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LIFE17 GIE/IT/000561



Indagine esplorativa sull'attività di ricerca connesse a Foreste e Cambiamenti Climatici

*Exploratory survey on research
activity to
Forests and Climate Change*

Serena Antonucci (UNIMOL)



PALERMO | 11 NOVEMBRE 2019

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The forest question

Trees are supposed to slow global warming, but growing evidence suggests they might not always be climate saviours.



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What is the current state of the science of forest responses to climate change?

What specific types of strategies are being recommended?

What are the knowledge gaps and research priorities moving forward?

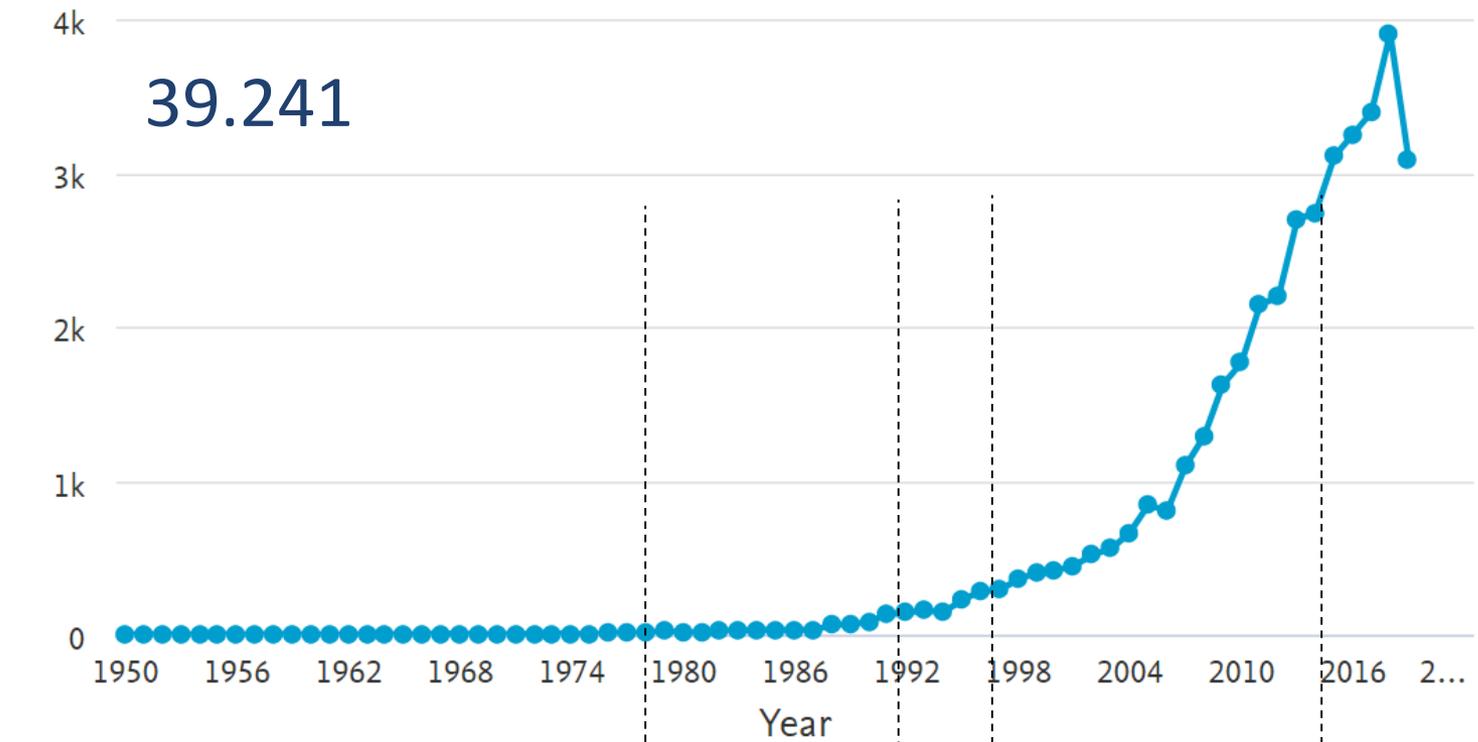


FOREST
AND
C C
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In TITLES ABS KEYS

39.241

Documents



1979
WCP

1992
ECO'92

1997
Kyoto

2015
Paris Agr



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Contents lists available at ScienceDirect

Quaternary Science Reviews

journal homepage: www.elsevier.com/locate/quascirev

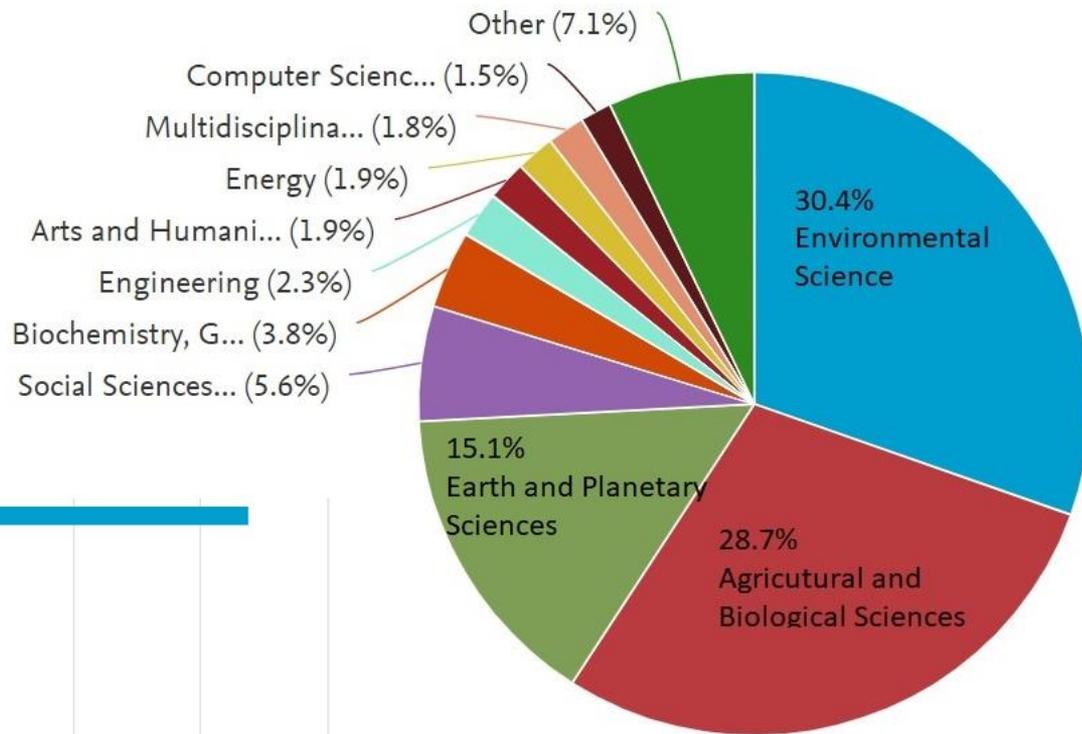
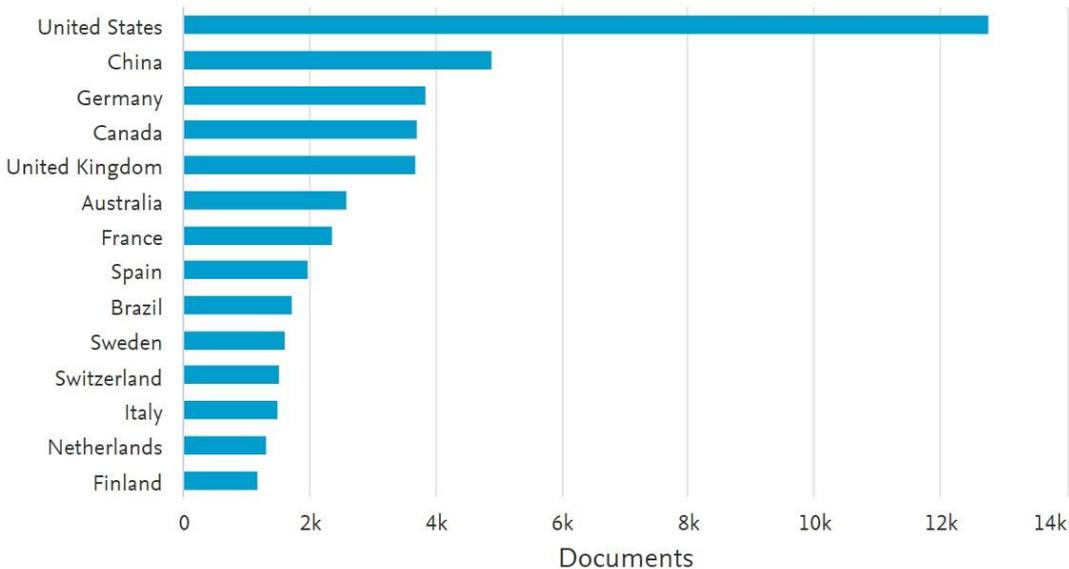
Dietary and habitat shifts in relation to climate of Neogene-Quaternary proboscideans and associated mammals of the Indian subcontinent

Rajeev Patnaik ^{a,*}, Ningthoujam Premjit Singh ^a, Debajyoti Paul ^b, Raman Sukumar ^c

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^b Department of Earth Sciences, Indian Institute of Technology, Kanpur, 208016, India

^c Centre for Ecological Sciences, Indian Institute of Science, Bengaluru, 560012, India



Contents lists available at ScienceDirect

Global Ecology and Conservation

journal homepage: <http://www.elsevier.com/locate/gecco>

Original Research Article

Vulnerability of global forest ecoregions to future climate change

Chun-jing Wang ^{a, b, c}, Zhi-Xiang Zhang ^d, Ji-Zhong Wan ^{a, c, *}

^a State Key Laboratory of Plateau Ecology and Agriculture, Qinghai University, Xining, 810016, China

^b College of Agriculture and Animal Husbandry, Qinghai University, Xining, 810016, China

^c Departamento de Ecología, Facultad de Ciencias Biológicas, Pontificia Universidad Católica de Chile, Santiago, Chile

^d School of Nature Conservation, Beijing Forestry University, Beijing, 100083, China



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keyword-driven approach

forest
AND
climate change

forest management
AND
climate change
AND
adaptation

forest management
AND
climate change

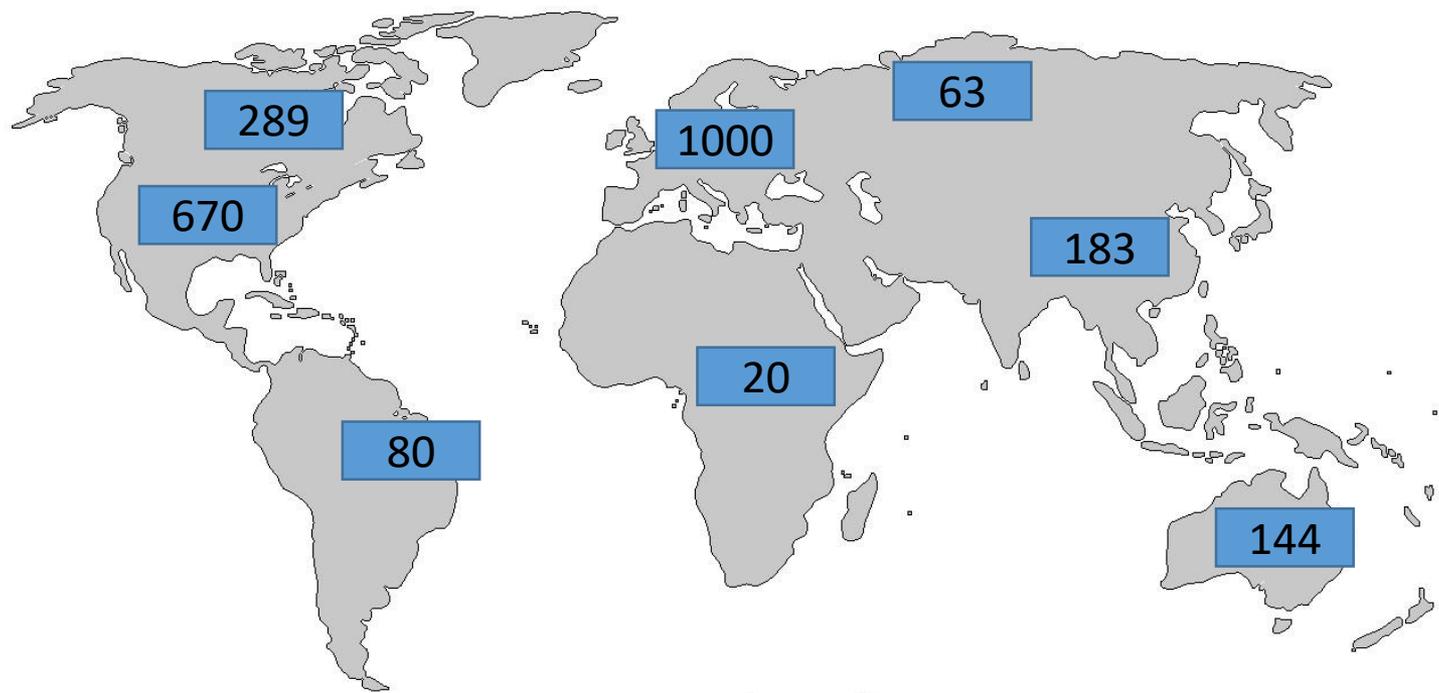
AFORCLIMATE

LIFE15 CCA/IT/000089

Adaptation of FORest management
to CLIMATE variability

FOREST AND CLIMATE CHANGE

In TITLES ARTICLE 2,260 documents



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Photosynthesis

Water use
transport

Tree species
distributions
and stand

Plants
and
Forest
ecosystems

Flowering
phenology

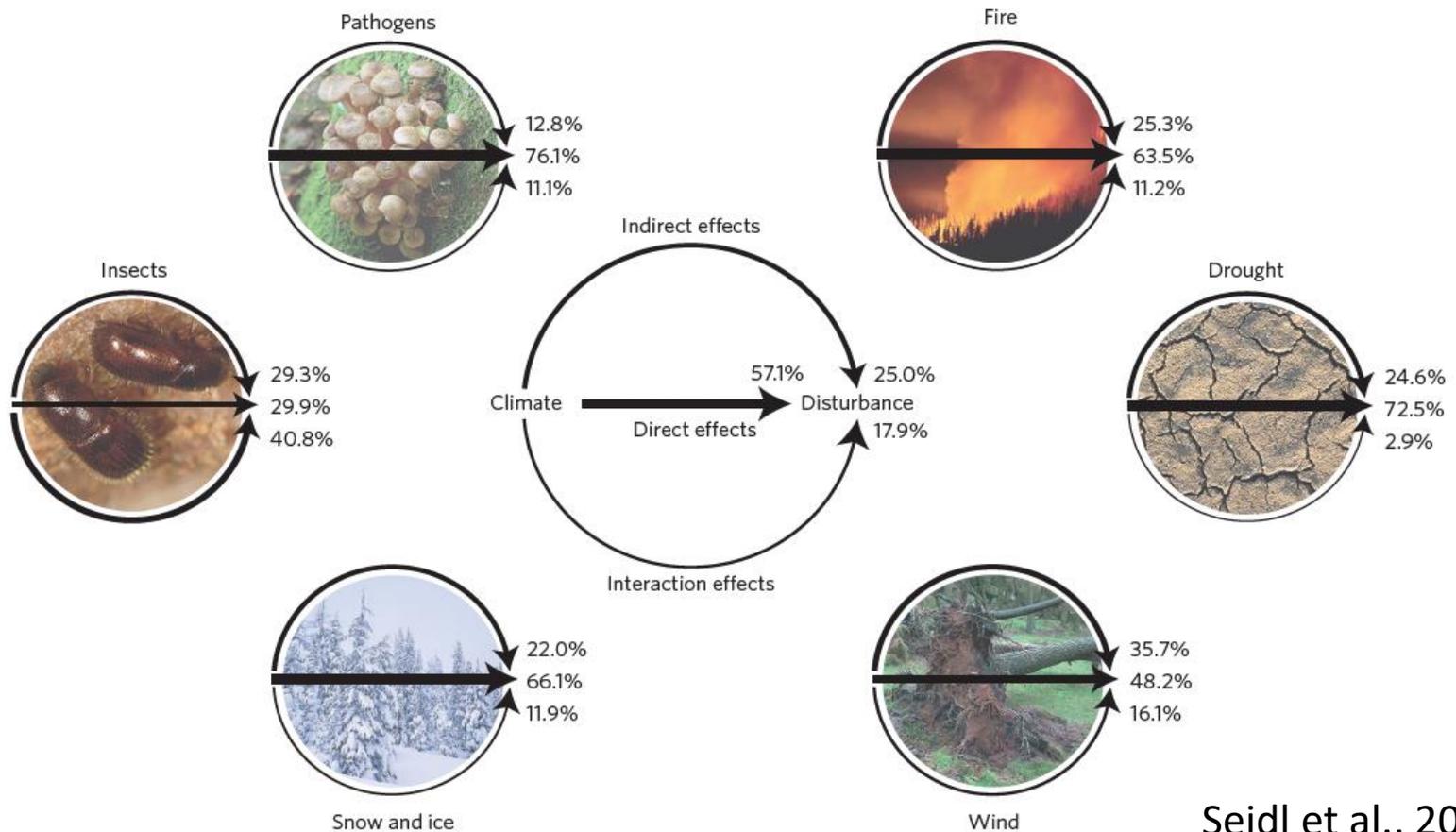
Genetic
change

Growth and
mortality

Wood density
and quality

Most studies analyse
the effects of climate on
ecosystems functions and process

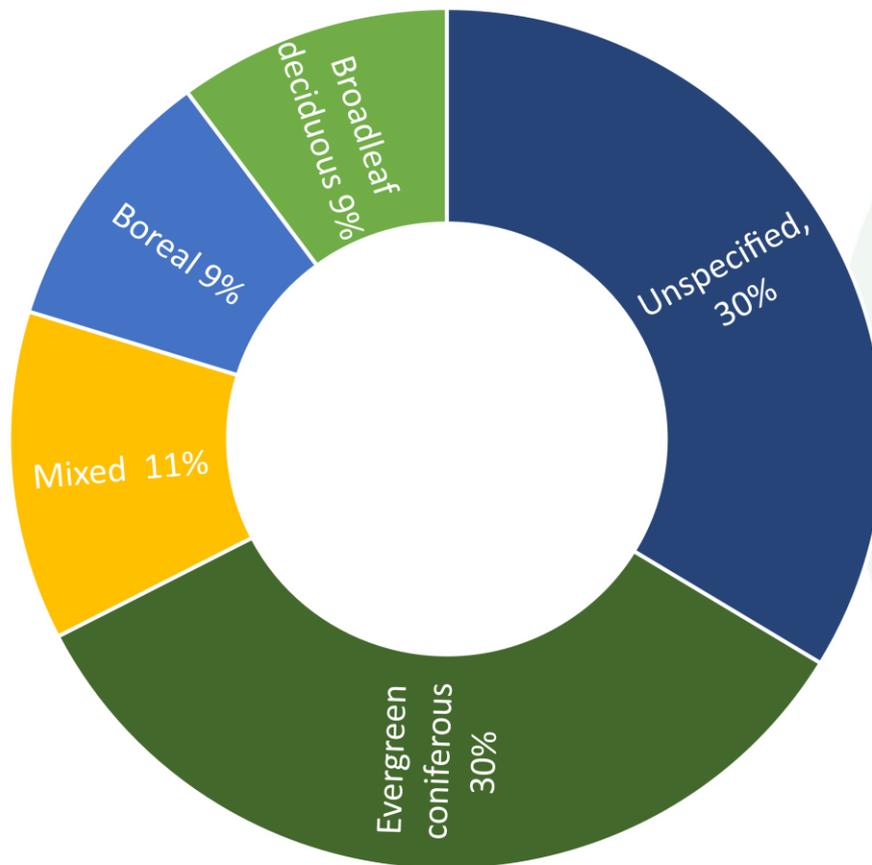
Many of the impacts of a changing climate to be felt through changing disturbance regimes



Seidl et al., 2017

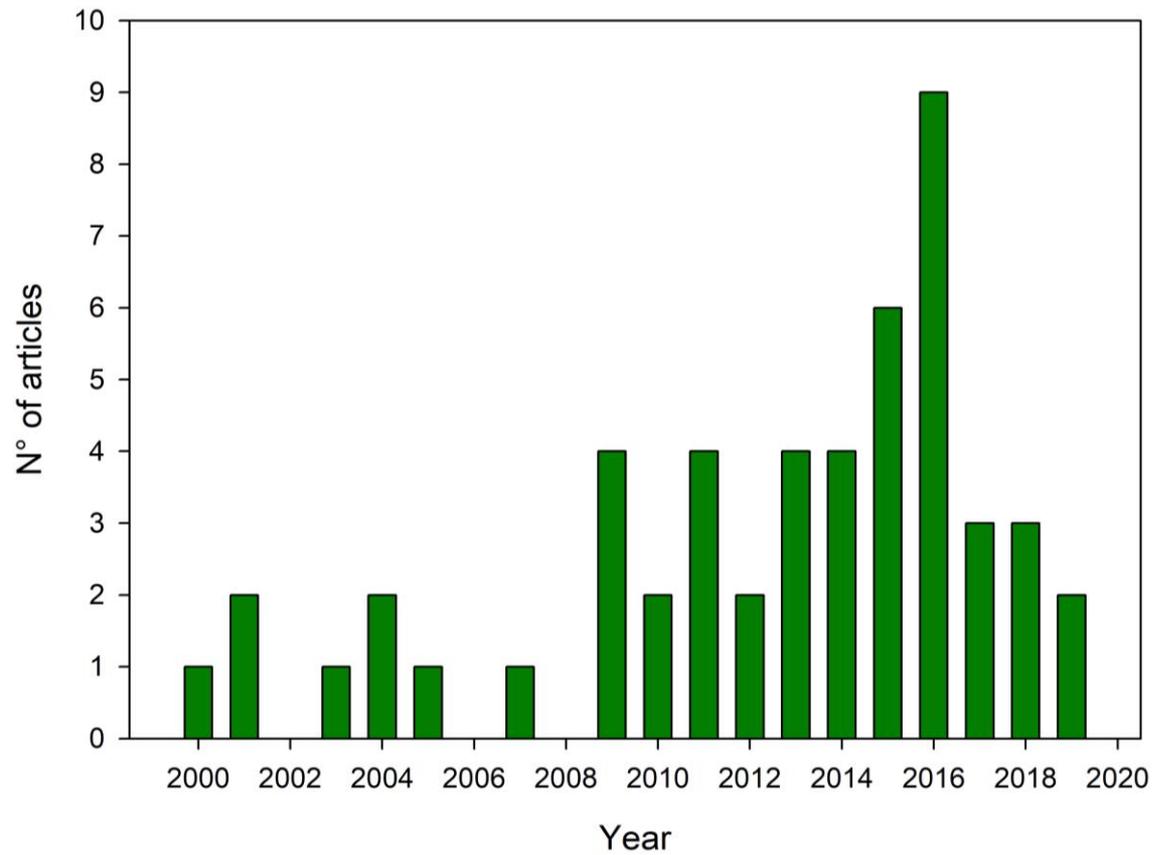
| Distribution of evidence for direct, indirect and interaction effects of climate change on forest disturbance agents in the reviewed literature.

FOREST MANAGEMENT AND CLIMATE CHANGE



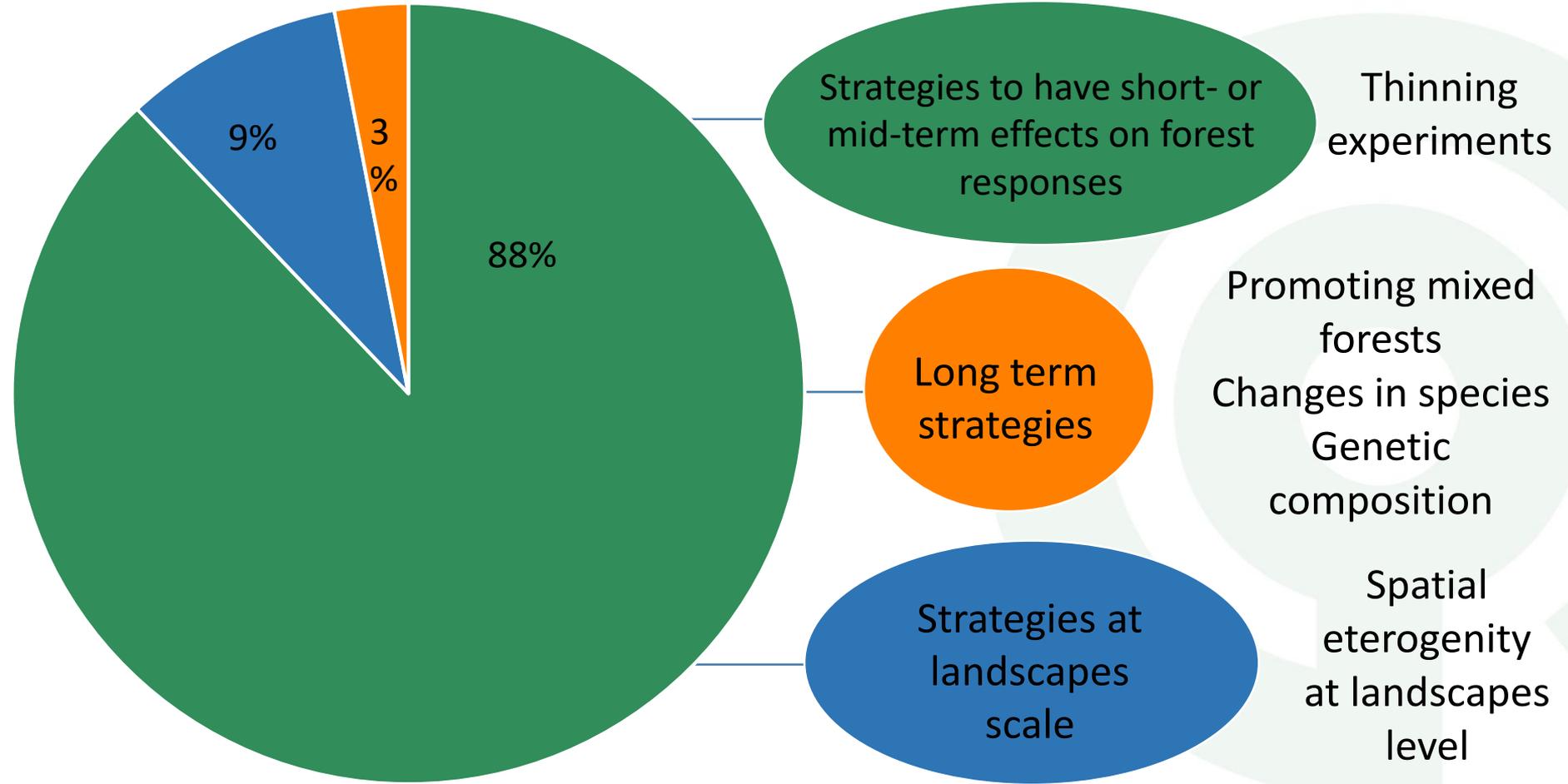
262 Articles

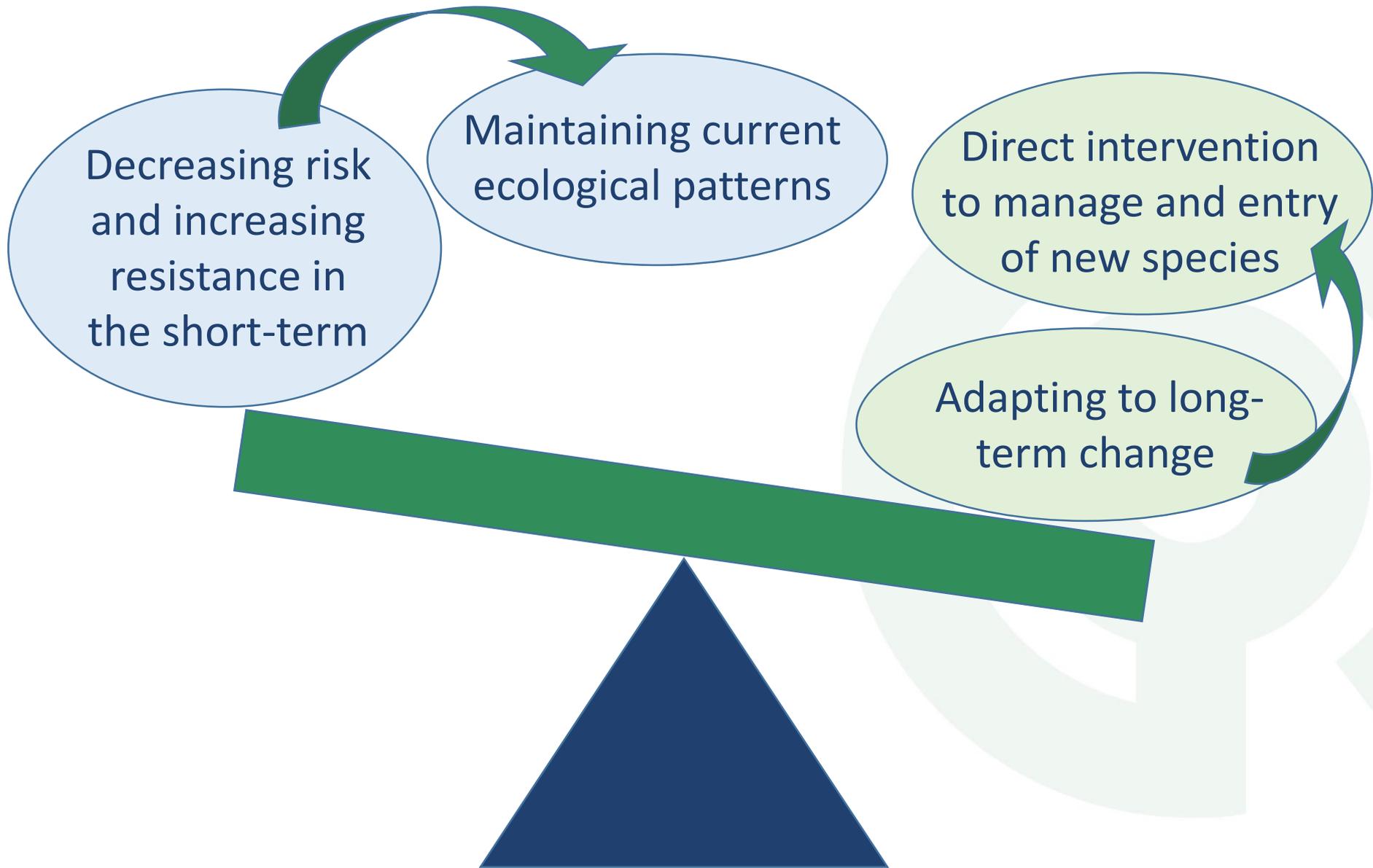
M A C C
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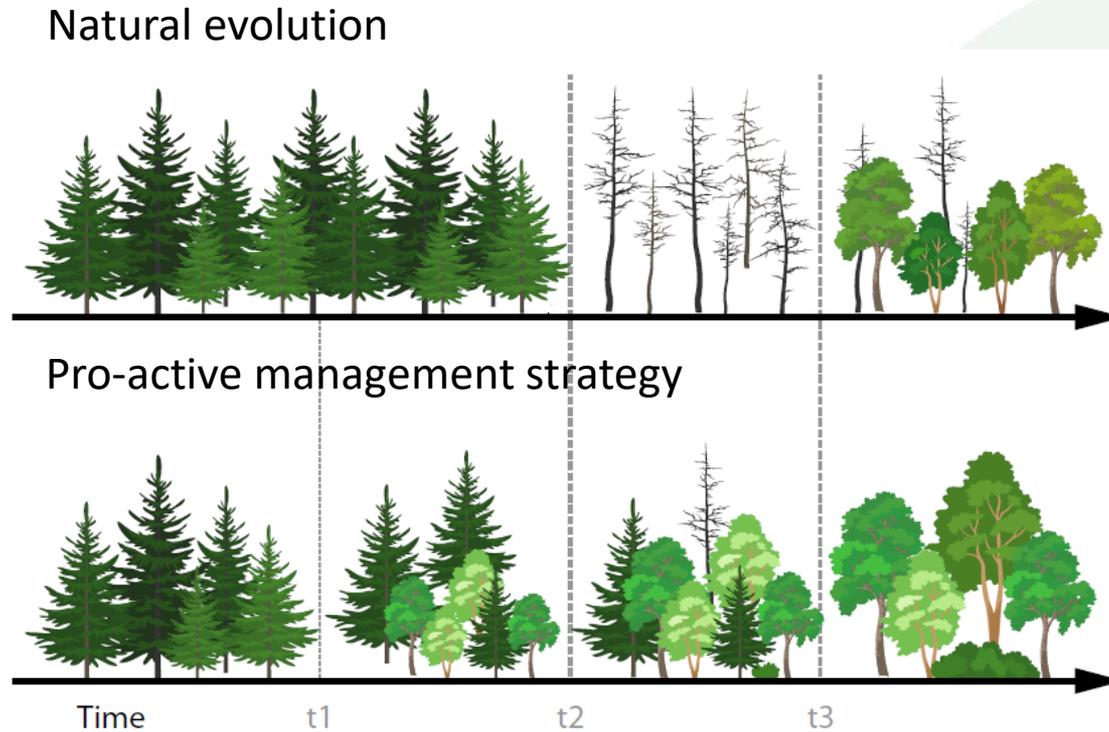
N AND ADAPTATION:
 T

“adjustment in natural or human systems in response to actual or expected climatic changes or their effects, which can be taken to reduce the impact of a particular risk or exploit its beneficial opportunities” IPCC 2014





Active forest management adaptation entails the use of silvicultural methods



Millar and Stephenson 2015

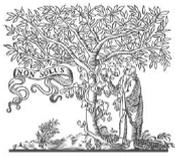
Adaptive forest management will change traditional forestry



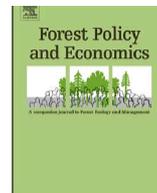
*High forest, Inverness
(Scotland) 2018*



*Coppice forest, Italy
2010*



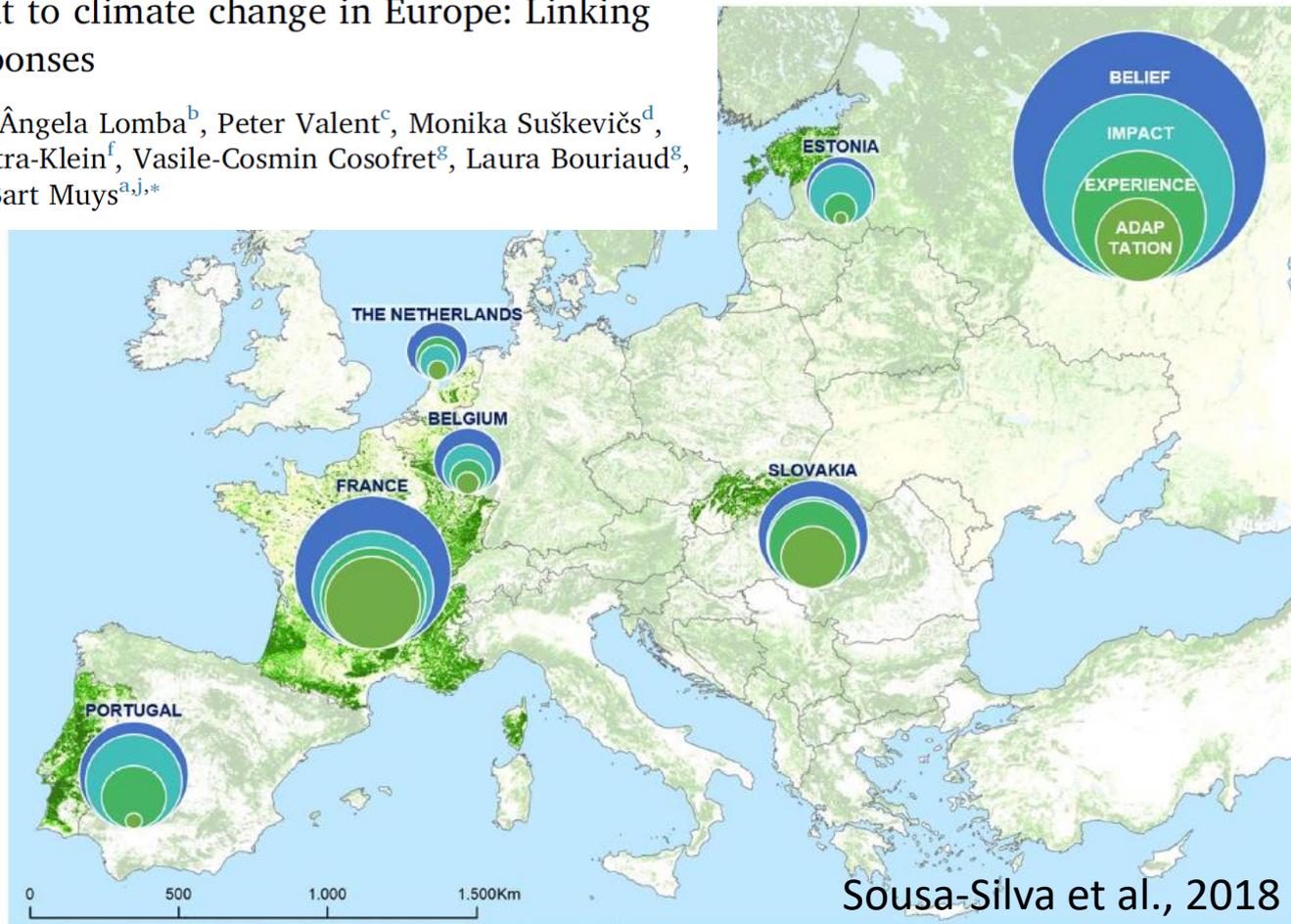
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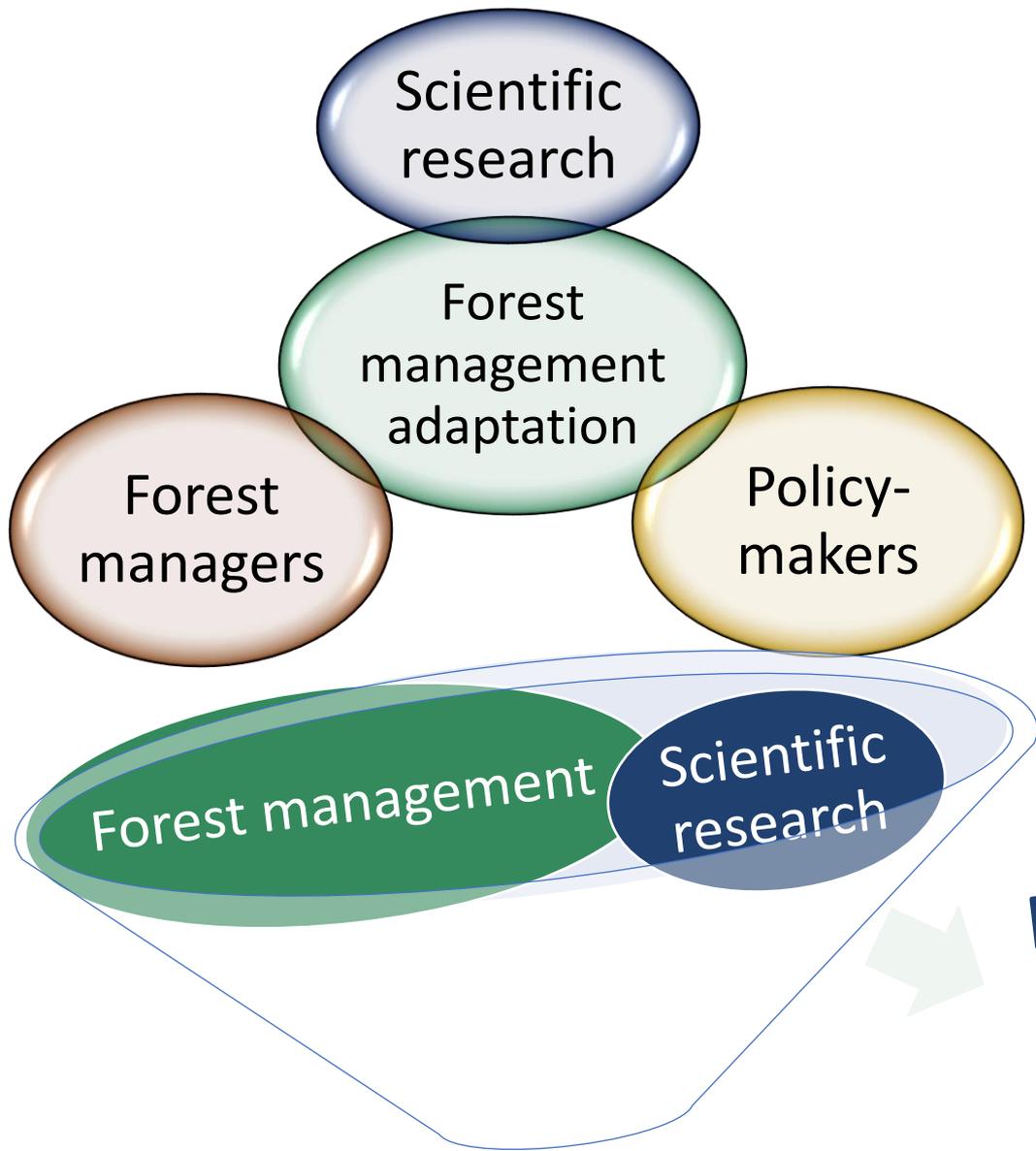


Adapting forest management to climate change in Europe: Linking perceptions to adaptive responses

Rita Sousa-Silva^{a,*}, Bruno Verbist^a, Ângela Lomba^b, Peter Valent^c, Monika Suškevičs^d, Olivier Picard^e, Marjanke A. Hoogstra-Klein^f, Vasile-Cosmin Cosofret^g, Laura Bouriaud^g, Quentin Ponette^h, Kris Verheyenⁱ, Bart Muys^{a,j,*}

In France 50%
In Slovakia 57%;
In Portugal 15%.





Viewpoint

World Scientists' Warning of a Climate Emergency

WILLIAM J. RIPPLE, CHRISTOPHER WOLF, THOMAS M. NEWSOME, PHOEBE BARNARD, WILLIAM R. MOOMAW,
AND 11,258 SCIENTIST SIGNATORIES FROM 153 COUNTRIES (LIST IN SUPPLEMENTAL FILE S1)

Scientists have a moral obligation to clearly warn humanity of any catastrophic threat and to “tell it like it is.” On the basis of this obligation and the graphical indicators presented below, we declare, with more than 11,000 scientist signatories from around the world, clearly and unequivocally that planet Earth is facing a climate emergency.

Exactly 40 years ago, scientists from 50 nations met at the First World Climate Conference (in Geneva 1979) and agreed that alarming trends for climate change made it urgently necessary to act. Since then, similar alarms have been made through the 1992 Rio Summit, the 1997 Kyoto Protocol, and the 2015 Paris Agreement, as well as

as actual climatic impacts (figure 2). We use only relevant data sets that are clear, understandable, systematically collected for at least the last 5 years, and updated at least annually.

The climate crisis is closely linked to excessive consumption of the wealthy lifestyle. The most affluent countries are mainly responsible for the historical GHG emissions and generally have the greatest per capita emissions (table S1). In the present article, we show general patterns, mostly at the global scale, because there are many climate efforts that involve individual regions and countries. Our vital signs are designed to be useful to the public, policymakers, the business community, and those working

forest loss in Brazil's Amazon has now started to increase again (figure 1g). Consumption of solar and wind energy has increased 373% per decade, but in 2018, it was still 28 times smaller than fossil fuel consumption (combined gas, coal, oil; figure 1h). As of 2018, approximately 14.0% of global GHG emissions were covered by carbon pricing (figure 1m), but the global emissions-weighted average price per tonne of carbon dioxide was only around US\$15.25 (figure 1n). A much higher carbon fee price is needed (IPCC 2018, section 2.5.2.1). Annual fossil fuel subsidies to energy companies have been fluctuating, and because of a recent spike, they were greater than US\$400 billion in 2018

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