

Visualizing Innovation

PI 0822, Vienna University of Economics and Business

13/11/2023, 10:00-12:00

The Austrian Patent Office

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Nice to meet you

- ▶ Raphaela Tiefenbacher, Head of Strategy
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- ▶ Renate Spring, Chief Economist
 - ▷ Renate.spring@patentamt.at
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Outline

- I. What are IPRs?
- II. Austrian Patent Office
- III. IP from an economic perspective
- IV. Economic Analysis in the APO

I. What are IPRs?

Design

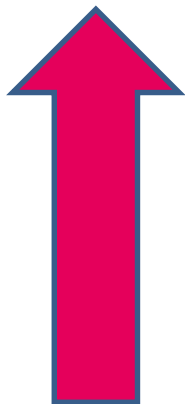


Patent

Trademark



IPR	Patents	Designs	Trade marks	Copyright	Geographical indications	Plant variety rights
Subject-matter	Inventions (solutions to technical problems)	Appearance of an article or product or parts of it and/or its ornamentation	Distinctive signs that identify certain goods or services and distinguish them from those of other businesses	Artistic, literary, dramatic, musical, photographic and cinematographic works; maps and technical drawings; computer programs and databases	Product originating in a particular geographical area whose quality or reputation is linked to its geographical environment or origin	Plant varieties



What are Patents exactly ?

Right **to exclude others**
from **industrially**

- ▶ producing the subject matter of the invention
- ▶ putting it on the market
- ▶ offering it for sale
- ▶ or using it or importing or possessing it for the above purposes.

Limited in **territory** (no effect beyond the country filed/validated) and in **duration** (20 years counting from application)

What can be patented ?

Patents shall be available for any invention, whether products or processes, in all fields of **technology** (mind: exceptions to patentability)

provided they are

- ▶ **new ***),
- ▶ **inventive**, and
- ▶ susceptible to **industrial application**

First to apply, not first to invent

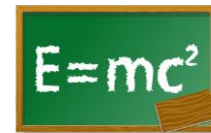
***) new** = not known to the public **at the time of application**

Public = access to anyone and everyone: conferences, publications, internet, diploma/PhD theses, leaflets, ...

And what is not a Patent?

The following are **not** inventions:

- ▶ **discoveries***), scientific theories, etc.
- ▶ Purely aesthetic creations (=art)
- ▶ schemes, rules for playing games or doing business, programs for computers



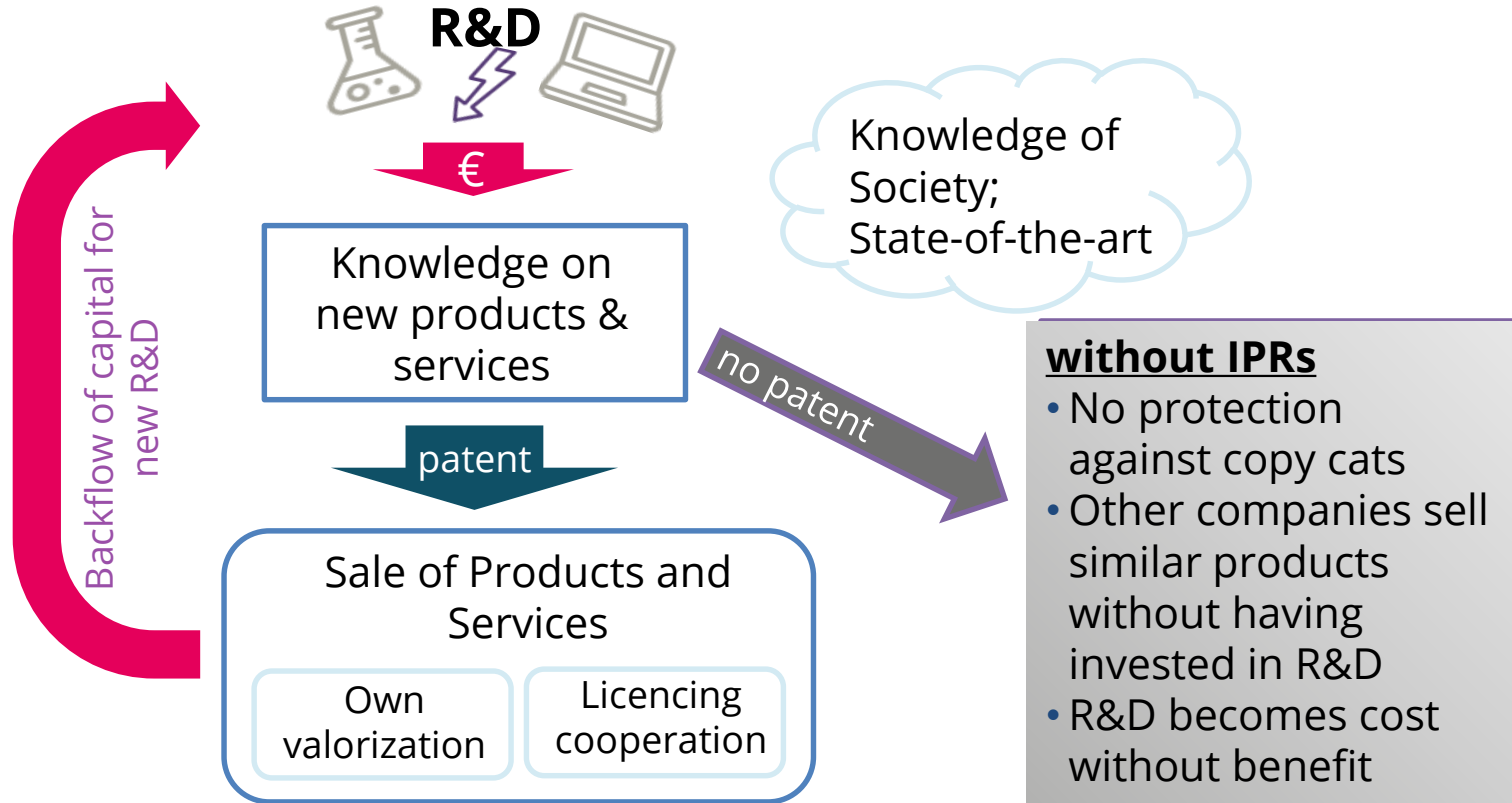
- ***discovery**: description of sth existing
→ e.g. increased hCG (specific hormone) level during pregnancy
- invention**: instruction how to solve a technical problem
→ e.g. pregnancy test

Types of Patents

- ▶ [Austrian Patents](#) (ca 2000 patent applications/year)
- ▶ [EP](#) (ca 2300 patent applications/year)
- ▶ [UP](#) (Dashboard)
- ▶ PCT
- ▶ Other national offices (USPTO)



But, why do it?



Austria

- ▶ IPRs are territorial monopolies
- ▶ Austria: small, open economy with an intense focus on exports
- ▶ Austrian companies need IP protection, where they
 - ▷ sell
 - ▷ produce
 - ▷ have competition

Functions of Patents

INDIVIDUAL

- ▶ Entitlement to remuneration
- ▶ Career factor
- ▶ Wealth and income factor (WEF)
- ▶ Participation in and shaping of the innovation process

COMPANY LEVEL

- ▶ Control over invention
- ▶ Protection from copy cats (knowledge is an imperfect product)
- ▶ Basis for cooperation (production, licencing)
- ▶ Knowledge sharing is incentivized
- ▶ Better chances of being funded (investors need securities)
- ▶ SMEs with intellectual property rights make up to 68% more profit
- ▶ Patent data as libraries

The innovation chain



You should always have a protection strategy when it comes to your invention. This applies to every link in this chain.

Inspiring Inventions

Patent

- ▶ Carmen Hijosa
- ▶ 2013 Foundation of Ananas Anam
- ▶ Patent for the production of pineapple fibres as a leather substitute (2013)
- ▶ SME (55 employees) Leather made from pineapple fibres
- ▶ Finalist for the EPO Inventor Award 2021





Inspiring Inventions

Patent

- ▶ Charlotte Ohonin
- ▶ Founder of Norganoid
- ▶ Research on „Organoids“
- ▶ Computer chips as miniorgans (Stemcells)
- ▶ Personalized Medicine
- ▶ Alzheimers
- ▶ Abolishment of animal testing



© Brutkasten

Inspiring Inventions

Patent

- ▶ Ottobock
- ▶ German with branch in Vienna
- ▶ Special Machinery
- ▶ Prostheses, sports wheelchairs and exoskeletons, i.e. supports that can be worn over clothing
- ▶ 200 patent applications per year



© ottobock

Inspiring inventors

Patent

- ▶ **TU Vienna**
- ▶ **Michael Harasek**
- ▶ **Hydrogen** is becoming increasingly important as a sustainable energy source.
- ▶ use the existing infrastructure of existing natural **gas networks**
- ▶ Electrochemical **separation technology** to cleanly recover the transported hydrogen
- ▶ and **compress it for use.**



© Patentamt
Michael Harasek,
inventor TU Wien

II. The Austrian Patent Office

IPR Stakeholder




 **Bundesministerium**
Klimaschutz, Umwelt,
Energie, Mobilität,
Innovation und Technologie



Patents, utility models, TM,
designs



 **Bundesministerium**
Justiz

Copyright law

 **Bundesministerium**
Finanzen

Counterfeiting

Austrian Patent Office

- ▶ authority for **intellectual property protection** in Austria (Vienna)
- ▶ 236 employees
- ▶ founded **1899** (125 anniversary next year)
- ▶ **compentencies:**
 - ▷ **IPRs:** patents, utility models, trademarks, designs and supplementary protection certificates
 - ▷ **Services** and public information on intellectual property rights and training courses ([IP Academy](#))

IP Strategy (2017)

Measures in five fields of action to support AT companies, unis, research institutions and innovators to protect and exploit their innovations in the best possible way and thus strengthen the science and business location.

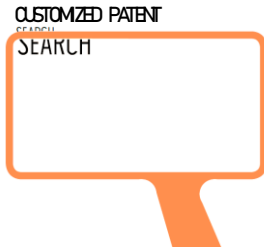
- ▷ Legal Framework
- ▷ Institutional Framework
- ▷ Skills and Awareness
- ▷ Special support for Innovators and Creatives for the use of IP
- ▷ Connections with other strategies by the government
- ▶ Definition of **36 Measures**: **32** have been realized

Our Priority: Help smaller players: PRO, Unis, SMEs and others

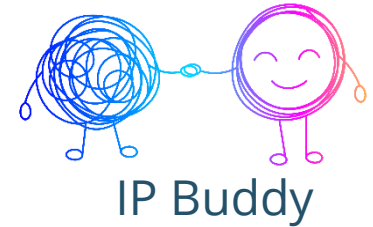
Activities and Services directed to SMEs, start-ups, universities



discover. **IP**

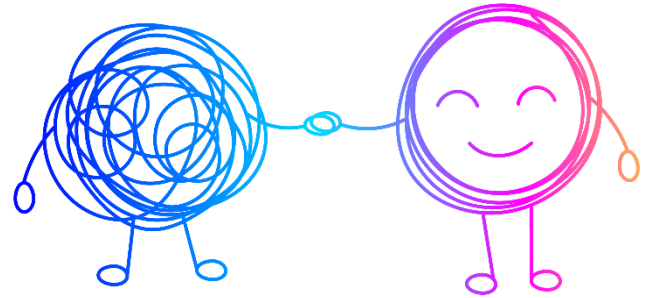


Gratis und exklusiv zu Ihrer Patentanmeldung
beim Österreichischen Patentamt.



„IP Buddy“, Patentscan

- exclusively for school and university students
- personal support: patents, trademarks and designs
- “IP Buddy Team”
- patent search possible
- free of charge



Women in IP

Buddy
for her



PATENTE

MARKEN

DESIGNS



MASSNAHMENPAKET GEGEN DIE NIEDRIGE
ERFINDERINNENQUOTE:

Stefan Harasek, Raphaela Tiefenbacher und Hildegard Etz präsentieren eine Reihe
von Neuerungen - u.a. BUDDY FOR HER.

BUDDY
FOR HER

2023 so far?



Masters of IP- Female Edition



Gender-Gap bei Erfindungen

Nur 8% der Erfindungen aus Österreich stammen von Frauen.

Vielfältige Gründe
Viele strukturelle Gründe für die mangelnde Geschlechterparität, aber auch konkrete Handlungsansätze für das Österreichische Patentamt.

Art der Tätigkeit ...
... ist entscheidend: Frauen sind eher im naturwissenschaftlichen und administrativen aber weniger im technisch-anwendungsorientierten Bereich tätig.

„Steter Tropfen höhlt den Stein“
Bewusstseinsbildung und Wissensverbreitung als integraler Bestandteil des Arbeitsauftrags.



Niedrige Erfinderinnenquote –
Ergebnisse einer qualitativen Umfrage



Intellectual Property
Finance

IP Academy



Founded
in 2018



Goal: to
disseminate
awareness
and
knowledge
on IP

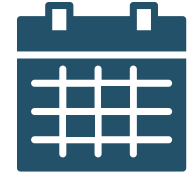


Free of
charge



userbase
increasing
steadily:

Since 2019
+51%



- IP by Women for Women
- Unitary Patent
- Masters of IP
- Podcast
- IP Management
- IP for Schools

III. IP – from an economic perspective

1. Innovation/IP and market failure
2. Importance of IP in the (Austrian) economy

III.1 Innovation/IP and market failure (1)

- ▶ **IPRs** to solve for market failures (?)
 - ▷ Knowledge as **public good** -> missing incentives to invent or innovate
 - ▷ **Missing property rights** -> property rights = right to exclude someone from using them
 - ▷ **Asymmetric information** -> i.e.: TM as quality signal to buyers
- ▶ Creating a **monopolistic situation** (securing exploitation for yourself)

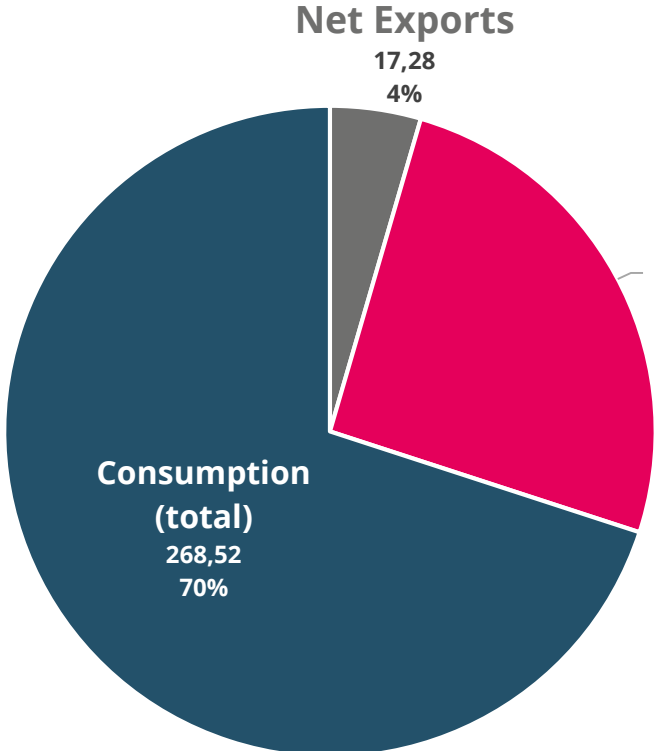
III.1 Innovation/IP and market failure (2)

Other examples of market intervention:

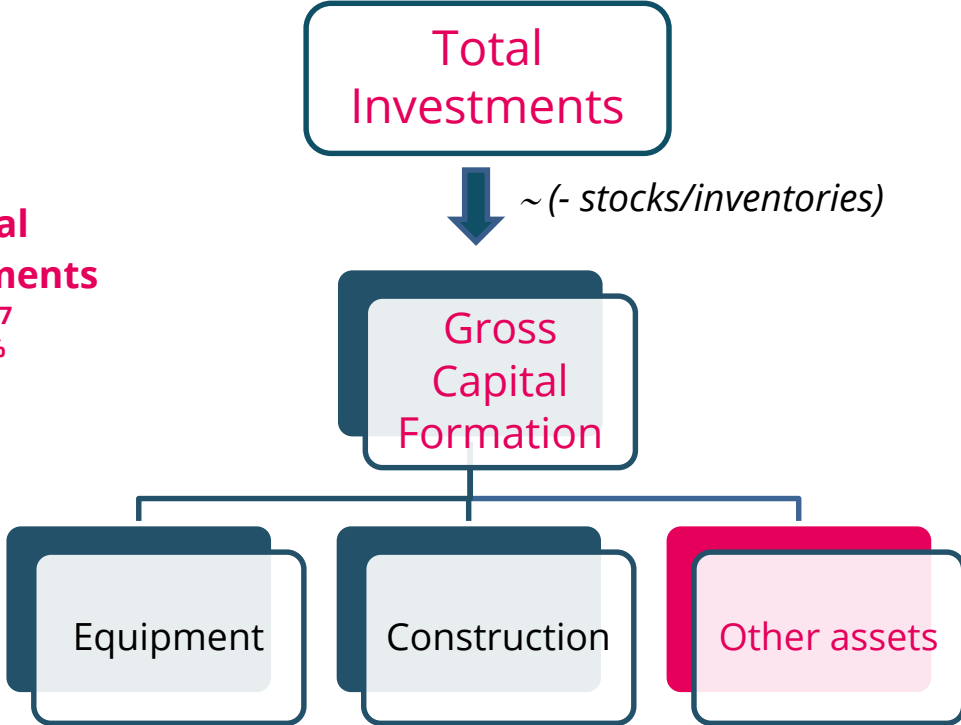
- ▶ **Promotion of innovation and research** to minimise **market failure** and promote the common good (e.g. medicines, progress in environmental protection, etc.)
- ▶ Examples:
 - ▷ Patent.Scheck (up to 10.000 EUR of patent costs; SMEs)
 - ▷ Research Premium (14% of research expenditure)
 - ▷ Education and university budget in general

III.2 Importance of IP (1)

GDP Austria 2022

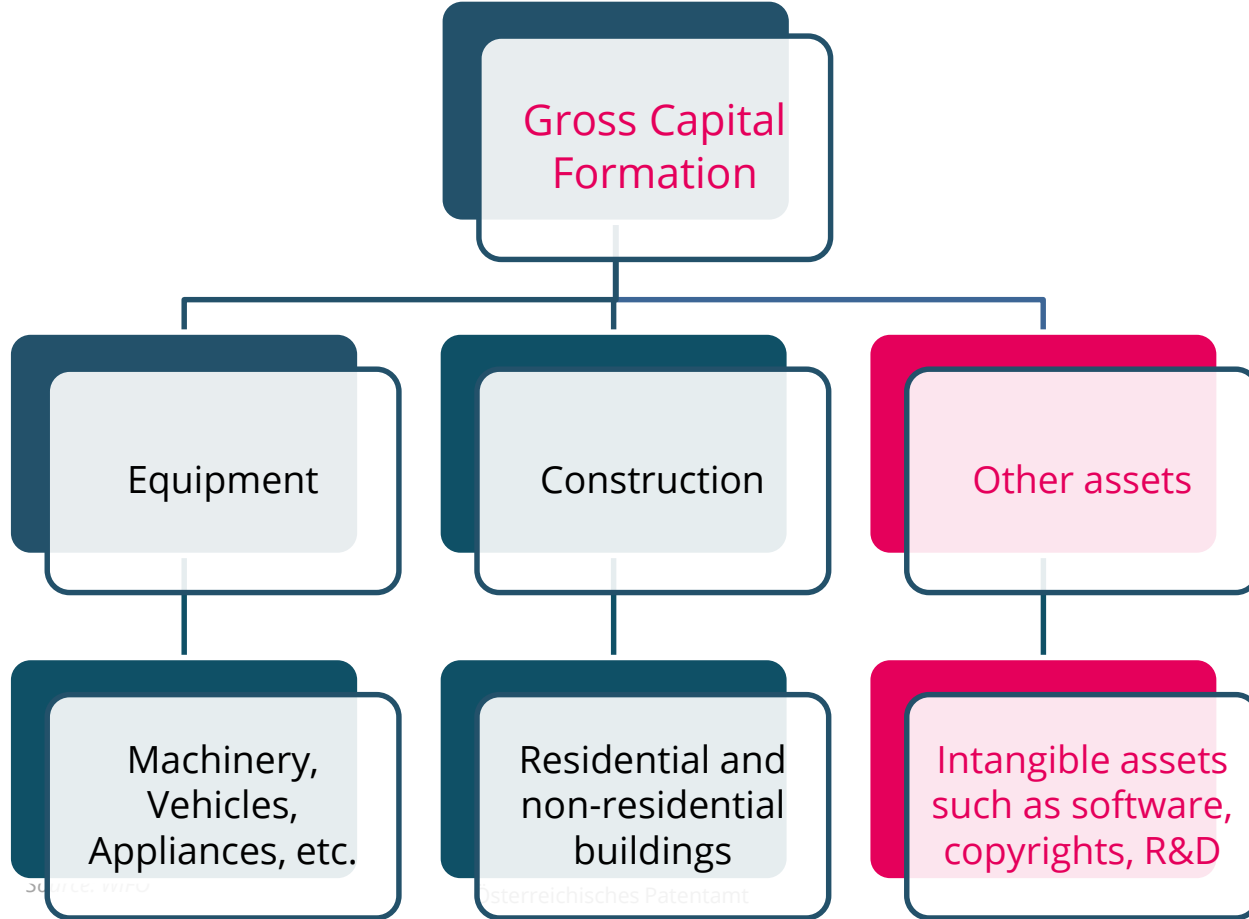


Total Investments
97,87
26%



Source: WIFO

III.2 Importance of IP (2)



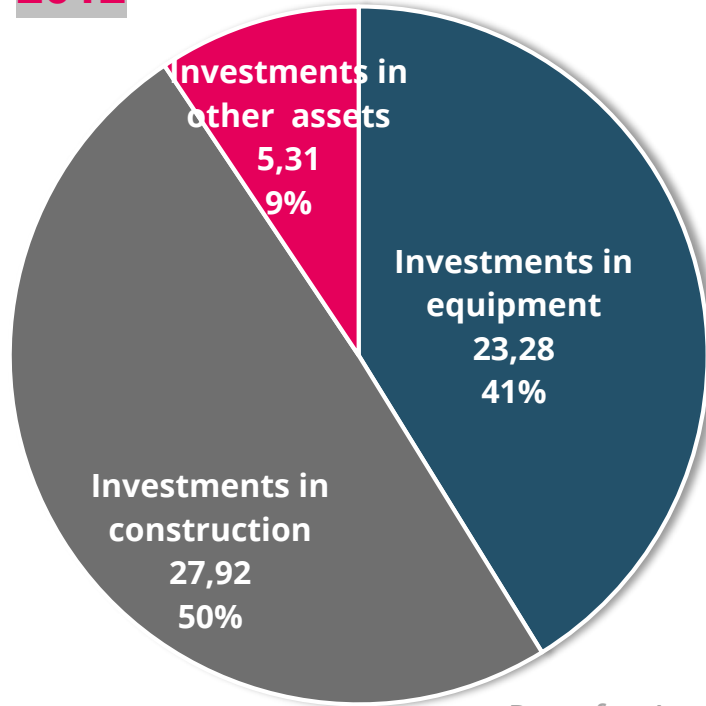
Source: WIPO

Österreichisches Patentamt

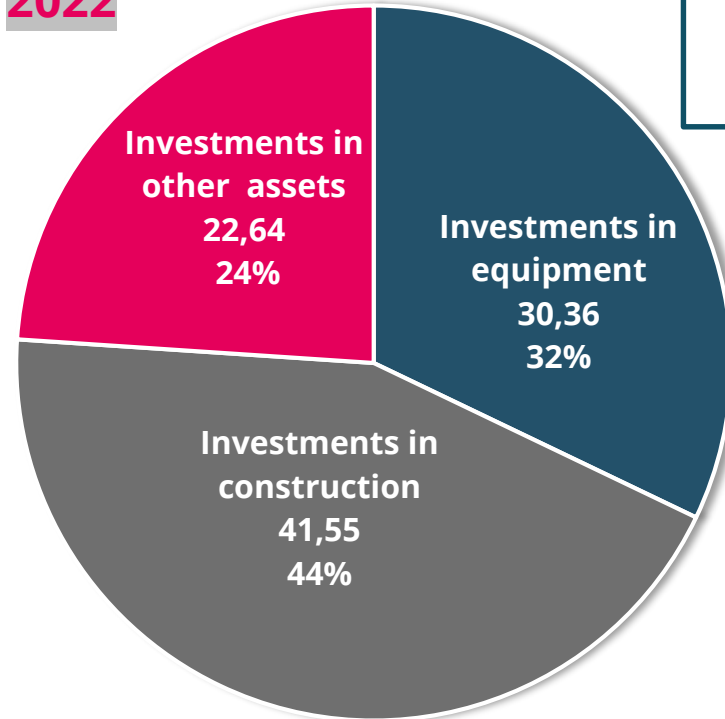
III.2 Importance of IP (3)

Gross fixed capital formation in Austria 2012/2022

2012



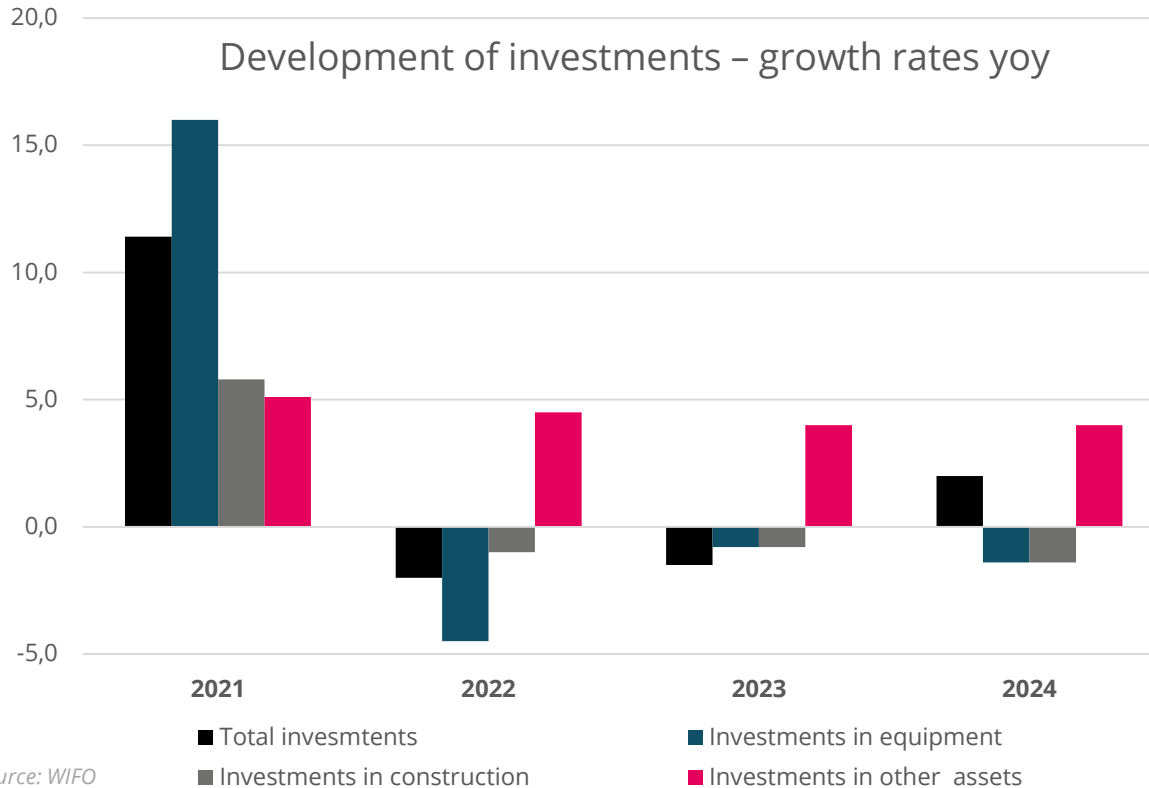
2022



Investments
in IP are
growing!

*Data for Austria; Source: WIFO; in bn. Euro;
Investments in other assets: intellectual property (R&D, software and databases, copyrights)*

III.3 Importance of IP (4)

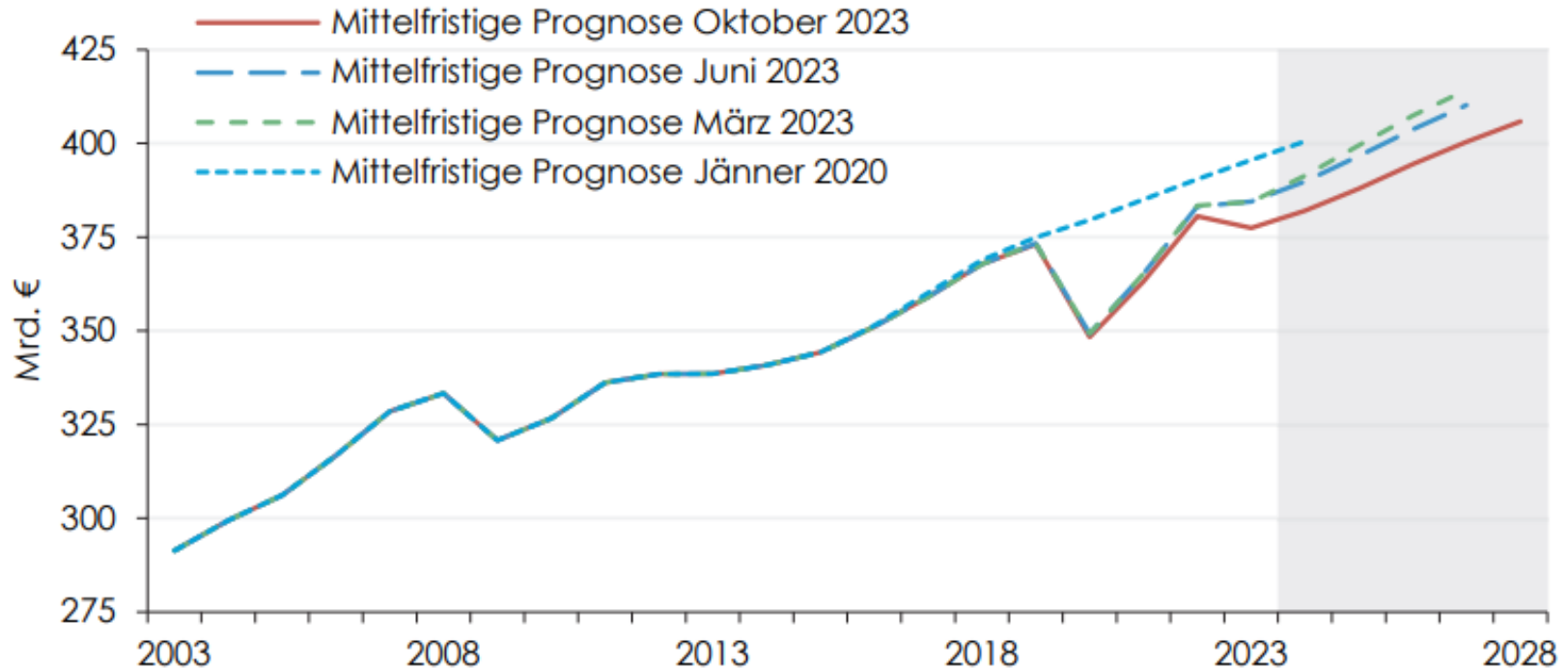


Source: WIFO

Investments
in IP (in other
assets) are
stable!

Not that
sensitive to
economic
fluctuations!

III.3 Importance of IP (5)



Source: WIFO

III.3 Importance of IP (6)

Contribution to EU GDP

IPR-intensive industries,
€ 6.4 trillion, 47.1%

Patent-intensive industries,
€ 2.4 trillion, 17.4%



Share of EU employment

IPR-intensive industries,
82 million jobs, 39.4%

Patent-intensive industries,
36 million jobs, 17.4%



Source: [EPO, EUIPO](#)

IV. Economic Analysis in the APO

„Economics division“ in the APO

Outputs i.a.:

1. Data Analysis
2. New: Publication series (own studies)
3. Factsheet

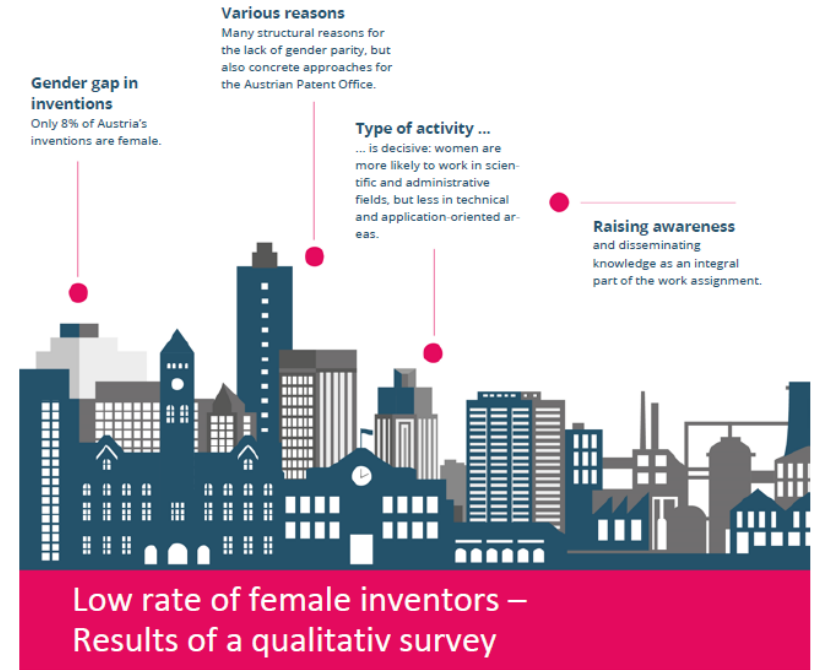
1. Data Analysis

- ▶ **Annual data analysis** ([Yearbook](#))
- ▶ **Reporting** national data to various international organizations (regularly)
- ▶ **Databases:**
 - ▷ [Patstat](#): bibliographical and legal event patent data from leading industrialised and developing countries
 - ▷ [Orbis IP](#): Bureau van Dijk/Moody's – company data
 - ▷ [Elvis](#) (Electronic administration and information system; 2012)
 - ▷ [World Gender-Name Dictionary](#)
- ▶ **Patent Search:** [espacenet](#) - Search Tool for everyone

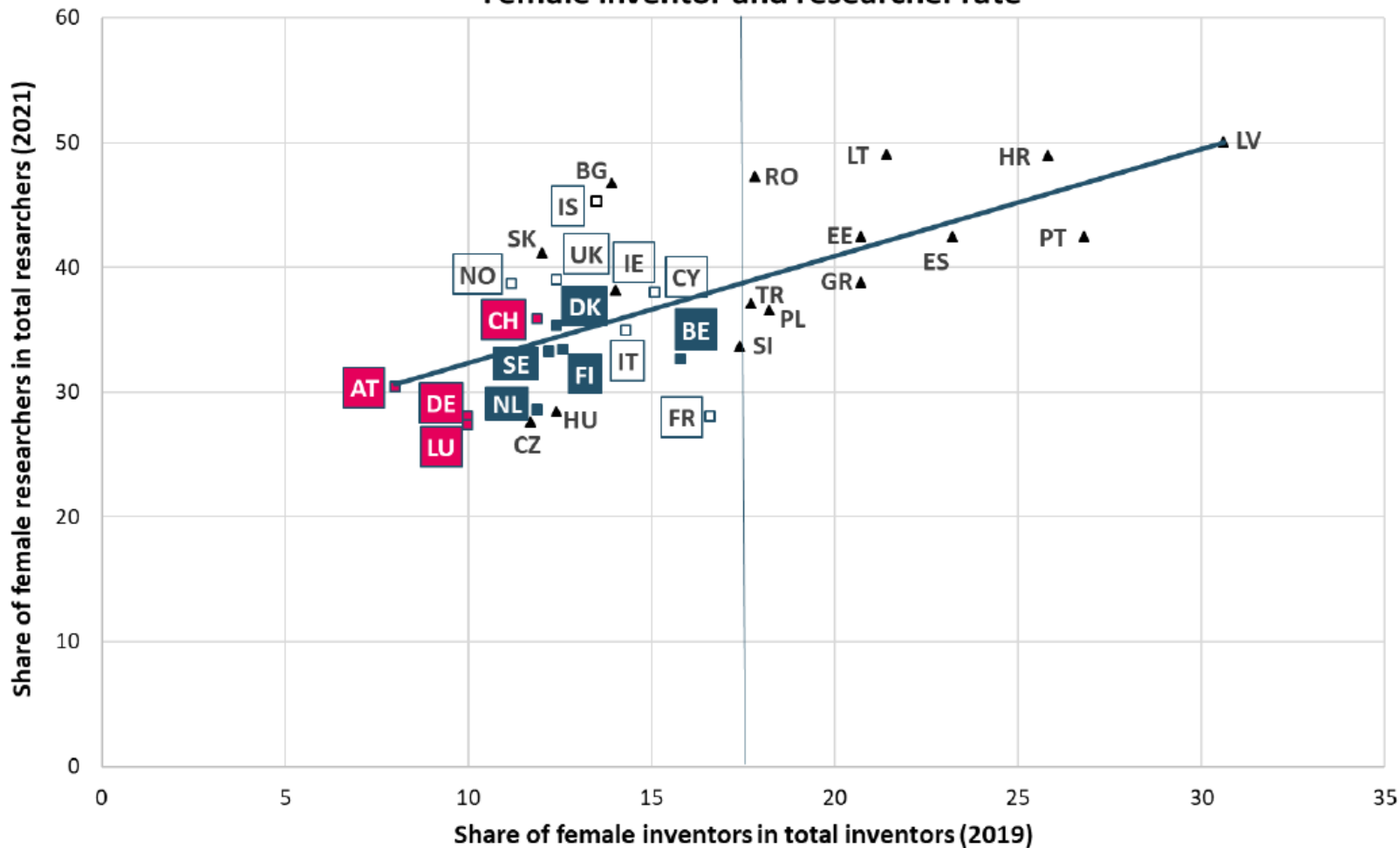


2. Publication series

- ▶ “Wissen schafft Perspektiven”
(~ “*knowledge creates prospects*”)
- ▶ Publication of analysis results,
1-2 p.a., DE and EN
- ▶ First: 8th of November:
“**Low rate of female inventors –
results of a qualitative survey**”



Female inventor and researcher rate



Survey

- ▶ **Topic: low female inventor's rate**
- ▶ Survey period: April 2023
- ▶ Format: **online**
open, semi-open and closed questions
- ▶ No. of questions: 96
- ▶ Group of participants:
 - ▷ 1,770 stakeholders
 - ▷ 7 IP stakeholder groups



Figure 5: Main categories - Reasons for the low rate of female inventors

Measures
(presented on 8th of November)

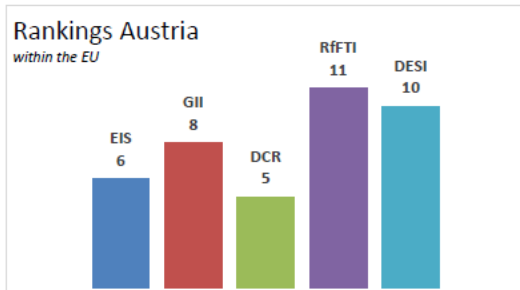
3. Factsheet

- ▶ most important **indicators and rankings** relating to the research and innovation landscape in Austria
- ▶ inter alia for **bilateral meetings** with international partners
- ▶ regularly adapted and updated

2022/2023

International rankings

Austria is one of the Strong Innovators and was able to maintain its position in comparison to the Innovation Leaders in the Global Innovation Index (GII) as well as in the DESI and is ahead of Innovation Leader Belgium here – as in the Digital Competitiveness Ranking (DCR).



EU-ranking of Austria 2022/23 compared to innovation leader countries

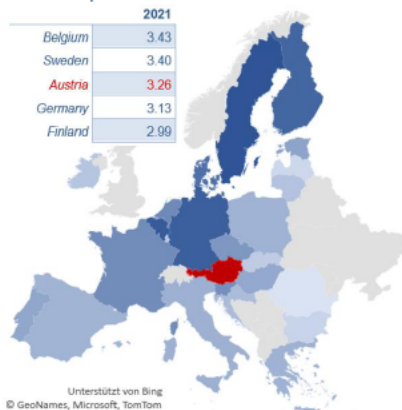
	2022/23	EIS	GII	DCR	RfFTI	DESI
Innovation-Leader	DK	1	5	1	8	2
	SE	2	1	2	1	4
	FI	3	2	4	4	1
	NL	4	3	3	2	3
	BE	5	11	9	5	16
	AT	6	8	5	11	10

Ranks within the EU. EIS: European Innovation Scoreboard (EC, 2023), GI: Global Innovation Index (WIPO, 2023), DCR: Digital Competitiveness Ranking (IMD), RfFTI: Readiness for Frontier Technologies Index (UNCTAD; 2023), DESI: Digital Economy and Society Index (EC, 2022)

Research and development

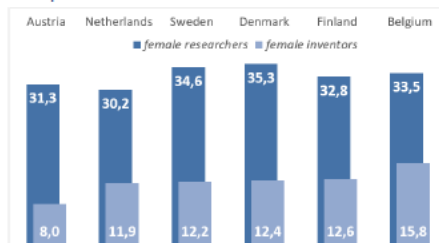
Research expenditure: In 2022, 14.3 billion euros were spent on research and development in Austria - 11.1% more than in the previous year.

Research ratio: With an R&D ratio of 3.26%, Austria is among the TOP-3 in the EU. For 2022 the ratio is estimated at 3.20%, for 2023 at 3.22%.



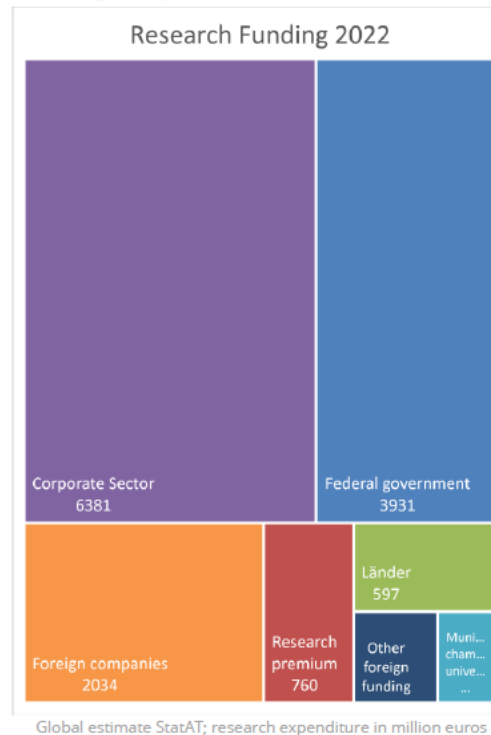
Statistics Austria/Eurostat; research expenditure as % of GDP

Women in research: At just under 31%, Austria is in the bottom quarter of the OECD in terms of the proportion of women in research, and even in last place in Europe for female inventors.



Data: OECD (2021) and EPO (2019)

Research funding: Around two-thirds of research expenditure (approx. 9.2 billion) is funded by companies - this also includes the research premium and foreign companies.



Global estimate StatAT; research expenditure in million euros

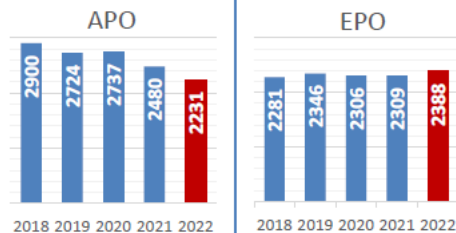
The public sector - federal government, Länder and municipalities as well as chambers, universities and social insurance institutions - provide one third of the funding (around 4.8 billion).

Trends in Patenting

2022

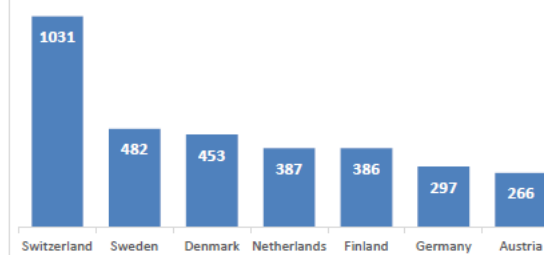
Development of patent applications at the ...

	... APO	... EPO
2018	2,900	2,281
2019	2,724 (-6.1%)	2,346 (+2.8%)
2020	2,737 (+0.5%)	2,306 (-1.7%)
2021	2,480 (-9.4%)	2,309 (+0.1%)
2022	2,231 (-10.0%)	2,388 (+3.4%)



APO: Patents and utility models; EPO: Euro-direct and PCT

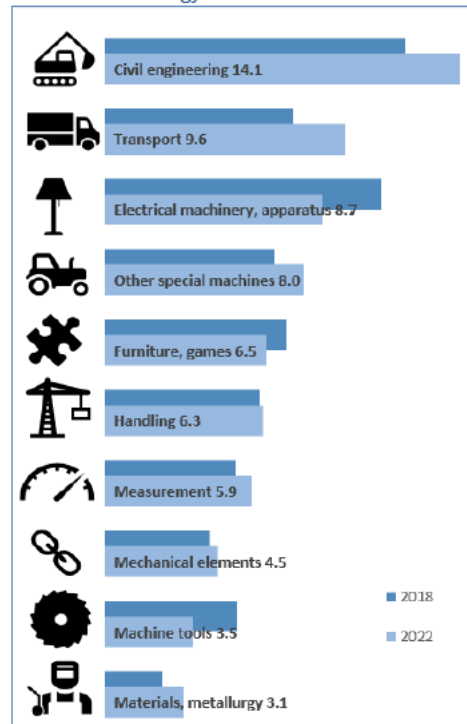
EPO patent applications- TOP 7 countries per mio. inhabitants



EPO data; Euro-direct and PCT

Top technology fields

Most patent applications at the Austrian Patent Office are filed in the fields of civil engineering, transport and electrical machinery. Compared to 2018, there are only marginal changes in the shares of technology fields observable.

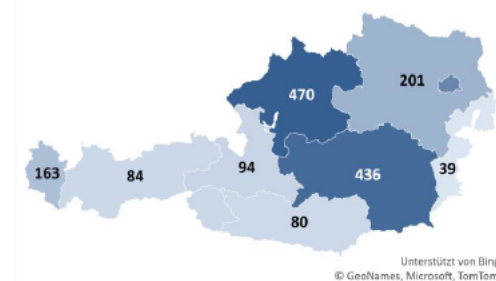


Shares of total filings at the APO in %

As regards patent applications from Austria at the EPO, technological fields such as pharmaceuticals, medical technology and semiconductors are also among the TOP application areas.

Top filing regions

In 2022, the highest number of applications for inventions (patents and utility models) was filed in Upper Austria with 470 applications, followed by Styria with 436 and Vienna with 345.

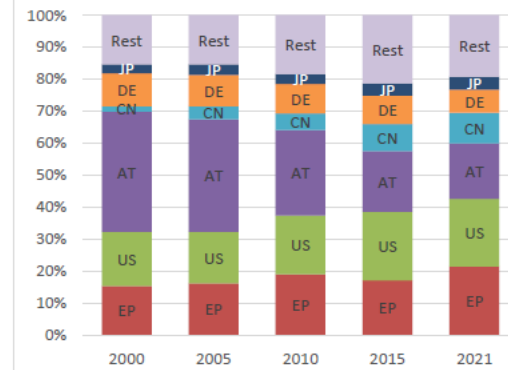


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Patent and utility model filings at the APO 2022

TOP filing countries


Over the years, there has been a shift in the number of patent applications filed by Austrians worldwide in favour of the US market and China.





Shares of patent applications from AT in %; data: WIPO

Thank you for your attention!

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The Austrian Patent Office

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