterrent work on the other. Those working on nuclear deterrent design probably have more in common with those working in nuclear physics than power engineering. However those involved in the manufacturing process for the deterrent (as opposed to the design itself) do deploy skills that are directly transferable into civilian work.

“Die Frage der Überschneidung zwischen Zivilem und Militärischen kann in zwei Bereiche unterteilt werden:

Waffen und Atom-U-Boot-Antrieb.“



3.4 The overlap between nuclear engineers in the power sector and the military

(1) The question of overlap between civil and military can be divided into two sections, weapons and nuclear submarine propulsion. There is significant scope for interchange in the latter as the power plant of a nuclear submarine is in general, similar to that of a modern power station. Many former nuclear submariners already occupy positions at all levels in the civil nuclear power and contracting industry and this is likely to continue.

(2) Thus the Royal Navy can be seen as a training ground for supporting the future UK nuclear power sector. By the counter argument, MOD are subject to the same issues of demographics as the rest of the industry and they are part of the pool calling for an adequate supply of engineering skills and providing training for them. There is also an overlap between the nuclear weapons sector and civil in certain specialised engineering fields, decommissioning and waste management area. The nuclear skills agenda for the UK therefore needs special attention to satisfy all parties.

(3) With respect to nuclear engineering education and training, the MOD is fully engaged through the appropriate sector skills council (COGENT), the national Skills Academy Nuclear (NSAN) and higher up the skills pyramid, the Nuclear Technology Education Consortium (NTEC), as well as through its own dedicated education and training programmes at HMS SULTAN.

(4) The UK continues to project manage, develop, design, supply and operate PWR technology for the nuclear submarine programme and this involves RN, MOD Civil Service and contractor resource, the latter led by BAE Systems and Rolls-Royce and supported by their supply chains. This programme includes new



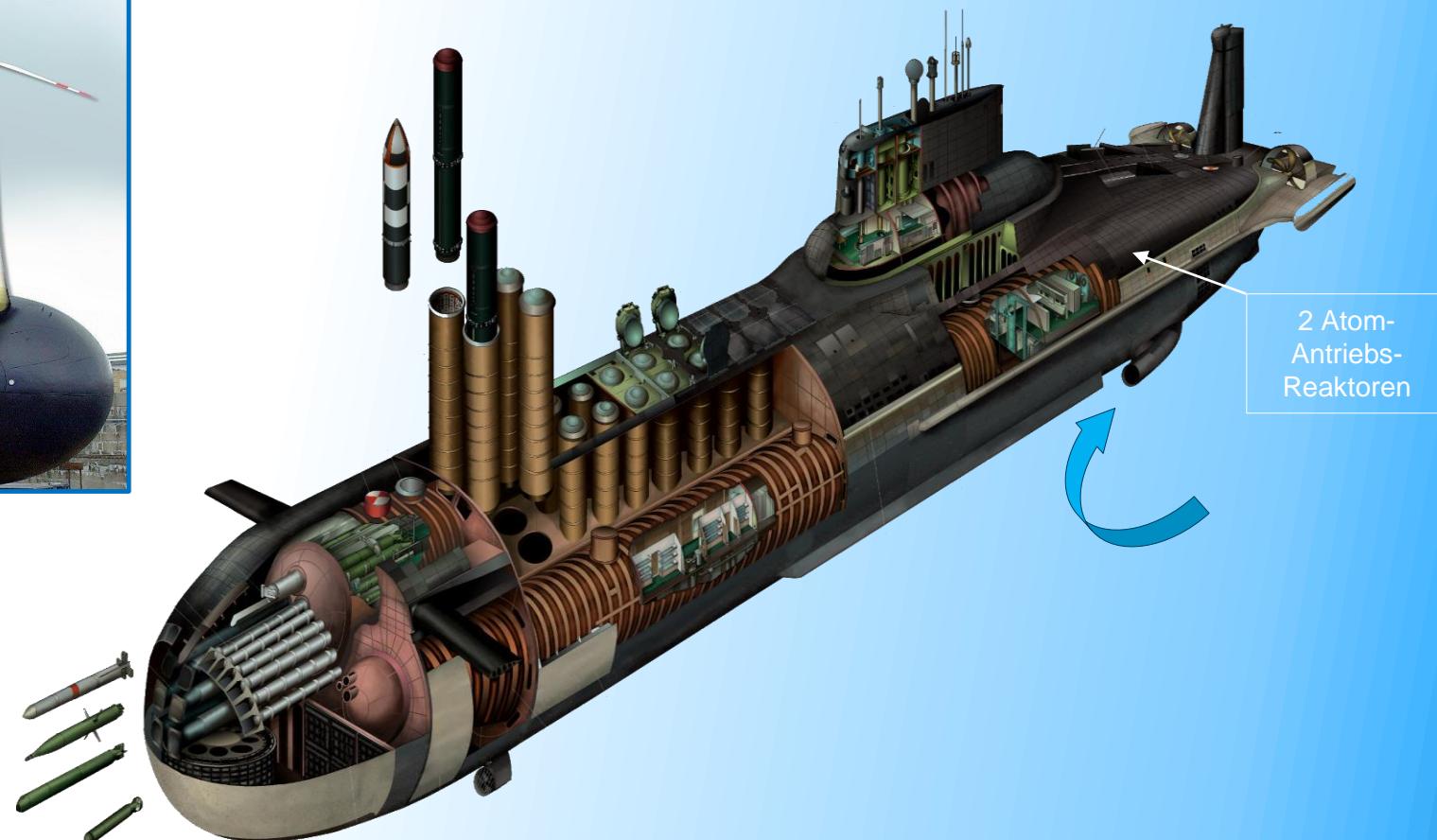
Was spricht bei U-Booten für



Atom-Antriebsreaktoren?



Warum die Erneuerbaren zum Erhalt der Zweitschlag-Fähigkeit nicht taugen





Ausbildungs-Infrastruktur

7. The overlap between nuclear engineers in the power sector and the military

7.1 There are a significant number of overlaps in the capabilities listed above between the civil and military sectors. Common aspects include areas such as:

Civil Nuclear Programme	Military Nuclear Programme
Reactor technology for electricity generation	Reactor technology for naval propulsion
Fuel recycle technology	Separation technology for plutonium and uranium
Legacy waste management and decommissioning	Legacy waste management and decommissioning
Enrichment technology for civil fuel	Enrichment technology for weapons

Innovation, Universities, Science and Skills Committee: Evidence **Ev 419**

7.2 The applications of the technology are different and it doesn't necessarily mean that having a civil nuclear capability means one, by default, has military capability. However there are common capabilities such as:

- Nuclear Materials performance.
- Nuclear Physics and Nuclear Data.
- Thermal hydraulics.
- Control and Instrumentation systems.
- Computational Fluid Dynamics.
- Nuclear Chemical Engineering.
- Safety Assessment.
- Robotics.
- etc.



Ausbildungs-Infrastruktur

“

**In der Vergangenheit wurde das militärische Programm weitgehend isoliert vom zivilen Programm entwickelt.
Aus Rücksicht auf Geheim-Informationen. ...**

7.3 In the past, the military programme has been developed very much in isolation from the civil programme. This was due to concerns over classified information. However there is an opportunity for civil and military programmes to work together in developing a skills pool and supporting research, with only the truly classified aspects of the military programme kept separate. The UK is not now in the position of having financial or personnel resources to develop both programmes in isolation. For example, reactor physicists on the military programme can develop their skills and knowledge by researching civil systems, and then only when necessary divert to classified work to follow a specialist career path. This link does however need to be carefully managed to avoid the perception that civil and military nuclear programmes are one and the same.

7.4 As noted earlier, a vibrant academic sector and the strong identity of a National Nuclear Laboratory will provide the mechanisms to ensure a coordinated and coherent approach to underpinning nuclear engineering skill base from basic science to applied technology.

March 2008

Submission from the Dalton Nuclear Institute

Das Vereinigte Königreich ist derzeit nicht in der Lage, es hat weder die finanziellen noch die personellen Ressourcen, um beide Programme isoliert zu entwickeln. ...

Diese Verbindung muss allerdings mit Vorsicht behandelt werden, um die Wahrnehmung zu vermeiden, dass das zivile und das militärische Atomprogramm ein und dasselbe sind.“

„Ich erinnere mich, die Atomingenieure waren die Aussätzigen am College.“

Alex Walsh, Leiter des zivilen Atomprogramms, BAE Systems



Q105 Chairman: Is it the same for BAE Systems? Would you echo that?

Mr Walsh: It is not necessarily the new build which has made the industry unattractive. I went to university in 1979. That was just after Three Mile Island had happened. I decided to do a nuclear engineering degree because I considered it to be the “green” thing to do at the time. After Three Mile Island there was a big swing in public opinion.

Q106 Chairman: Slightly, yes.

Mr Walsh: I remember the nuclear engineers were the pariahs of the college. The number of youngsters who wanted to go into nuclear engineering fell off. The nuclear engineering degrees shut down before the end of the new build with Sizewell B. There was a real public swing which said that this was not an industry that you would want to get into if you were a youngster, so I do not blame the stopping of new build for the youngsters not coming in. I think we have to show that it is an attractive industry. It is a

Nukleartechniker



Sie sind jung, haben ein abgeschlossenes Ingenieursstudium und Freude an nuklearen Massenvernichtungswaffen?

Wir sind eine Europäische Atommacht und möchten das auch bleiben. Eigentlich finden wir es einfacher, Nachwuchs mit friedlichen Botschaften zu rekrutieren als mit militärischen. Heute möchten wir aber einmal offen kommunizieren, dass die gemeinsame Nutzung der nuklearen Infrastruktur den britischen Verteidigungshaushalt entlastet. Für Ihr neues Ausbildungszentrum am Standort Hinkley Point haben wir uns mithilfe einer ausgebüfften Subventionsstrategie Steuergelder gesichert, die über die direkte Zuweisung der Steuermittel in den Militärhaushalt nicht darstellbar gewesen wären.“

Verteidigungshaushalt entlasten

A UK SMR programme would increase the security, size and scope of opportunities for the UK supply chain significantly, enabling long-term sustainable investment in people, technology and capability



Advantages to the UK's nuclear deterrent programme

One particular application for deployment of the talent developed through the UK SMR programme would be in the ongoing maintenance of the UK's independent nuclear deterrent. Currently, the UK Government is required to invest funding to sustain the skills and capability necessary for the maintenance of the Royal Navy's nuclear submarine programme. Recent decisions in Parliament have committed the UK to continue with independent deterrence for another generation, and therefore the need to maintain the relevant skills and capability remains paramount.

The indigenous UK supply chain that supports defence nuclear programmes requires significant ongoing support to retain talent and develop and maintain capability between major programmes. Opportunities for the supply chain to invest in new capability are restricted by the limited size and scope of the defence nuclear programme. A UK SMR programme would increase the security, size and scope of opportunities for the UK supply chain significantly, enabling long-term sustainable investment in people, technology and capability.

Expanding the talent pool from which defence nuclear programmes can draw from would bring a double benefit. First, additional talent means more competition for senior technical and managerial positions, driving excellence and performance. Second, the expansion of a nuclear-capable skilled workforce through a civil nuclear UK SMR programme would relieve the Ministry of Defence of the burden of developing and retaining skills and capability. This would free up valuable resources for other investments.

A similar story can also be told around creating talent in major

Kompetenzpool

„Die Erweiterung einer kerntechnisch qualifizierten Arbeitnehmerschaft durch ein ziviles SMR-Atom-Programm würde das Verteidigungsministerium von der Last befreien, die Entwicklung und Erhaltung von Fähigkeiten und Kompetenzen zu schultern. Dies würde wertvolle Ressourcen für andere Investitionen freisetzen.“

Rolls Royce, 2017 UK SMR - A National Endeavour



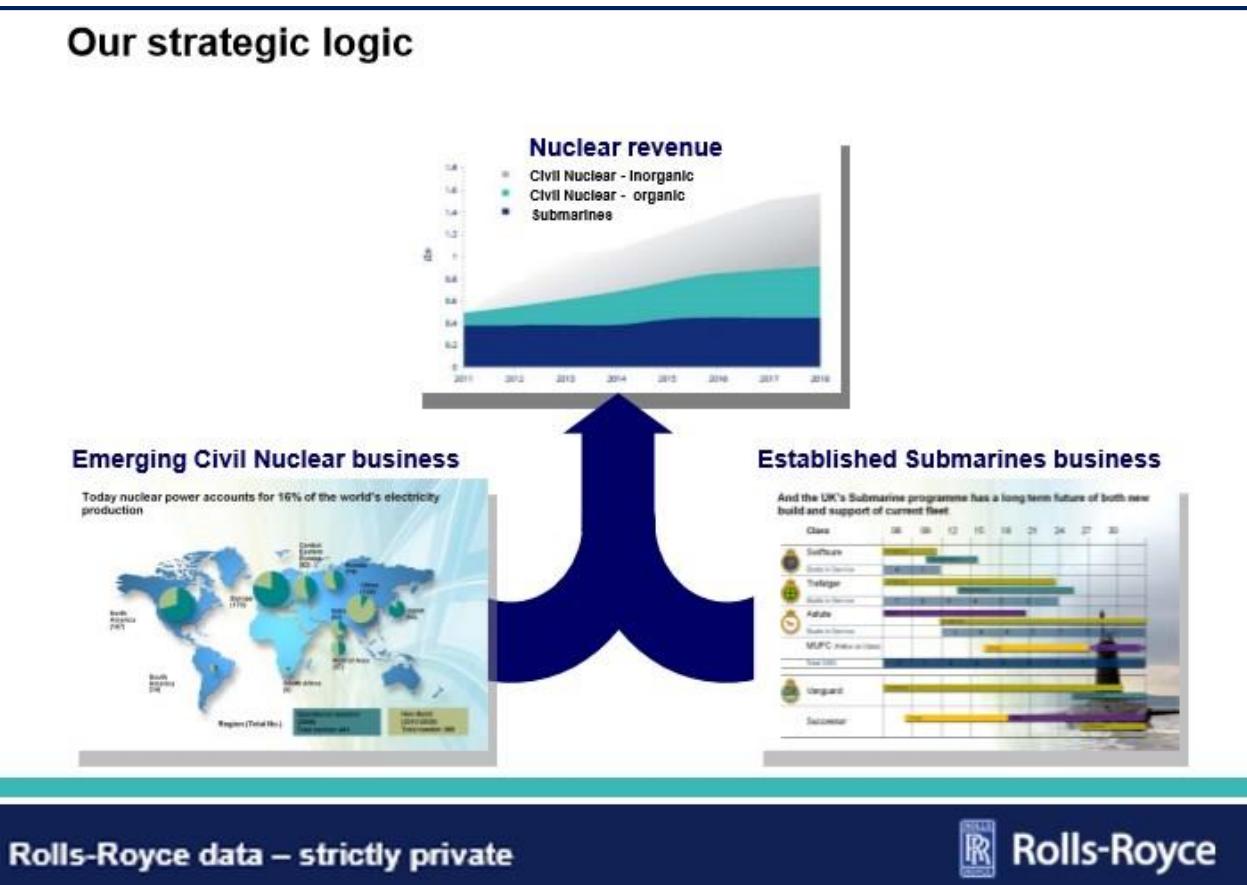
“ Rolls Royce entwirft seit 50 Jahren DRUCKWASSERREAKTOREN.

Ich denke, es geht um die Zulieferindustrie, die wir mit dem Neubau ziviler Atomreaktoren voranbringen müssen.“



Dr. Stephen Garwood,
Rolls Royce

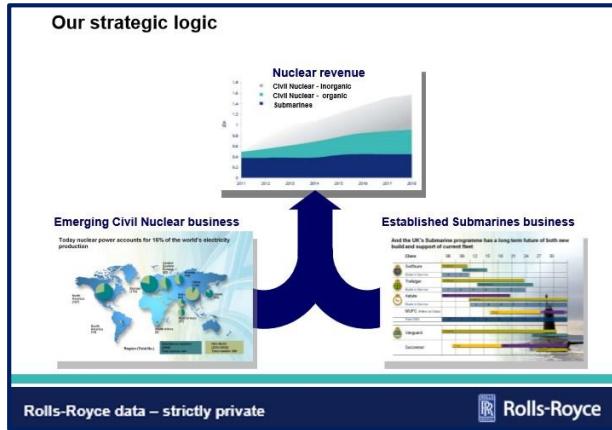
Our strategic logic



weaknesses:

Dr. Garwood: There is a very strong strength on design still in this country. My company has been designing pressurised water reactors for 50 years. We have 850 nuclear engineers in the broader sense working today on that activity and that is a continuing skill. There is also a skill out in the supply chain, which has come from the legacy issues in nuclear engineering and I think it is that supply chain that we need to advance with the new civil build. We still have a very strong capability out in the supply chain and in certain industries in the nuclear area.

Das Fadenriss-Problem ist kein Energiewende-spezifisches Problem



Two of the biggest players are worthy of note. First, there are the Rolls Royce nuclear operations, based in Derby, whose central role in manufacturing the nuclear steam raising plant for British submarines has for many decades made them synonymous with this important military nuclear supply chain. With longstanding side interests in associated supply roles for civilian nuclear business, Roll Royce announced in 2008 an intention to explore larger scale opportunities in the civilian nuclear sector more proactively (World Nuclear News 2008). The logic of this decision is shown in an illuminating slide from a presentation of 2012 by a senior directly-responsible Rolls Royce executive, marked as "strictly private" (but publicly available on the internet), shown in Figure 4.⁹ This graphic summarises a projected ramping up from that date of 'inorganic' growth in the civil nuclear business of Rolls Royce (in other words, achieved through corporate acquisitions (Nanndakumar et al. 2014)), envisaged to rise from effectively zero in 2011 to around £0.8 billion in 2018. It is the anticipated growth in global civil nuclear business acquired by this means (shown in the lower left hand side of Figure 4), that is held to combine with the inconveniently intermittent 'drum beat' of nuclear submarine orders (shown on the lower right hand side), to allow for a more satisfactory overall smoothing of orders and an associated projection of a remarkable rate of growth in combined revenues of factor three over seven years.

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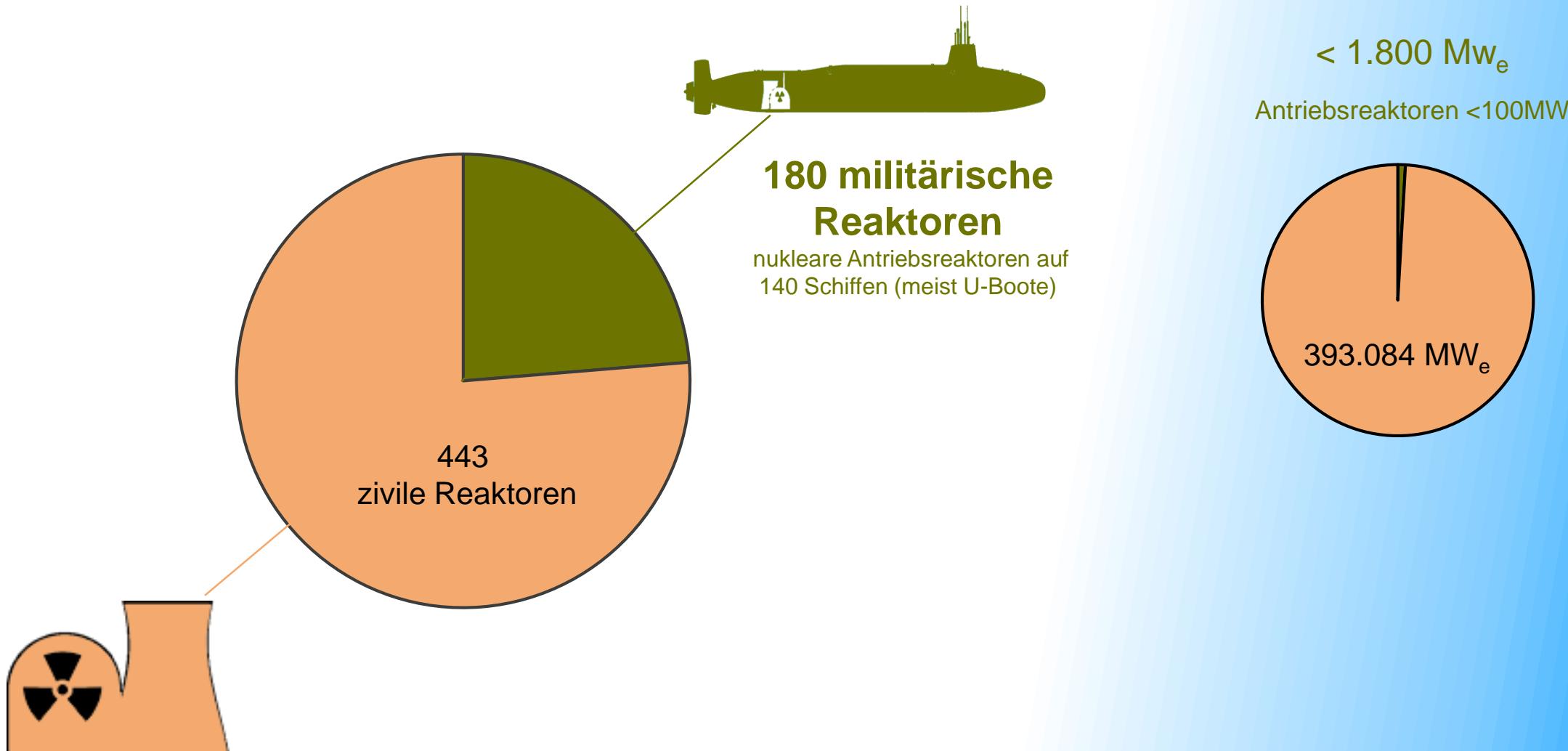
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Es ist das erwartete Wachstum im weltweiten zivilen Nukleargeschäft, das mit der ungünstigen wechselhaften Taktung der Atom-U-Boot-Aufträge kombiniert wird, um eine zufriedenstellende Gesamtglättung der Auftragseingänge zu ermöglichen.“ ...

Die zivile Atomkraft ist der Infrastruktur-Garant für die militärische Atomkraft

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Ökonomische Skalierungseffekte, (Kompetenzpool, Zuliefererindustrie, (Taktung in Auftragsbüchern)



Geringe Stückzahl. Große Abstände zwischen den Bestellungen. Was bedeutet das für die Zuliefer-Industrie?

Kein Wort zum
klima-
freundlichen
Antrieb

Neue Jagd-Unterseeboote unterstreichen Frankreichs Weltmacht-Ambition

Den Stapellauf der «Suffren» lässt sich Präsident Macron nicht entgehen.

Die neuen U-Boote sind besonders geräuscharm und damit schwer zu orten.



Der postfaktische Dreiklang:



CO₂-arm



Bezahlbar



Hier fehlt eine wichtige Information



Wer hat die Entwicklung eines Modells des französischen **SMR**
„Atomkraftwerke der Zukunft“ initiiert?
EDF, CEA und Framatome.
sagt das Umweltministerium und unterschlägt dabei ...



„Militärisches Geheimdokument unbequem für Ex-Umwelt-Minister Nicolas Hulot“ 6 neue EPR ab 2025



„zur Erhaltung der Kompetenzen in der Nuklearindustrie.“

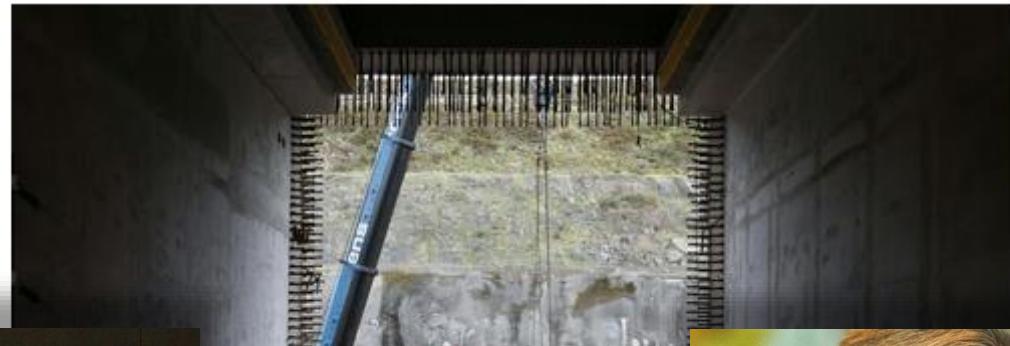
„Ein Anliegen für zivile Tätigkeiten, aber auch für die Verteidigung - mit dem Atomantrieb von U-Booten und Flugzeugträgern.“

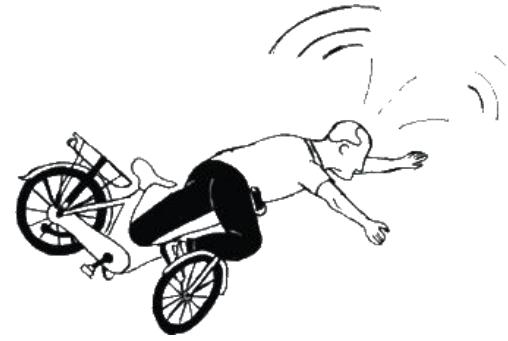
EXCLUSIF - Nucléaire : le rapport qui gênait Nicolas Hulot

Les Echos.fr

VERONIQUE LE BILLON | ELSA FREYSENNE | 30/08/2018 |

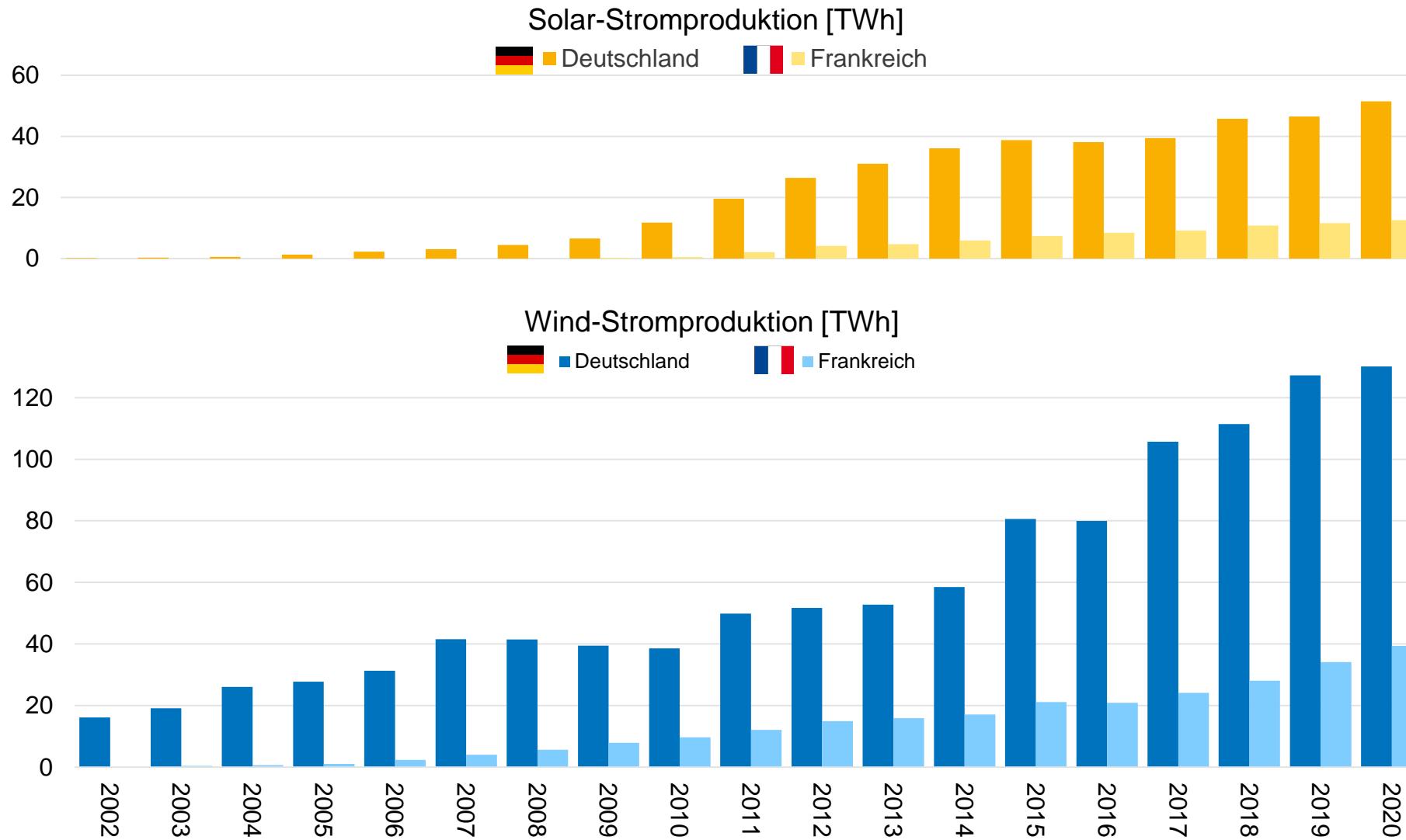
30.8.2018





Trotz bester geografischer Bedingungen

atomare Lock-in-Effekte bremsen die Erneuerbaren





Hier fehlt eine wichtige Information

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TechnicAtome @Technicatome · 28. Jan.
TechnicAtome développe un modèle de SMR de technologie française avec EDF, le CEA et Naval Group.
Signature du contrat stratégique de la filière nucléaire

Tweet übersetzen



28.1.2019 Unterzeichnung eines strategischen Vertrags mit der Nuklearindustrie

Signature du contrat stratégique de la filière nucléaire
François de Rugy, ministre d'État, ministre de la Transition écologique et solidaire, Bruno Le Maire, ministre de l'Économie et des Finances et...
ecologique-solidaire.gouv.fr



Warum das Militär die zivile Atomkraft braucht



Der frühere Energie-Minister, ein Energie-Analyst, die größte Bank Europas, ein multinationaler Energiekonzern, eine Rating-Agentur, die Arbeitnehmer-Aktionäre des Atom-Konzerns, ein Mitglied des Wirtschaftsausschusses im Oberhaus und der konservative Hauptstadt-Bürgermeister üben Kritik am teuersten Kraftwerk der Welt.

- Quersubventionierung
- Lieferketten
- Spezial-Material
- Forschung/Entwicklung
- Ausbildungs-Infrastruktur
- Industrielle Basis

#atoms4war