



Grøn forskning Mogens Sandfær

nsk forskning

En

Da

Søg i Lokale Data

Søg i Åbne Data - På vej

 Patenter & Innovation

Søg Patentfamilier - Prototype

 Bevillinger & Fonde

Danske Fondes Data - Prototype

Analytiske Overblik

Open Access

Grøn Forskning - Prototype

Forsknings samarbejde - På vej

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Om Data & Dokumentation

FORAN - Forskningsanalytisk Netværk

Grøn forskningsstrategi sætter klar retning for den grønne forskning og styrker samspil med erhvervslivet



I september 2020 præsenterede den daværende regering Danmarks første strategi for investeringer i grøn forskning, teknologi og innovation.

Grøn forskningsstrategi sætter klar retning for den grønne forskning og styrker samspil med erhvervslivet



Grønne undertemaer

1. Grøn energi
2. Energieffektivisering
3. Bæredygtigt jordbrug & fødevarer
4. Grøn transport
5. Miljø & cirkulær økonomi
6. Natur & klimaforandringer
7. Bæredygtig adfærd

I september 2020 præsenterede den daværende regering Danmarks første strategi for investeringer i grøn forskning, teknologi og innovation.



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Analytical Overview of Green Research, Development & Innovation

**Proto
type !**



Work in progress - In close collaboration between the Danish ministry and the NORA team and consultants



Analytical Overview of Green Research, Development & Innovation

Introduction

Background of the overview

Read about the [Danish Green Research Strategy](#) at the Ministry of Higher Education and Science. The ministry has established an [overall definition of green research, development and innovation](#) including seven subtopics to be used in strategies, analyses, surveys, mapping, monitoring, and other initiatives in connection with the green transition:

1. Green energy (Sustainable energy technologies and production etc.)
2. Energy efficiency (Energy efficiency)
3. Sustainable agriculture & food (Sustainable food production, agriculture and forests)
4. Green transportation (Climate friendly transportation)
5. Environment & circular economy (Environmental protection, circular economy and environmental technology)
6. Nature & climate change (Nature conservation, biodiversity and climate change)
7. Sustainable behaviour (Sustainable behaviour and societal consequences)

Only the first 6 subtopics are used in this overview, which is explained below.



Methodology of the overview

The ministry has developed search queries for the Elsevier Scopus database, designed to identify Danish publications related to each of the subtopics 1-6, while subtopic 7 is included in the other six search queries, where relevant. Therefore, there is not an independent search query for subtopic 7.

Using these search results, the publications of the Research Portal Denmark's Elsevier database have been tagged with one or more of the subtopics 1-6, where applicable. This tagging is then used to produce the analytical overviews and to offer a dedicated Green research search filter in the Research Portal Denmark's Elsevier database. Thus, it is possible to jump from an element in the analytical overview to the corresponding search result in the Research Portal's Elsevier database, where the underlying publications may be studied and analyzed further.

In the national level overview, the figures for Denmark are compared with the figures for EU-27 for the purpose of green research comparisons. Section E allows for the selection of individual countries for green research analysis. Currently, Sweden and the Netherlands are the benchmark countries included in Section E. Additional benchmark countries will be added soon.

Below the national level, the figures for a specific Danish subset are compared with the overall figures for green research in Denmark.



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Analytical Overview of Green Research, Development & Innovation



How much green research?
What kind of green research?
Who contributes to green research?
How much international collaboration?
- With which countries and regions?
How much public-private collaboration?
What level of citation impact?





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Analytical Overview of Green Research, Development & Innovation

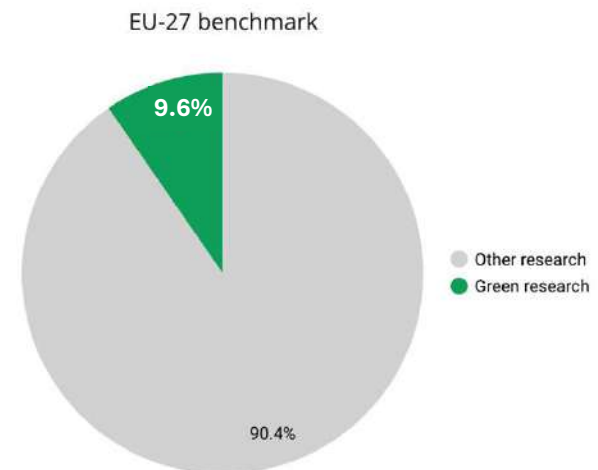
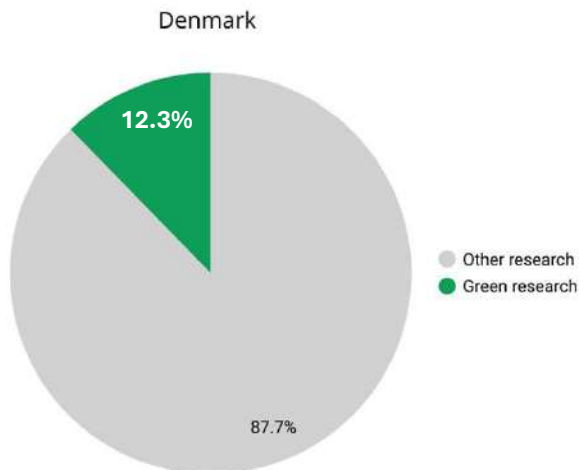
A. National Overview for the years 2011-2023 Compared to EU 27 Members

[Download PDF](#)

In section E, you may compare Denmark with selected benchmark countries

A.1 How much green research?

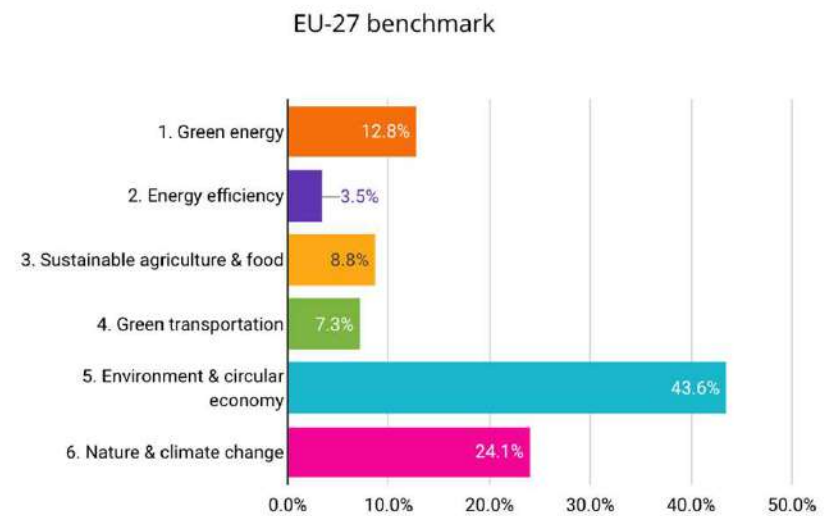
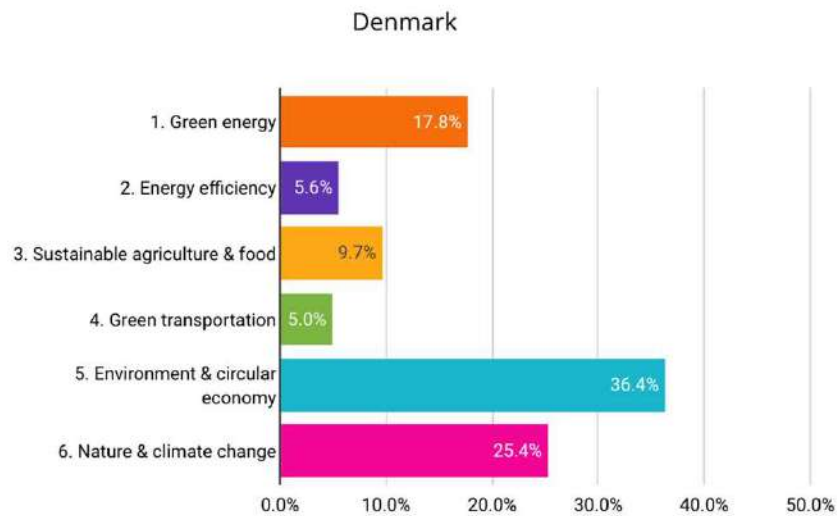
How many publications have one or more green classifications?



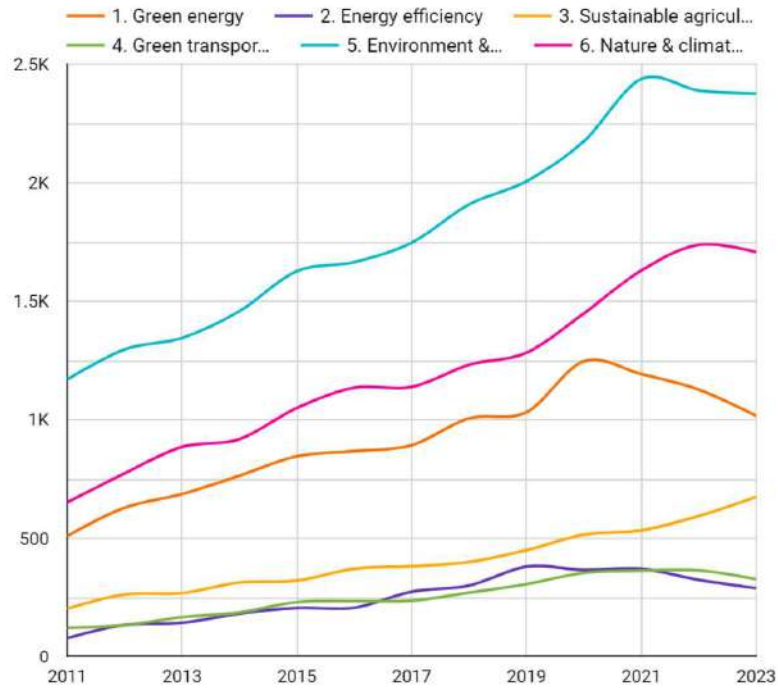


A.2 What kind of green research?

How are green publications split between the 6 subtopics?



Denmark



Explore the underlying Danish publications in the search module

[1. Green energy](#)

[4. Green transportation](#)

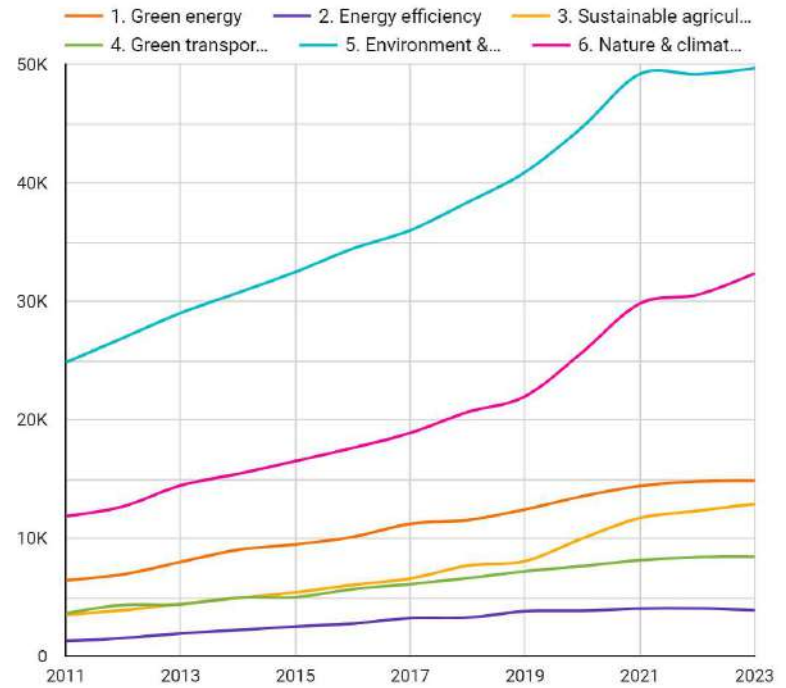
[2. Energy efficiency](#)

[5. Environment & circular econo...](#)

[3. Sustainable agriculture & food](#)

[6. Nature & climate change](#)

EU-27 benchmark







Search mode: **Simple** Basic Expert







GENERAL

- + Matching Records in ⁱ
- + Years  

PERSONS

- + Contributors
- + Corresponding Authors
- + Number of Contributors

ORGANISATIONS

- + Danish Affiliations ⁱ  
- + Global Collaboration  
- + Funders

SUBJECTS

- + DK Main Research Areas
- + DK Green Classification ⁱ
- + UN SDG Classification
- + OECD Classification
- + AU/NZ FOR Classification


PUBLICATION DETAILS

- + Publication Types
- + Source Titles
- + Publishers
- + Languages
- + Open Access  

Example: "green energy" 

Search

Entire database: 397,433 publications

Applied filters: DK Green Classification=(1. Green energy) 

Combined results: 11,855 publications

Save Query

Clear Query

Export Results

Sort by

Year ↓



 [Anaerobic glucose uptake in Pseudomonas putida KT2440 in a bioelectrochemical system](#)

Pause L. [et al.]
2024, **Academic Article**, Microbial Biotechnology

[A business model design for hydrogen refueling stations: A multi-level game approach](#)

Zhao T. [et al.]
2024, **Academic Article**, International Journal of Hydrogen Energy

 [A two-layer energy management system for a hybrid electrical passenger ship with multi-PEM fuel cell stack](#)

Xie P. [et al.]
2024, **Academic Article**, International Journal of Hydrogen Energy

[Accelerate the Shift to Green Energy with PVDF Based Piezoelectric Nanogenerator](#)

Lee J. [et al.]
2024, **Academic Article**, International Journal of Precision Engineering and Manufacturing Green Technology



Search mode: Simple Basic Expert

GENERAL

- + Matching Records in i
- + Years

PERSONS

- + Contributors
- + Corresponding Authors
- + Number of Contributors

ORGANISATIONS

- + Danish Affiliations i
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SUBJECTS

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- + OECD Classification
- + AU/NZ FOR Classification

PUBLICATION DETAILS

- + Publication Types
- + Source Titles
- + Publishers
- + Languages
- + Open Access

- Years

Select one or more and click Apply

<input type="checkbox"/> 2024	36
<input type="checkbox"/> 2023	1,017
<input type="checkbox"/> 2022	1,127
<input type="checkbox"/> 2021	1,193
<input type="checkbox"/> 2020	1,247
<input type="checkbox"/> 2019	1,032
<input type="checkbox"/> 2018	1,006
<input type="checkbox"/> 2017	893
<input type="checkbox"/> 2016	868
<input type="checkbox"/> 2015	846
<input type="checkbox"/> 2014	764
<input type="checkbox"/> 2013	687
<input type="checkbox"/> 2012	629
<input type="checkbox"/> 2011	510

2024, **Academic Article**, International Journal of Hydrogen Energy

Accelerate the Shift to Green Energy with PVDF Based Piezoelectric Nanogenerator

Lee J. [et al.]

2024, **Academic Article**, International Journal of Precision Engineering and Manufacturing Green Technology

Search

Save Query Clear Query Export Results Sort by Year ↓

KT2440 in a bioelectrochemical system

stations: A multi-level game approach

en Energy

brid electrical passenger ship with multi-PEM fuel cell stack



Search mode: Simple Basic Expert

GENERAL

- + Matching Records in ⓘ
- + Years

PERSONS

- + Contributors
- + Corresponding Authors
- + Number of Contributors

ORGANISATIONS

- + Danish Affiliations ⓘ
- + Global Collaboration
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- + OECD Classification
- + AU/NZ FOR Classification

PUBLICATION DETAILS

- + Publication Types
- + Source Titles
- + Publishers
- + Languages
- + Open Access

Example: "green"

Entire database

Applied filters:

- Danish Affiliations ⓘ

Unfold, select, and then click

Apply

- Universities 11,003

- All Universities 11,003
- DTU Technical ... 5,186
- AAU Aalborg U... 4,225
- AU Aarhus Uni... 1,083
- KU University ... 482
- SDU University... 444
- RUC Roskilde ... 43
- CBS Copenhag... 39
- Unclear Univer... 18
- ITU IT Universi... 9

+ Artistic Higher Ed... 3

+ University Colleges 12

+ Business Academ... 1

+ Hospitals 26

+ Governmental Ins... 105

+ Non-Profit Organi... 26

+ GTS Institutes 153

+ Private Research 1,487

+ Miscellaneous 371

🔗 Anaerobic glu...
Pause L. [et al.]
2024, **Academi**

A business m
Zhao T. [et al.]
2024, **Academi**

🔗 **A two-layer e**
Xie P. [et al.]
2024, **Academi**

Accelerate th
Lee J. [et al.]
2024, **Academi**

Search input field with a search button and a close button (X).

Search input field with a search button and a close button (X).

Search input field with a search button and a close button (X).

Buttons: Save Query, Clear Query, Export Results. Sort by: Year ↓

40 in a bioelectrochemical system

s: A multi-level game approach

ectrical passenger ship with multi-PEM fuel cell stack

Piezoelectric Nanogenerator

Engineering and Manufacturing Green Technology



Search mode: Simple Basic Expert

GENERAL

- + Matching Records in ⓘ
- + Years

PERSONS

- + Contributors
- + Corresponding Authors
- + Number of Contributors

ORGANISATIONS

- + Danish Affiliations ⓘ
- + Global Collaboration →
- + Funders

SUBJECTS

- + DK Main Research Areas
- + DK Green Classification ⓘ
- + UN SDG Classification
- + OECD Classification
- + AU/NZ FOR Classification

PUBLICATION DETAILS

- + Publication Types
- + Source Titles
- + Publishers
- + Languages
- + Open Access

Example: "green ene

Entire database: 3

Applied filters: DK

Anaerobic gluco

Pause L. [et al.]
2024, Academic A

A business mod

Zhao T. [et al.]
2024, Academic A

A two-layer ene

Xie P. [et al.]
2024, Academic A

Accelerate the S

Lee J. [et al.]
2024, Academic A

- Global Collaboration
- + Affiliations
- Countries
- Select one or more and click

Apply

<input type="checkbox"/>	China	1,896
<input type="checkbox"/>	United States	1,042
<input type="checkbox"/>	Germany	920
<input type="checkbox"/>	United Kingdom	812
<input type="checkbox"/>	Italy	539
<input type="checkbox"/>	Spain	535
<input type="checkbox"/>	Iran	532
<input type="checkbox"/>	Sweden	518
<input type="checkbox"/>	Netherlands	433
<input type="checkbox"/>	Norway	419
<input type="checkbox"/>	Australia	344
<input type="checkbox"/>	France	334
<input type="checkbox"/>	India	324
<input type="checkbox"/>	Switzerland	258
<input type="checkbox"/>	Belgium	221

Search

Query

Clear Query

Export Results

Sort by

Year ↓

Electrochemical system

Level game approach

Passenger ship with multi-PEM fuel cell stack

Micro Nanogenerator

Accelerate the S... International Journal of Precision Engineering and Manufacturing Green Technology



Search mode: **Simple** Basic Expert



Example: "green energy" X

Search

Entire database: **397,433** publications

Applied filters: X

Combined results: **11,855** publications

[Save Query](#) [Clear Query](#) [Export Results](#) Sort by

- GENERAL
 - + Matching Records in i
 - + Years
- PERSONS
 - + Contributors
 - + Corresponding Authors
 - + Number of Contributors
- ORGANISATIONS
 - + Danish Affiliations i
 - + Global Collaboration
 - + Funders
- SUBJECTS
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 - + OECD Classification
 - + AU/NZ FOR Classification
- PUBLICATION DETAILS
 - + Publication Types
 - + Source Titles
 - + Publishers
 - + Languages
 - + Open Access

- Open Access

Select one or more and click

[Apply](#)

<input type="checkbox"/> All Open Access	6,154
<input type="checkbox"/> Undetermined	5,701
<input type="checkbox"/> Green	5,555
<input type="checkbox"/> Gold	1,753
<input type="checkbox"/> Gold-Hybrid	847
<input type="checkbox"/> Free to read	731

Anaer i **40 in a bioelectrochemical system**

2024, **A bus** **: A multi-level game approach**

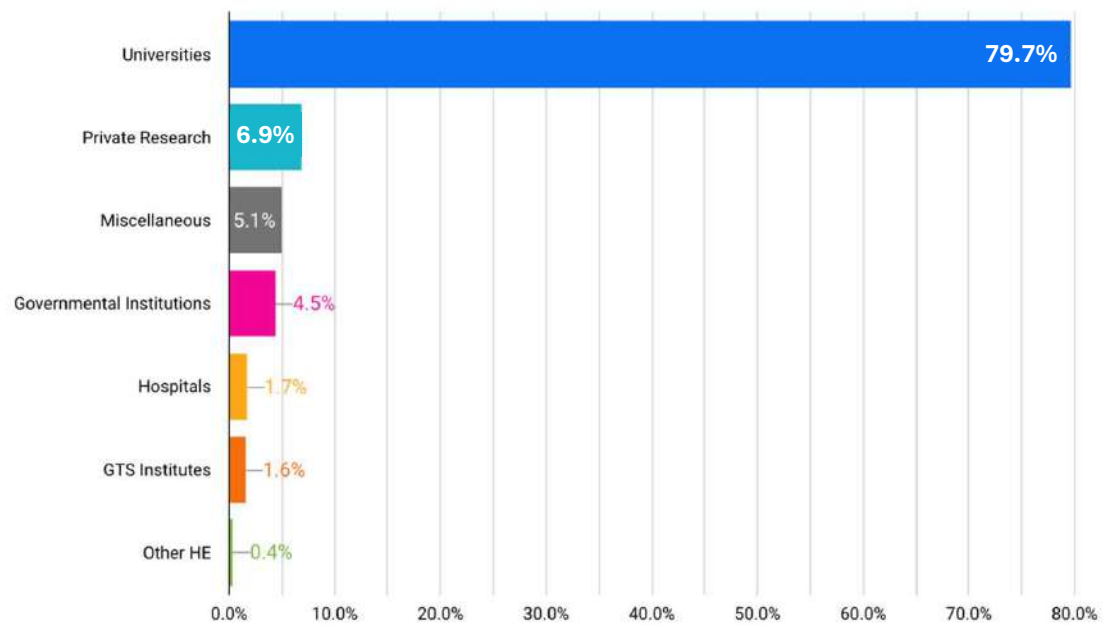
2024, **A t** **ctrical passenger ship with multi-PEM fuel cell stack**

2024, **Accel** **ezoelectric Nanogenerator**

Lee J. [et al.] 2024, **Academic Article**, International Journal of Precision Engineering and Manufacturing Green Technology

A.3 Contributors to Danish green research

Which Danish organisation groups contribute to the Danish green publications?



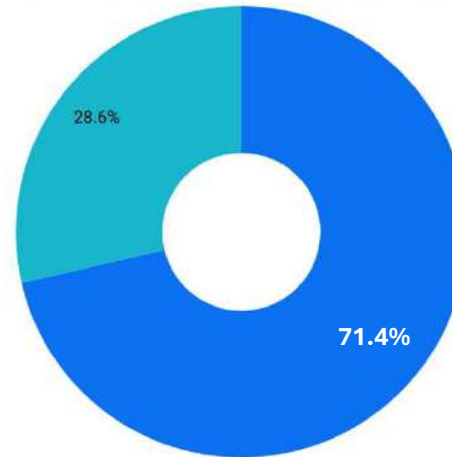
Explore the underlying publications in the search module

[Danish green publications](#)

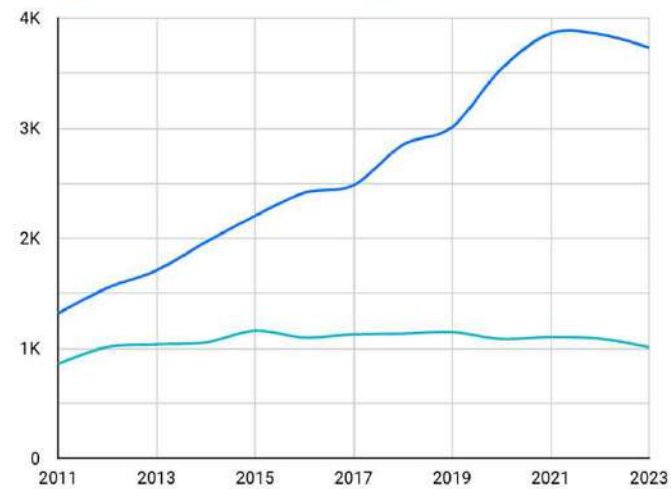
A.4 International collaboration

How many green publications involve collaboration with international partners?

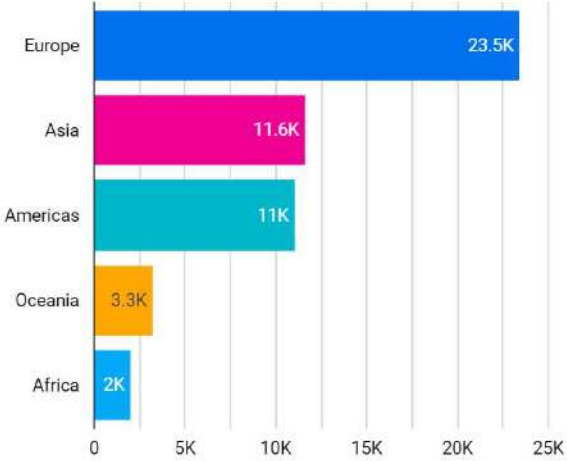
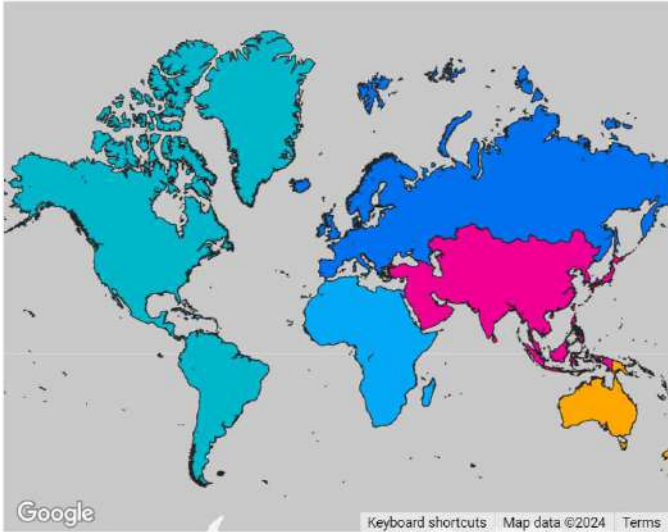
● With international collaboration ● Without international collaboration



— With international collaboration — Without international collabor...



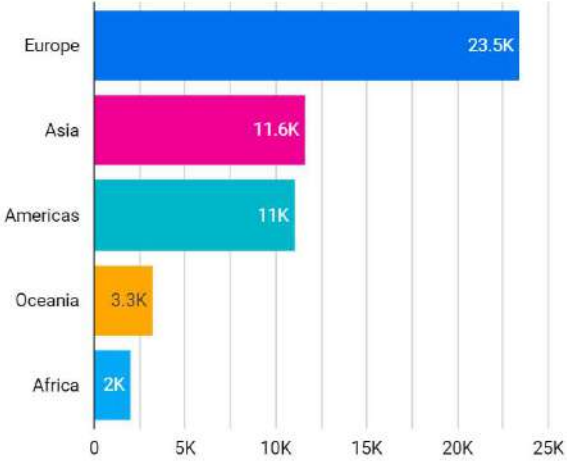
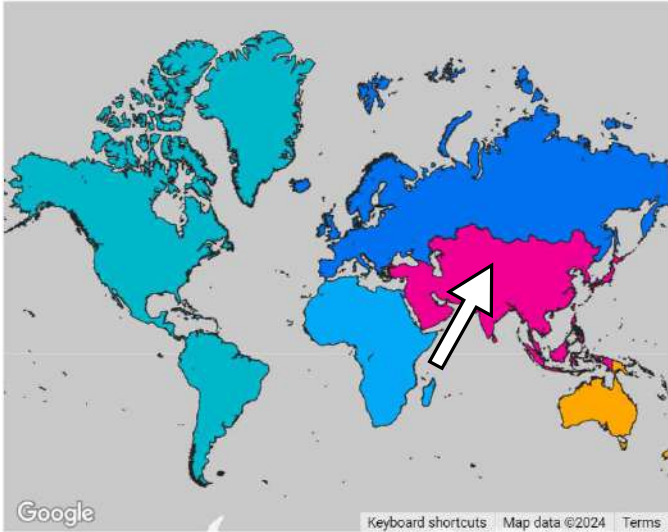
Which regions take part in the green collaboration?
See the top 10 collaborative countries at the world level below - or click on a continent to zoom-in
Click the map to filter countries by continent. Click again to return to world level figures.



Top 10 collaborative countries



Which regions take part in the green collaboration?
See the top 10 collaborative countries at the world level below - or click on a continent to zoom-in
Click the map to filter countries by continent. Click again to return to world level figures.

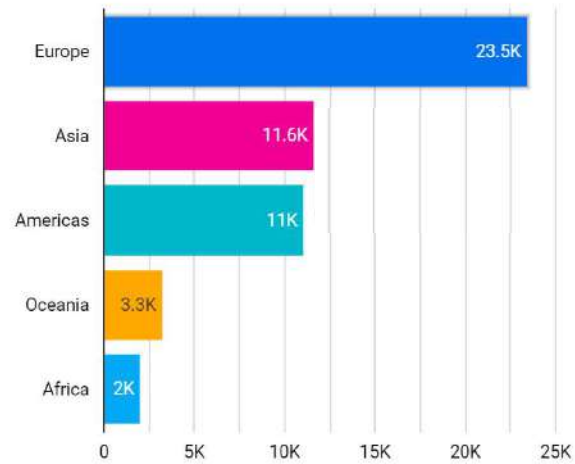
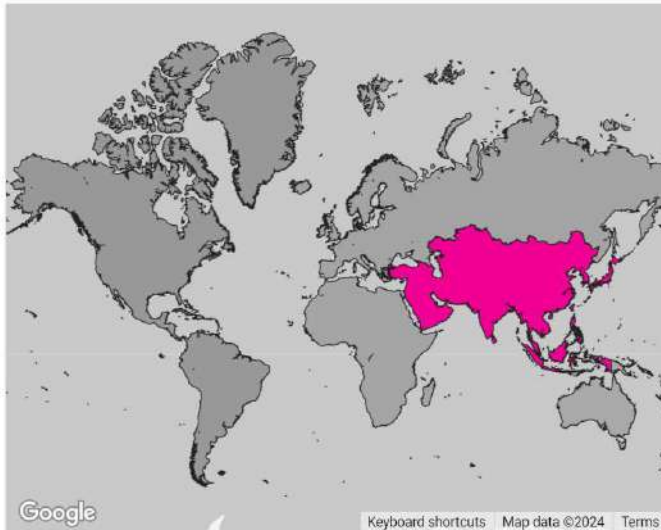


Top 10 collaborative countries

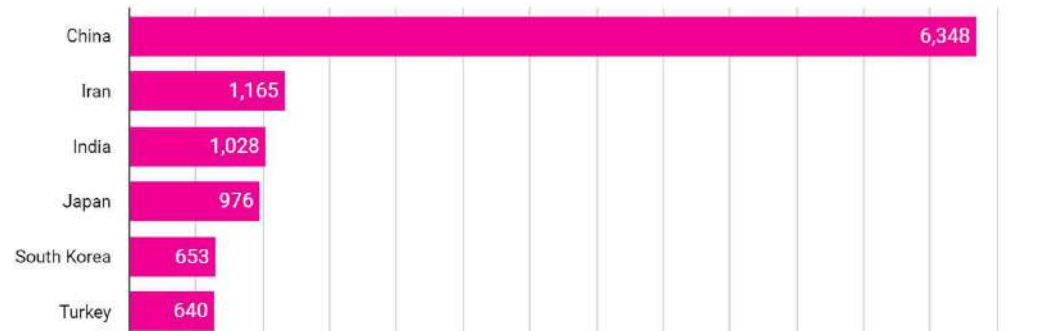


Which regions take part in the green collaboration?
See the top 10 collaborative countries at the world level below - or click on a continent to zoom-in

Click the map to filter countries by continent. Click again to return to world level figures.

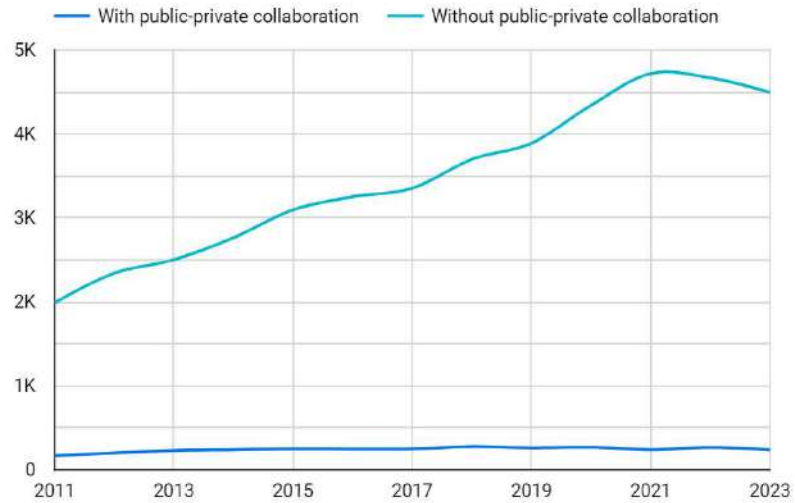
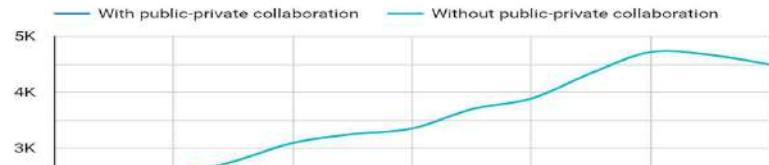
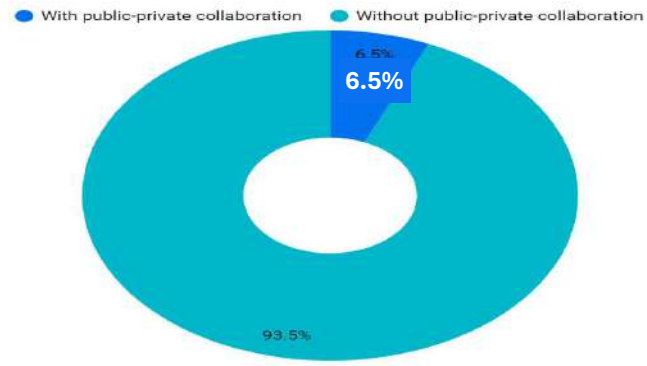


Top 10 collaborative countries



A.5 Danish Public-Private collaboration

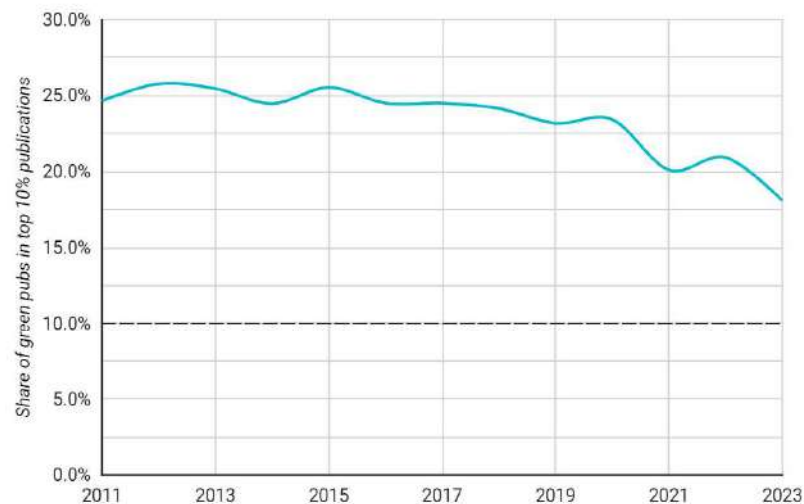
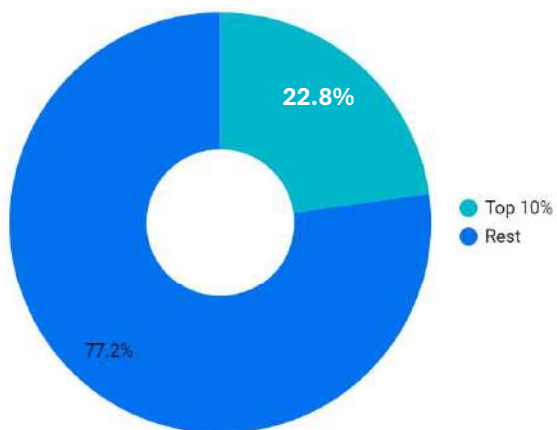
How many green publications involve collaboration between public and private partners?



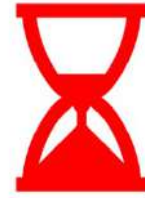


A.6 Citation Impact

What is the share of Danish green publications in the top 10% most cited worldwide (field-weighted)?




i Outputs in Top Citation Percentiles indicates the extent to which a set of publications are present in the top 10% most-cited percentiles of a data universe, the entire Scopus database based on their FWCI values.



Research Portal Denmark – Discover and explore Danish research

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 **B. Green subtopics**

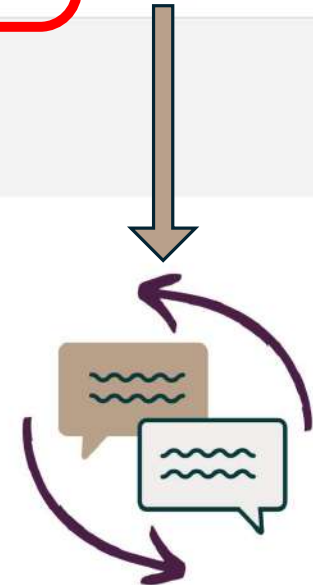
 **C. Organisation groups**

 **D. Organisations**

 **E. Country comparisons**

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 Analytiske Overblik

Søg i Globale D

Søg i Lokale Da

Søg i Åbne Dat

 Patenter & I

Søg Patentfami

 Bevillinger & F

Danske Fondes Data - *Prototype*

OPDAG & BEKENDTSKAB

FORAN - Forskningsanalytisk Netværk

THE END OF THE TOUR



Tak

Uddannelses- og Forskningsstyrelsen
Forskning og Vidensbaseret Innovation

Og kontorerne

- **Analyse og Data**
- **Forskning og Forskningsinfrastrukturer**

Vores IT-konsulenter

- **Vox Novitas / Franck Falcoz**
- **Ontocale / Brian Lowe** - <https://ontocale.com/>
- **Dataverz / Pedro Parraguez Ruiz & Nelson Guaman** - <https://www.dataverz.net/>

Vores IT-infrastruktur fra

- **DTU Research IT, Div. of IT Service**



Tak





 Publikationer

Søg i Globale Data

Søg i Lokale Data

Søg i Åbne Data - På vej

 Patenter & Innovation

Søg Patentfamilier - Prototype

 Bevillinger & Fonde


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