



Grand Challenges research

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Nature Sustainability

natureresearch

Outline

- **Grand challenges: context**
- **Beyond fundamental science**
- ***Nature Research's* strategy:**
 - Existing thematic journals
 - Areas of growing editorial interest
- **Questions**



What are the Grand Challenges?

- Non-communicable Diseases
- Environmental Health
- Sanitation
- Ageing
- Migration
- Violence
- Urban Health
- Global Mental Health
- Community Care
- Implementation science
- Behavior change
- Sociocultural Determinants of Health
- Digital Health
- Big Data
- HIV, Vaccines, Pandemics, Tropical Diseases
- Public Health Policy
- Pollution
- Waste management
- Natural resources management
- Governance (ecosystems, natural resources, social systems)
- Ecosystem services
- Soil health
- Sustainable Food Systems
- Climate change
- Sustainable Energy Systems
- Sustainable Transport Systems
- Sustainable Supply Chains
- Sustainable Cities
- Sustainable Development
- Circular Economy
- Environmental policy

Features of Grand Challenges Research

- Societal problems emerge in **interconnected** settings, they are **complex** and **pressing**
- Examples:
 - climate change impacts on water resources, agriculture and food security
 - Affluence, road transport, obesity, city planning, and behavior change
- **We urgently need to understand the drivers of such problems and identify solutions**



Beyond fundamental research

- Nature Research's **core strengths**: fundamental life sciences & physical sciences
- To address global challenges, fundamental research is not enough or not always adequate
- We need in-depth knowledge about the organization and functioning of our societies and economies
- We also need to understand how individuals and groups interact within their social and cultural contexts, and the role of technology in influencing such interactions
- We need a deeper understanding of our mutual interactions with the natural world



What Kind of Research?

- **Interdisciplinary** (integrating natural and social sciences, natural and engineering sciences, engineering and social sciences)
- **Transdisciplinary** (academics co-design and co-produce it with potential users of research)
- **Solution-oriented**
- **Policy-relevant**



What are the institutional challenges?

- Academia is entrenched on the specialization model
 - Career incentives – gaining scholar recognition in a specific field is essential
 - Metrics of performance – publishing in reputable/high impact factor journals is the best indicator of success
- Funding evaluation reflects the current research model



What are the editorial challenges?

- Often research is context- or problem-specific and **not designed to deliver generalizable results**
- **Peer review of interdisciplinary articles can be challenging**
- Policy relevance and solution orientation can be hard to assess
- Impact beyond citations – what's the metric?



What article types?

- Typical research article for original research, enough?
 - Quantitative and qualitative research: analytical modelling, experiments (in the lab, in the field), case studies, meta-analyses, etc.
- Review-type article - consolidation of original research, systematic synthesis of actual interventions



What are we doing?

- Increasing our competence in societally-relevant research and championing our interest both internally and externally
- Launching thematic journals and expanding the scope of existing journals where possible
- Gradually increasing our presence in the social sciences and applied sciences



Championing our interest

GRAND CHALLENGES PROGRAMME

Research-based solutions
to real-world problems



Sustainable Cities

Building green, livable
cities that last



Global Health

Working across
borders for good



Climate Change

Slowing climate
change and adapting



Digitally
Transformed
World



Food-Energy-Water
Nexus

Ensuring long-term

Thematic journals (I)

- They are conceived to become leading journals in research relating to their theme, across various disciplines
- They go beyond basic science
- They act as a spear-head for our strategy to capture the societal challenges research landscape



Thematic journals (II)

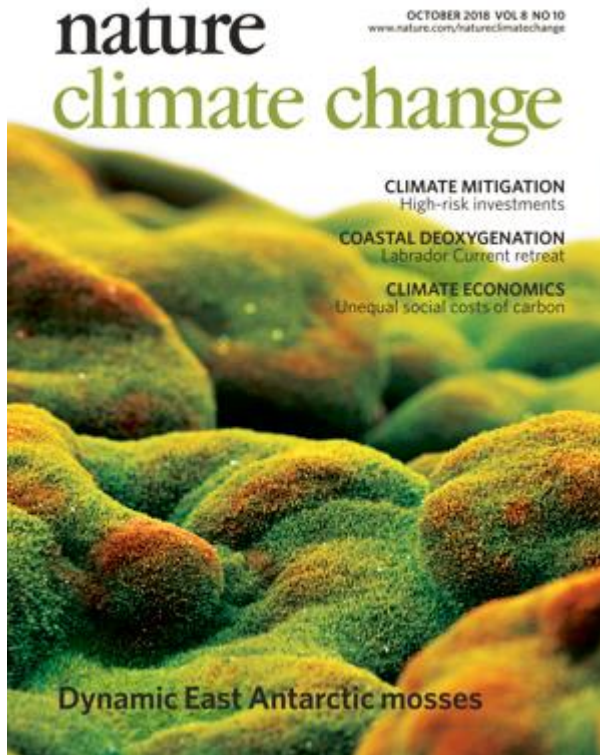
- Very broad scope requires combination of internal editorial capacity with external advice;
- Variety of format articles to gain flexibility;
- Selective as any other *Nature*-branded title.



Existing Titles

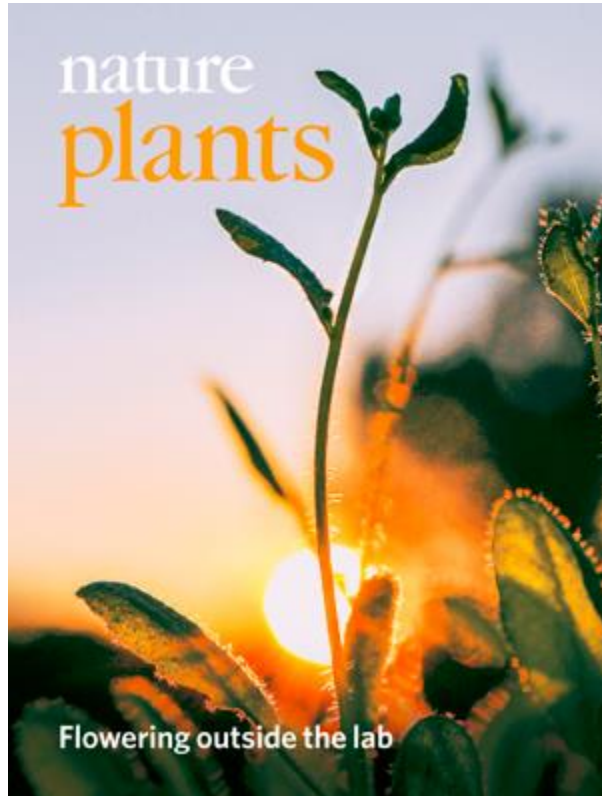


Nature Climate Change



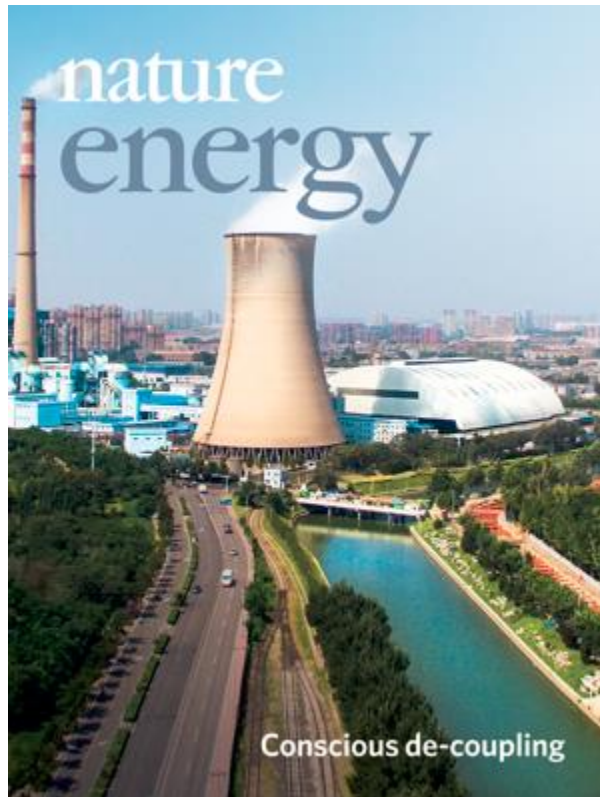
Nature Climate Change is a monthly journal dedicated to publishing the most significant and cutting-edge research on the science of climate change, its impacts, and wider implications for the economy, society and policy. **The editorial team includes two social science editors.**

Nature Plants



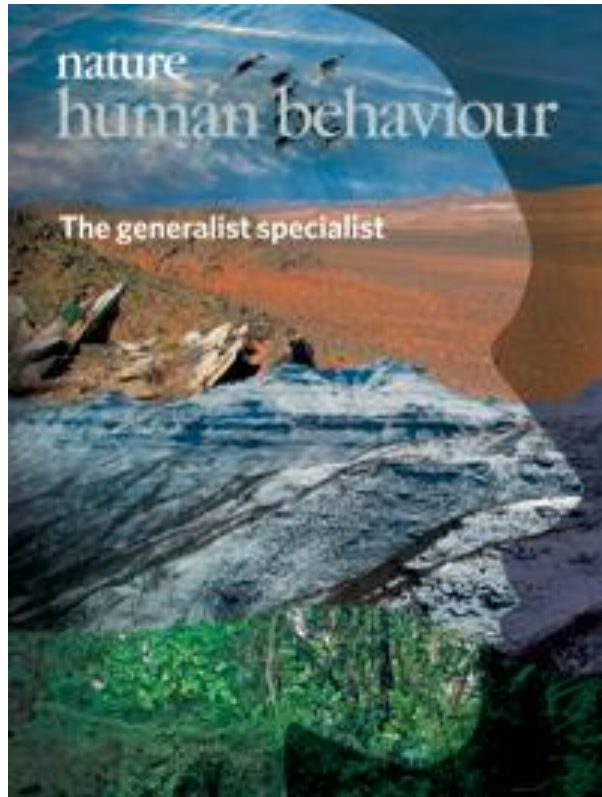
Nature Plants is a monthly journal concerned with all aspects of plants be it their evolution, development or metabolism, their interactions with the environment, or their societal significance. **The editorial team includes one social science editor.**

Nature Energy



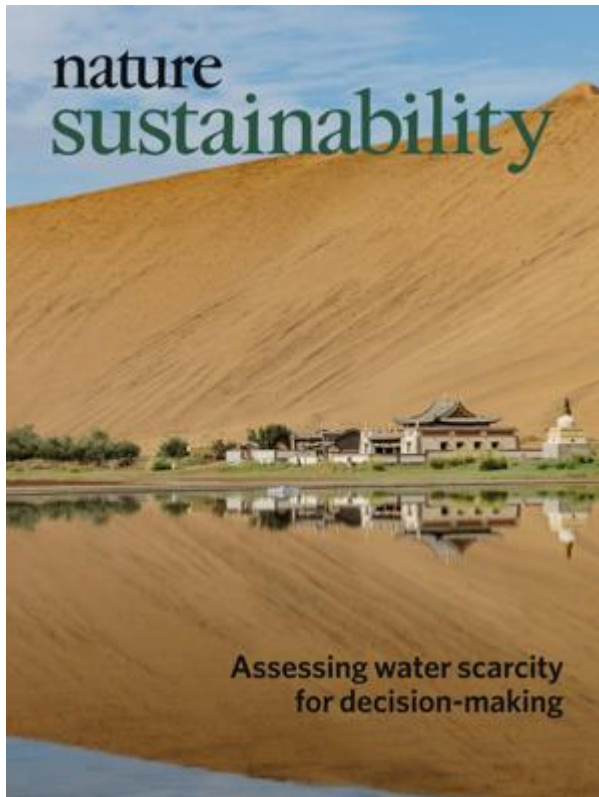
Publishing monthly, *Nature Energy* is dedicated to exploring all aspects of the energy system, from the generation and storage of energy, to its distribution and management, the needs and demands of the different actors, and the impacts that energy technologies and policies have on societies. **The editorial team includes two social science editors.**

Nature Human Behaviour



Drawing from a broad spectrum of social, biological, health, and physical science disciplines, *Nature Human Behaviour* publishes research of outstanding significance into any aspect of individual or collective human behaviour. **The editorial team includes editors from various social science backgrounds.**

Nature Sustainability



Nature Sustainability publishes significant original research from a broad range of natural, social and engineering fields about sustainability, its policy dimensions and possible solutions.

The editorial team includes two social science editors and an environmental engineering editor.


Examples of published articles



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Article | Published: 05 February 2018

A good life for all within planetary boundaries

Daniel W. O'Neill , Andrew L. Fanning, William F. Lamb & Julia K. Steinberger*Nature Sustainability* **1**, 88–95 (2018) | [Download Citation](#) 

Abstract

Humanity faces the challenge of how to achieve a high quality of life for over 7 billion people without destabilizing critical planetary processes. Using indicators designed to measure a 'safe and just' development space, we quantify the resource use associated with meeting basic human needs, and compare this to downscaled planetary boundaries for over 150 nations. We find that no country meets basic needs for its citizens at a globally sustainable level of resource use. Physical needs



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Abstract


Main

[A safe and just space](#)[Analytic framework](#)[Biophysical boundaries and social thresholds](#)[Relationship between indicators](#)[Discussion](#)[Methods](#)[Additional information](#)



Analysis | Published: 16 July 2018

A spatial overview of the global importance of Indigenous lands for conservation

Stephen T. Garnett , Neil D. Burgess, John E. Fa, Álvaro Fernández-Llamazares, Zsolt Molnár, Cathy J. Robinson, James E. M. Watson, Kerstin K. Zander, Beau Austin, Eduardo S. Brondizio, Neil French Collier, Tom Duncan, Erle Ellis, Hayley Geyle, Micha V. Jackson, Harry Jonas, Pernilla Malmer, Ben McGowan, Amphone Sivongxay & Ian Leiper

Nature Sustainability **1**, 369–374 (2018) | [Download Citation](#) ↓

Abstract

Understanding the scale, location and nature conservation values of the lands over which Indigenous Peoples exercise traditional rights is central to implementation of several global conservation and climate agreements. However, spatial information on Indigenous lands has never been aggregated globally. Here, using publicly available geospatial resources, we show that Indigenous Peoples manage or have tenure

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Indigenous rights vital to survival

Richard Howitt

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Analysis | Published: 10 September 2018

The water footprint of different diets within European sub-national geographical entities

Davy Vanham , Sara Comero, Bernd Manfred Gawlik & Giovanni Bidoglio*Nature Sustainability* 1, 518–525 (2018) | [Download Citation](#) ↓

Abstract

The water footprint concept has been recognized as being highly valuable for raising awareness of the large quantity of water resources required to produce the food we consume. We present, for three major European countries (the United Kingdom, France and Germany), a geographically detailed nationwide food-consumption-related water footprint, taking into account socio-economic factors of food



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Analysis | Published: 14 August 2018

Global assessment of agricultural system redesign for sustainable intensification

Jules Pretty , Tim G. Benton, Zareen Pervez Bharucha, Lynn V. Dicks, Cornelia Butler Flora, H. Charles J. Godfray, Dave Goulson, Sue Hartley, Nic Lampkin, Carol Morris, Gary Pierzynski, P. V. Vara Prasad, John Reganold, Johan Rockström, Pete Smith, Peter Thorne & Steve Wratten

Nature Sustainability **1**, 441–446 (2018) | [Download Citation](#) ↓

Abstract

The sustainable intensification of agricultural systems offers synergistic opportunities for the co-production of agricultural and natural capital outcomes. Efficiency and substitution are steps towards sustainable intensification, but system redesign is essential to deliver optimum outcomes as ecological and economic conditions change. We show global progress towards sustainable intensification by farms and hectares, using seven sustainable intensification sub-types: integrated

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[Sustainable intensification](#)

[Beyond improved efficiency and substitution to redes...](#)

[Redesign typology and methods](#)

[Results](#)

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Same areas of growing editorial interest

- Water research
- Food research
- Cities research
- Global health



Open editorial questions

- **Measuring impact of societally-relevant research**
- **Format of policy-relevant research:**
 - Grey literature
- **Transdisciplinary research**
 - Role of private sector
 - Role of civil society
 - Role of government
 - Role of boundaries organizations

Questions ?

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