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Impact of the Eurofighter Tranche 4 on the German economy

Executive Summary of the socio-economic
contribution by the Eurofighter Tranche 4



Study commissioned by:

BDLI 
Connecting.The.Dots.



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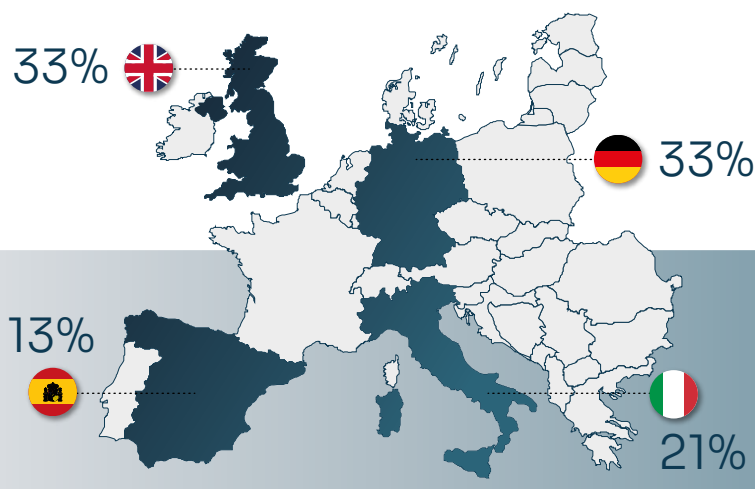
Executive Summary

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The Eurofighter programme forms the backbone of European industry for the production of state-of-the-art military aircraft

Composition of the Eurofighter programme

Percentage of workshares in the development of the Eurofighter



Eurofighter Jagdflugzeug GmbH (Aircraft)

AIRBUS BAE SYSTEMS
LEONARDO

Eurojet Turbo GmbH (Engine)

MTU Aero Engines Avio Aero ROLLS ROYCE
ITP Aero

European Armament Companies

DIEHL Defence MBDA
RHEINMETALL GROUP

Percentage of workshares in the production of Eurofighter components

Eurofighter Jagdflugzeug GmbH

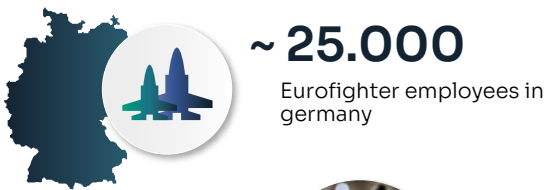
Component	Country	Percentage
Front fuselage and rear fuselage	United Kingdom	36%
Hull centre	Germany	30%
Right wing	Spain	14%
Left wing and rear fuselage sections	Italy	20%

Eurojet Turbo GmbH

Component	Country	Percentage
Combustion chamber, High pressure turbine	United Kingdom	34%
Variable Thruster	Spain	16%
Low pressure turbine, afterburner	Italy	20%
Low and High pressure Compressors, Engine Control Units (DECMU)	Germany	30%

The Eurofighter encompasses a strong industrial ecosystem and actively defends the safeguarding of democracy in action

The Eurofighter programme in the present



More than 400 companies
in direct production and extended supply chain

” The Eurofighter’s superiority both in close air combat and at long range ensures the protection of our own forces and assets.

German Ministry of Defence:
“Weapon systems and large-scale equipment of the Bundeswehr”

Tried, proven, and ready



AIR POLICING BALTIKUM



Nine successful months in Estonia



IN ACTION IN JORDAN AND IRAQ
CD · CBI · NMI



ENHANCED AIR POLICING SOUTH

3 more Eurofighters in Romania

Sources: Eurofighter Jagdflugzeug GmbH, German Ministry of Defence

The study illustrates the contribution of Eurofighter Tranche 4 to the German economy based on three general factors

Scope and objectives of the study

Eurofighter Tranche 4



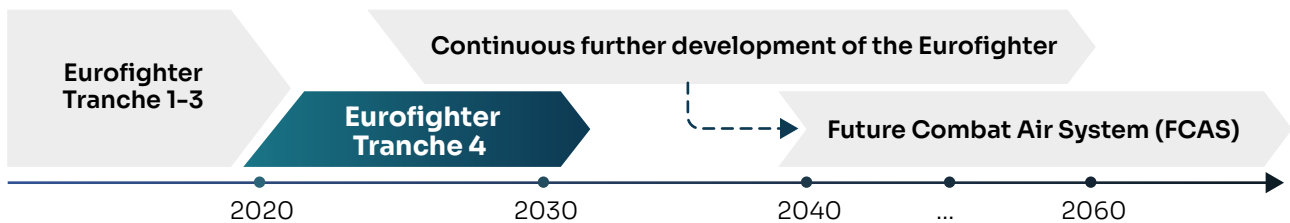
Quadriga Programme

Purchase commitments
38 aircraft
~ 5.500 M€



Halcón Programme

Purchase commitments
20 aircraft
~ 2.050 M€¹



Socio-economic observation areas



Effects on
employment



Impact on
GDP



Impact on
tax revenues

i The scope of the study focuses on the **value creation of the Quadriga and Halcón programmes in Germany** and takes into account both the **production period (2020 to 2031)** and the **utilisation & maintenance period² (2023 to 2060)**

1 Difference in unit price, as the Spanish purchase contract does not include obsolescence management and the Eurofighter is not subject to VAT there
2 See definition in the Customer Product Management (CPM) of the German Armed Forces: "In the utilisation phase, all measures are to be carried out to maintain and restore the operational capability and readiness. This includes, among other things, maintenance, repair, logistical support, training and other services".

Sources: Eurofighter Jagdflugzeug GmbH, BMVG Central Service Regulation A-1500/3 "Customer Product Management"

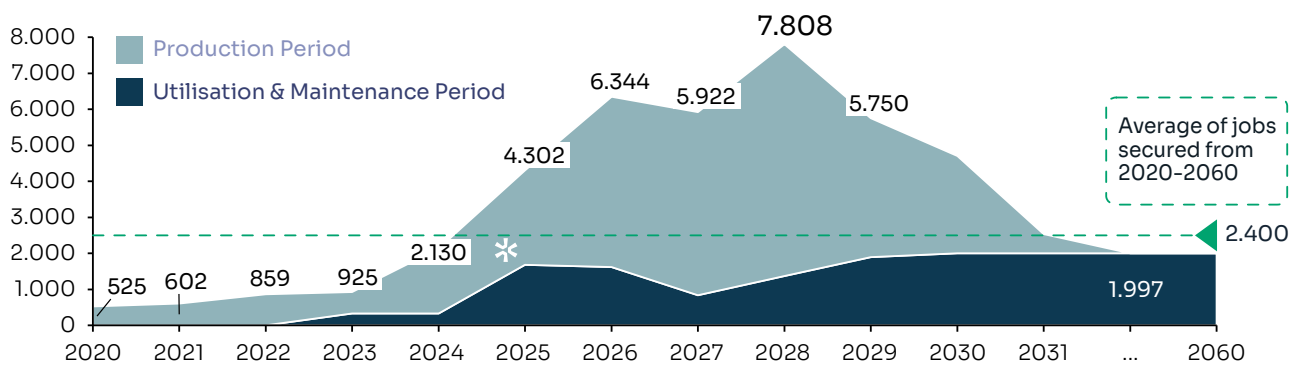
The Eurofighter Tranche 4 programme sustains at its peak more than 7.800 highly-qualified jobs in Germany

Contribution to the preservation of jobs

Effect on employment in Germany



Temporal distribution of jobs created in Germany from 2020 to 2060



*Initial increase due to material and capability build-up for utilisation and maintenance period
Sources: Federal Statistical Office "Input-Output Table of the German Economy" (2019), Strategy& Analysis



+ 33%

For every job created in **the aerospace sector** by the Eurofighter Tranche 4, **33% additional jobs** will be created in the **German economy**

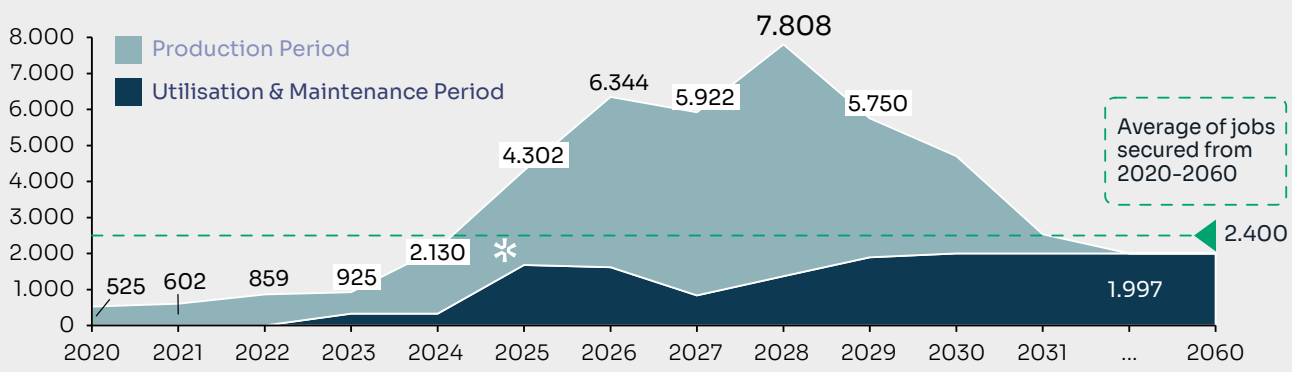
By 2060, a contribution to German GDP totalling 6,457 M€ will have been generated by Eurofighter Tranche 4

Contribution to gross domestic product

Effect on the gross domestic product in Germany



Temporal distribution of jobs created in Germany from 2020 to 2060



*Initial increase due to material and capability build-up for utilisation and maintenance period
Sources: Federal Statistical Office "Input-Output Table of the German Economy" (2019), Strategy& Analysis

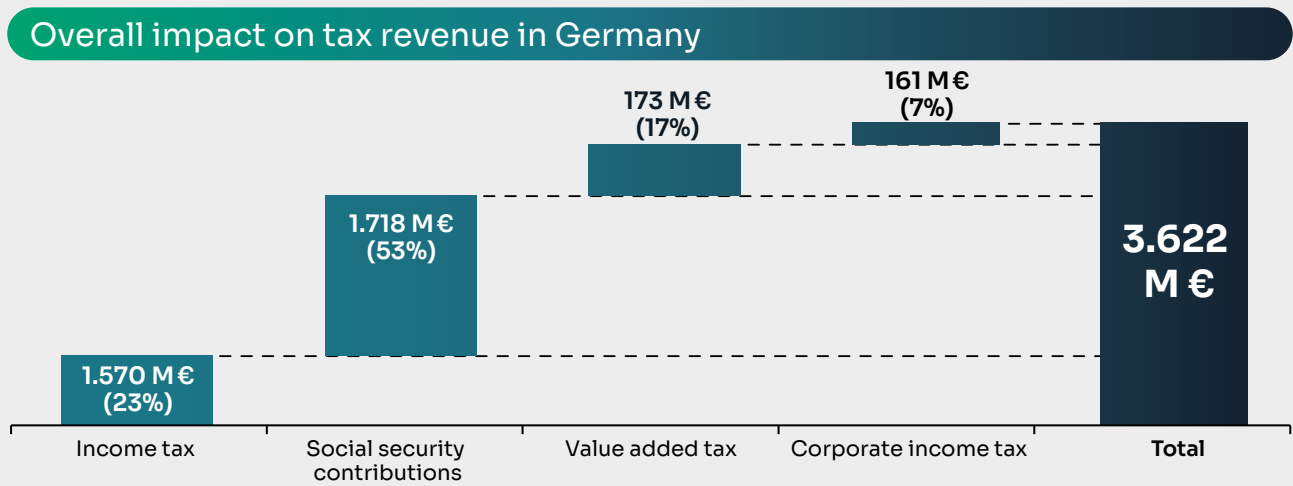
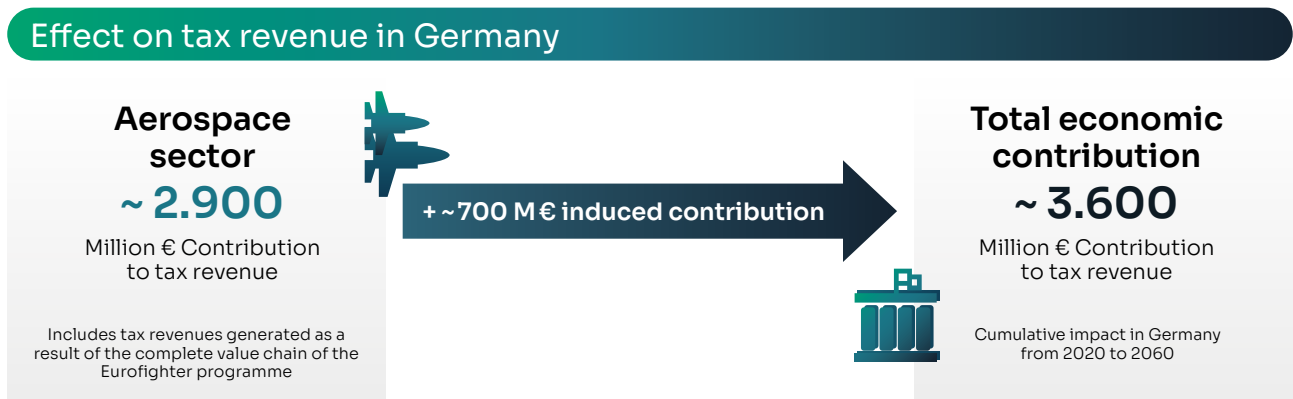


+ 11%

For every euro of GDP generated in the aerospace sector by the Eurofighter Tranche 4, a further 11% additional contribution to total GDP will be made

The tax revenue of 3,622 M€ generated by Tranche 4 until 2060 amortises about 66% of the Quadriga acquisition costs (5.500 million euros)

Contribution to German tax revenue



Sources: BMVG, Federal Statistical Office "Input-Output Table of the German Economy" (2019), Strategy& Analysis

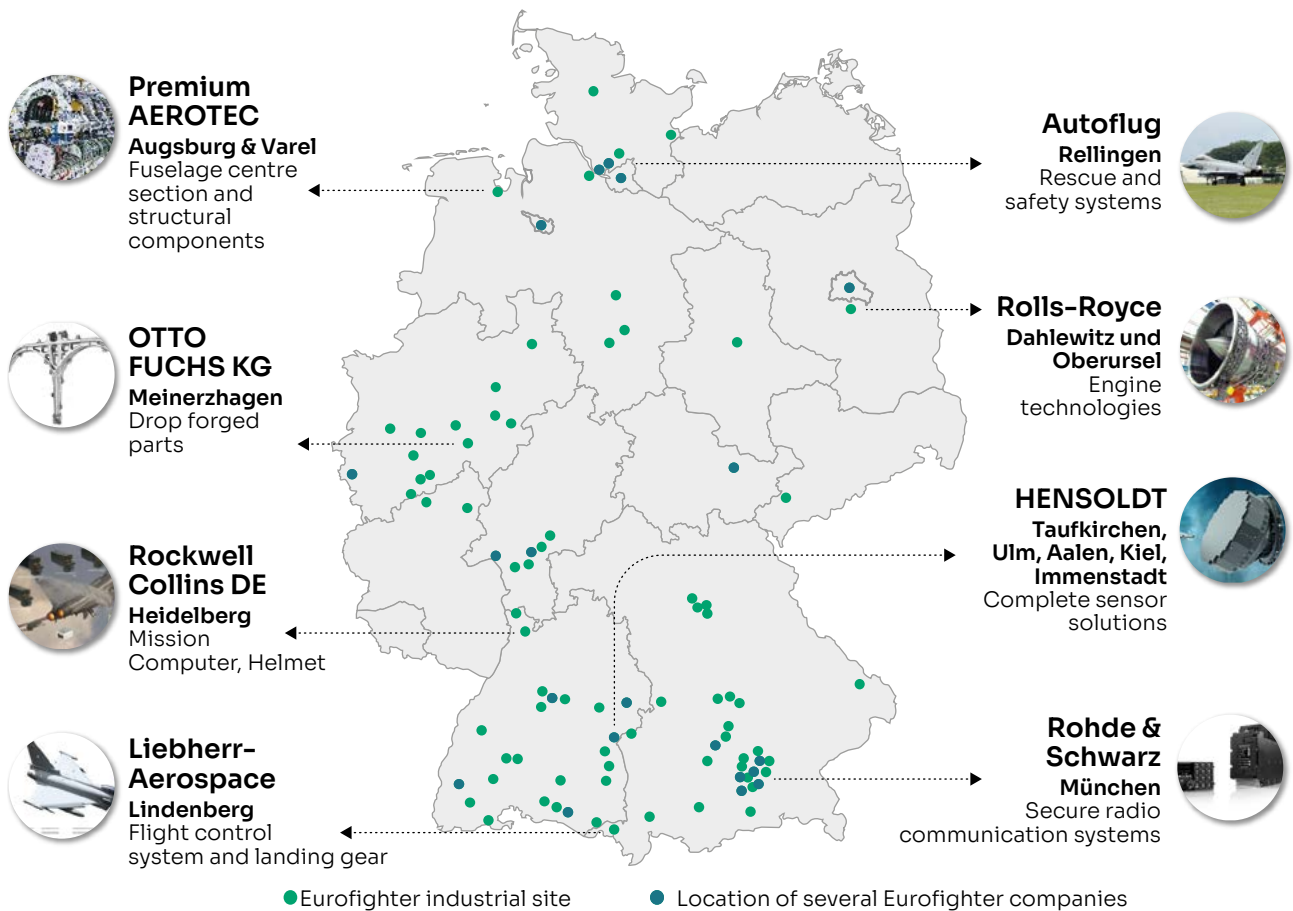


+26%

For every euro of tax revenue generated in **the aerospace sector** Eurofighter Tranche 4, **26% additional tax revenue** is generated in Germany

The German Eurofighter industrial network is spread across a wide variety of regions and technological sectors

Map of suppliers to the Eurofighter programme



Sources: Eurofighter Jagdflugzeug GmbH, Strategy& Analysis

Key observations

- The direct contractors and **over 120 suppliers** of the Eurofighter programme **are spread over almost all states** of the German federal republic
- **Geographical clusters** are an important **industrial location factor**, as well as **close cooperation with the German Air Force**, such as in the Military-Industrial Competence Centre for development, production & maintenance of the Eurofighter
- Geographical proximity and short delivery routes enable Eurofighter partners to have an **efficient and agile manufacturing process** and contribute to a positive environmental footprint
- The backbone of the Eurofighter is formed by **regional technology and engineering competencies**, which realise numerous **key technologies** in the system

The Eurofighter fields a wide range of key technologies from forward-looking German development programmes

Overview of German key technologies in the Eurofighter



Networked operations*

e. g. via human-machine collaboration with unmanned aerial systems from Airbus Defense & Space and others



Electronic Warfare*

e. g. for coordinate detection of threats by the Arexis EK system of the company Saab



Protection

e. g. through the Praetorian self-protection system with parts from the Hensoldt company



Artificial intelligence*

e. g. through signal-processing software from the software company Helsing



Secure IT and communication

e. g. via software-defined radios of the Soveron family from Rohde & Schwarz



Sensor technology

e. g. via ECRS¹ Mk1 AESA² radar from the companies Hensoldt and Airbus Defense & Space

* Future planned technology programmes 1) European Common Radar System; 2) Active Electronically Scanned Array
Sources: Eurofighter Jagdflugzeug GmbH, Strategy& Analysis

i Key technology “Made in Germany” enables unrestricted access to all aircraft systems, mission & logistics data of the Eurofighter and thus ensures Germany’s full technological, operational and political sovereignty.

The Eurofighter programme strengthens national sovereignty and makes significant contributions to the German economy

Summary of the economic impacts

Tranche 4 contribution to the socio-economic development of Germany

 Effects on employment	→	At annual peak¹ of total 25.000 jobs in full German Eurofighter programme	7.800 jobs
 Impact on GDP	→	Total economic contribution²	6.500 Millionen €
 Impact on tax revenues	→	Total economic contribution²	3.600 Millionen €

1 Jobs saved on average each year from 2020 to 2060
2 Cumulative impact from 2020 to 2060

Contribution to strengthening Germany's national sovereignty

- **Reduced technology dependency**
- Increased **national sovereignty** of Germany
- Advanced **state-of-the-art research and development work**
- Supported **development of national engineering competencies**
- Increased **security in crisis situations**
- Strengthened **operational capability of the Air Force**

The return of tax revenues into the German fiscal budget amounts to

 **66%**

compared to the former Quadriga procurement costs (5.500 Millionen €)

i The procurement of Eurofighter Tranche 4 has far-reaching socio-economic effects in terms of employment, GDP and tax revenues, strengthens national sovereignty and secures competencies in German key technology fields

Sources: Eurostat, Federal Statistical Office, BMVG, Strategy& Analysis

The Eurofighter Long Term Evolution (LTE) programme will contribute significantly to the development of Future Combat Air System (FCAS)

The future of the Eurofighter programme



- o Eurofighter tranche currently in operation
- o Delivery of the first **Tranche 4 Eurofighters** for the **Quadriga and Halcón** programmes
- o Introduction of state-of-the-art **E-SCAN radars**
- o The development intention for the first Eurofighters of the **Long Term Evolution** programme was signed in 2019
- o The LTE programme will serve as an enabler to **ensure the performance** and form the **basis for new capabilities and technologies** for Eurofighter Tranche 5
- o Especially in the areas of **data acquisition and Electronic Warfare (EloKa)** **the performance will be greatly increased**
- o As a result, the Eurofighter will **remain operational at least until 2060** and will be an **essential part of the FCAS**
- o **FCAS is a European air combat system** being developed mainly by Airbus (Germany), **Dassault Aviation** (France) and **Indra** (Spain)
- o The aim is to develop a **next-generation weapon system (NGWS)** with unmanned “remote carriers” (drones) and a latest-generation fighter aircraft (New Generation Fighter – NGF)
- o The **Air Combat Cloud**, another component of the NGWS, links remote carriers and NGFs, **enabling agile data transfer and ensuring information superiority**

Eurofighter Typhoon



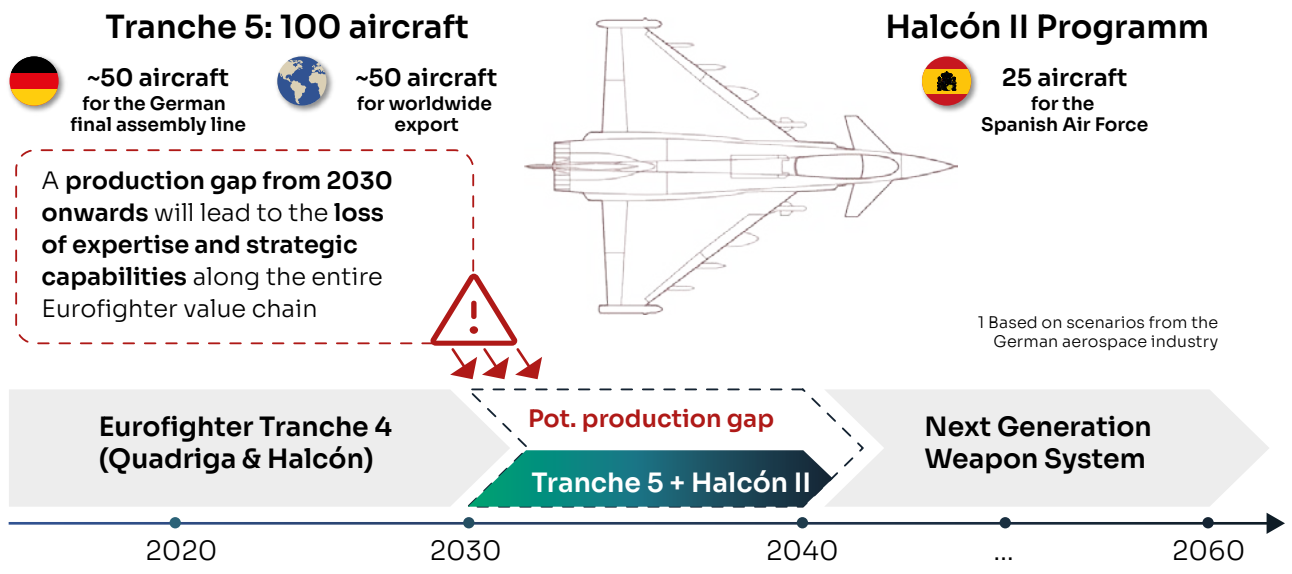
Important development bridge until the arrival of the FCAS

Sources: Eurofighter Jagdflugzeug GmbH, Strategy& Analysis

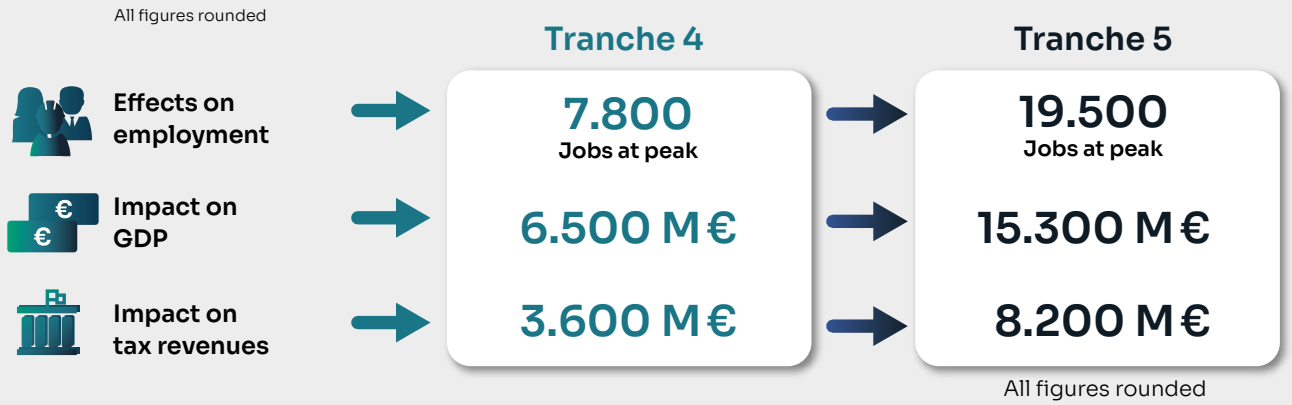
Ordering a Eurofighter Tranche 5 creates significant economic value add and ensures seamless capability retention

Impact estimation of a German Eurofighter Tranche 5 and Spanish Halcón II programme

Geschätzte Parameter¹ einer zukünftigen Eurofighter Beauftragung



Contribution to the socio-economic development of Germany²



² estimated contribution of German value add to production and utilisation period, as well as development costs from the Long Term Evolution programme; Includes

A potential procurement of Tranche 5 is an opportunity to

- **Create and sustain highly qualified jobs**
- Preserve **national sovereignty in data usage** and in the further development and use of combat aircraft
- Strengthen the entire **German economy**
- **Prevent an imminent loss of capability** in the aviation industry

Sources: Eurofighter Jagdflugzeug GmbH, Airbus D&S, Strategy& Analysis

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