



## Future visions: mastering foresight and effective communication

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Mission 4 “Education and Research” - Component 2: “From research to business” - Investment  
3.1: “Fund for the realisation of an integrated system of research and innovation infrastructures”



# Outline

## 1) Shaping tomorrow: science in an uncertain world

Exploring the science–policy interface through foresight, megatrends, and post-normal science

## 2) The power of connection: science, stakeholders and strategic communication

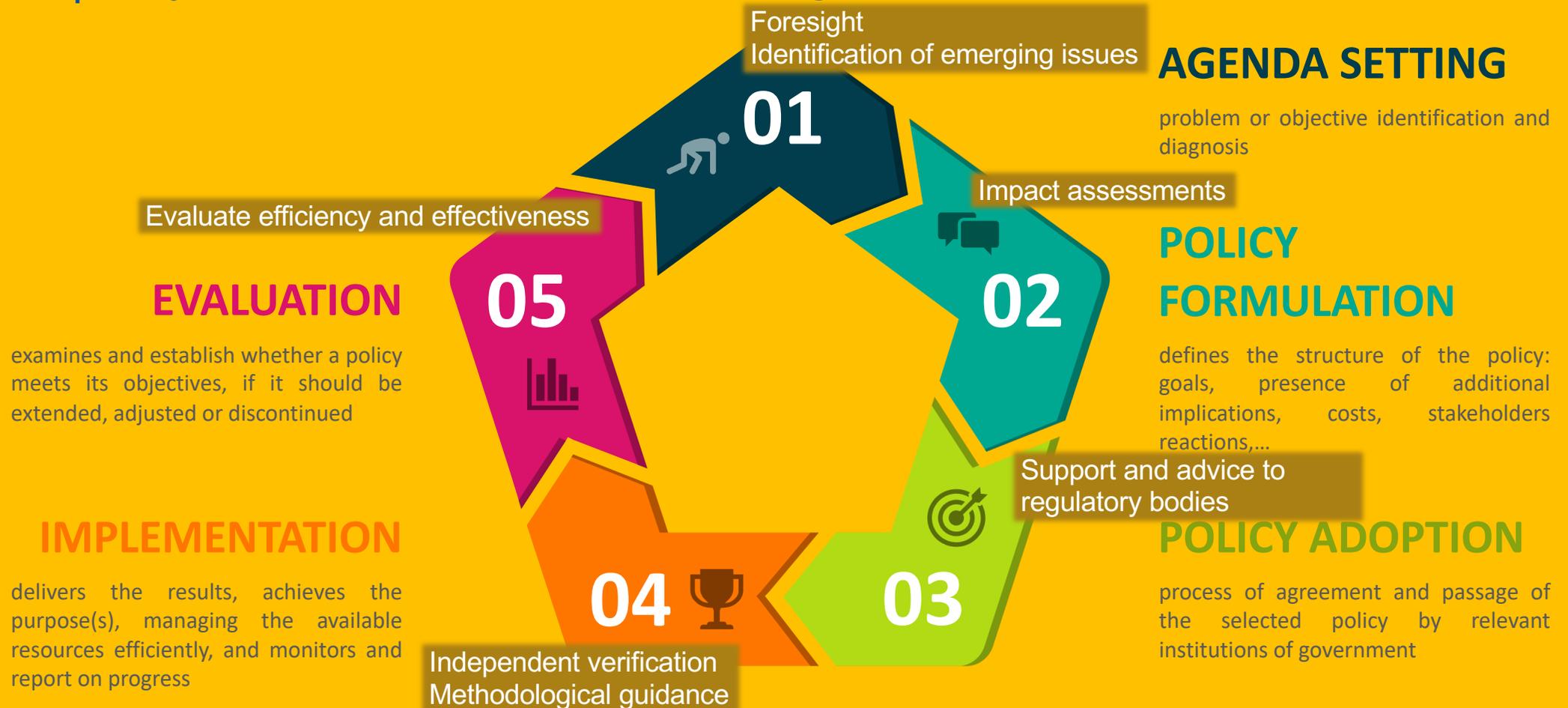
Strategies for effective communication and engagement with policymakers, stakeholders, and the public

🤔 What are the major challenges for science when informing policy in contexts of uncertainty, complexity, and rapid change?



# The science-policy interface

## *a cyclical framework for effective governance*



# Challenges at the interface and uncertainty

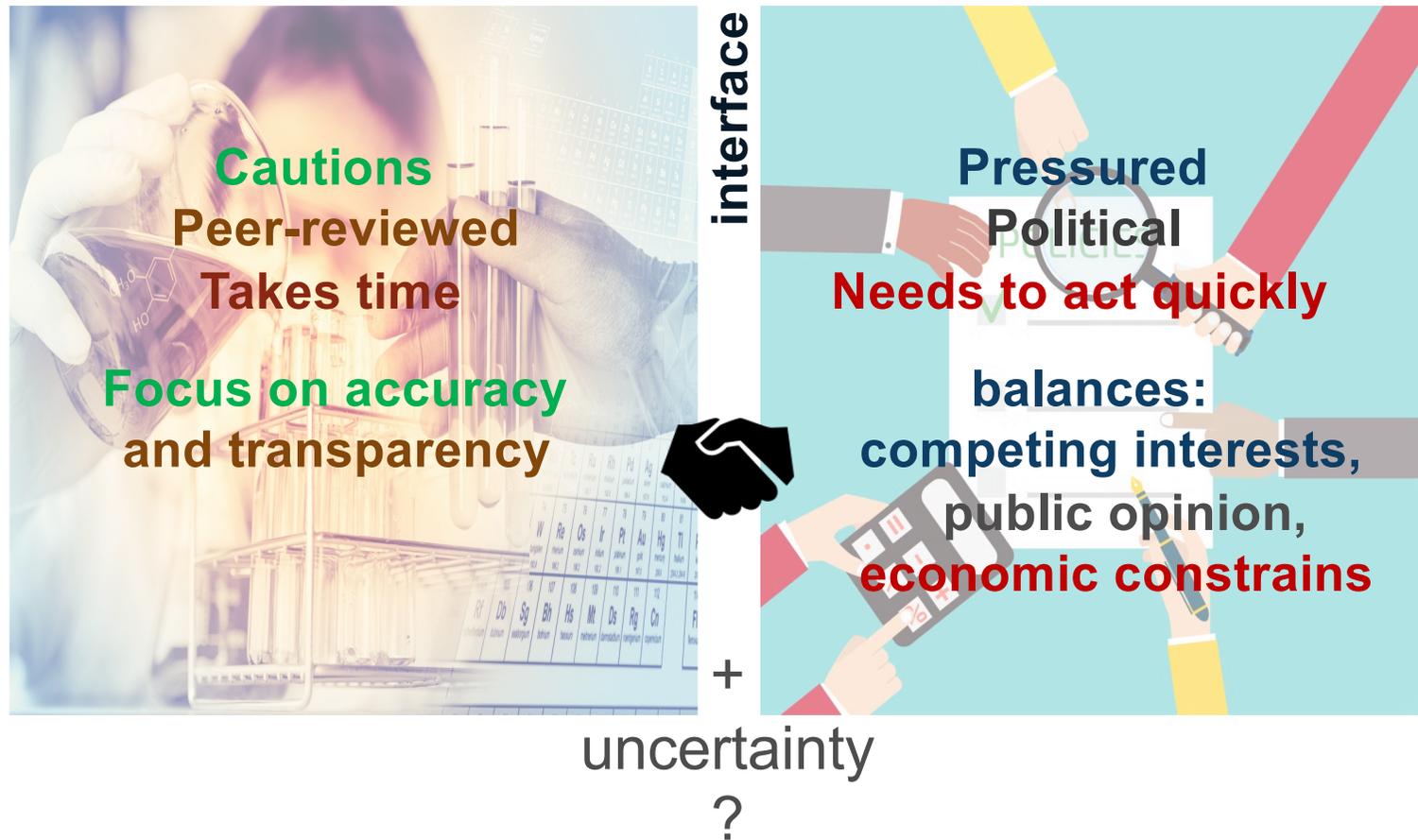
**Science**

**Policy**

Tensions:

A. Timelines

B. Values-priorities



# ...finding tools to overcome the obstacles

## Science in an uncertain world

- 
- High uncertainty, high complexity
  - Classic prediction approaches limited
  - Need for robust decisions

## Why look ahead?

- 
- We cannot predict the future exactly
  - But we must still prepare for different possibilities
  - Science can support policy with *plausible* futures

## How?

- 
- Systematic exploration of future pathways
  - Anticipating change, scanning signals
  - Building resilience into policy

# Facing the unknown

*two strategic approaches for policy support*

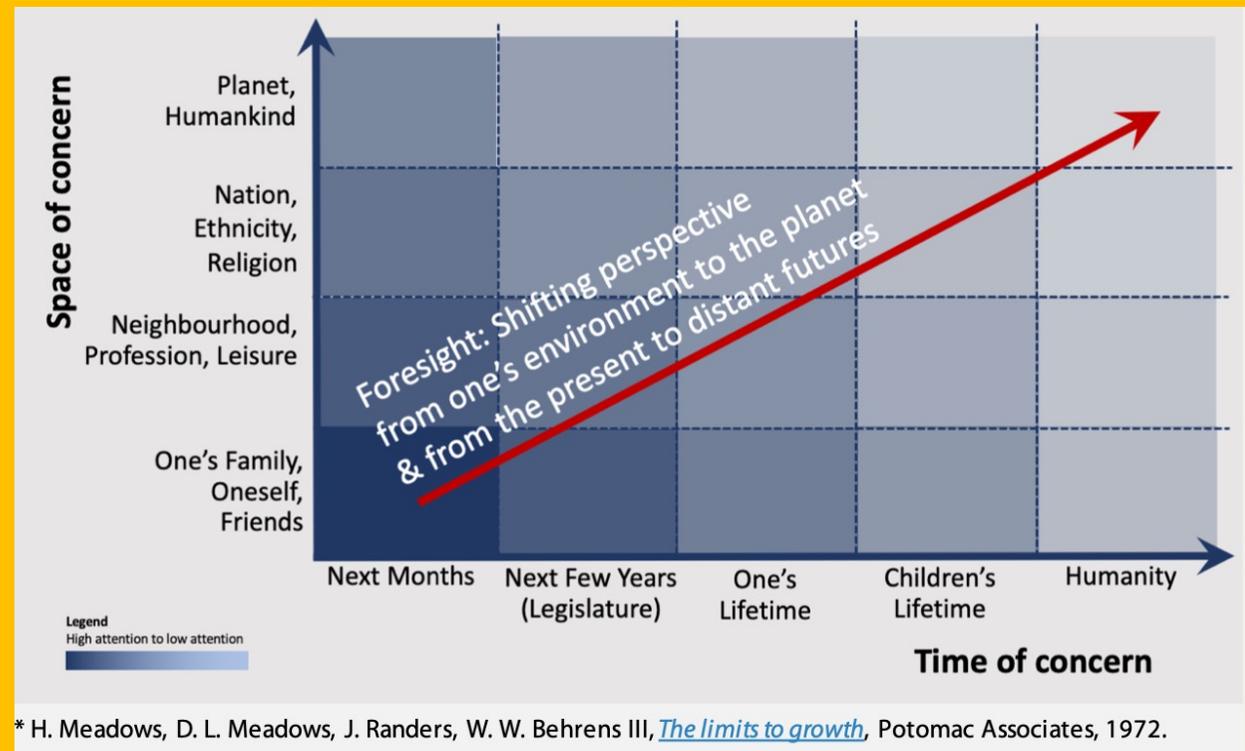




# What is foresight?

**Foresight** is the analytical and participatory process of exploring what may happen in the future in order to prepare for it.

It is not about predicting the future, but about minimising surprises.



**Guidelines for foresight-based policy analysis, 2021**

# The Importance of Strategic Foresight

*in policy making*



## 1. Addressing Complexity and Uncertainty

- by exploring how different factors interact over time, providing a broader view of possible outcomes

## 2. Encourages long-term thinking in short-term political cycles

- to consider long-term impacts and make informed decisions that will be effective in the future

## 3. Enhancing resilience and adaptability

## Example: Climate change



### Addressing Complexity and Uncertainty

1. Multiple stakeholders
2. Interconnected issues
3. Scientific Complexity
4. Economic Considerations
5. Future Projections
6. Technological Advancements,.....



### Long-term Thinking in Policy

1. Setting Emission Reduction Targets
2. Promoting Sustainable Energy Transition
3. Enhancing Carbon Sinks
4. Encouraging Behavioral Changes



### Enhancing resilience and adaptability

1. Integrated Climate Action Plans
2. Investments in resilient Infrastructures
3. Research and Innovation
4. Public Engagement and Education

**Foresight**  
Methodologies  
and tools



### HORIZON SCANNING

examining information to identify potential threats, opportunities, and future developments. For early warning and strategic planning in policy

### SCENARIO PLANNING

creating detailed narratives about different future states based on varying assumptions. To help policy makers consider multiple possible futures and develop robust strategies

### TREND ANALYSIS

examines patterns and trends over time to predict future developments. By this policy makers can anticipate changes and adapt their strategies accordingly

### DELPHI METHOD

gathers insights from a panel of experts by questioning, aiming to a consensus on future developments. Useful for tapping into expert knowledge and identifying emerging issues

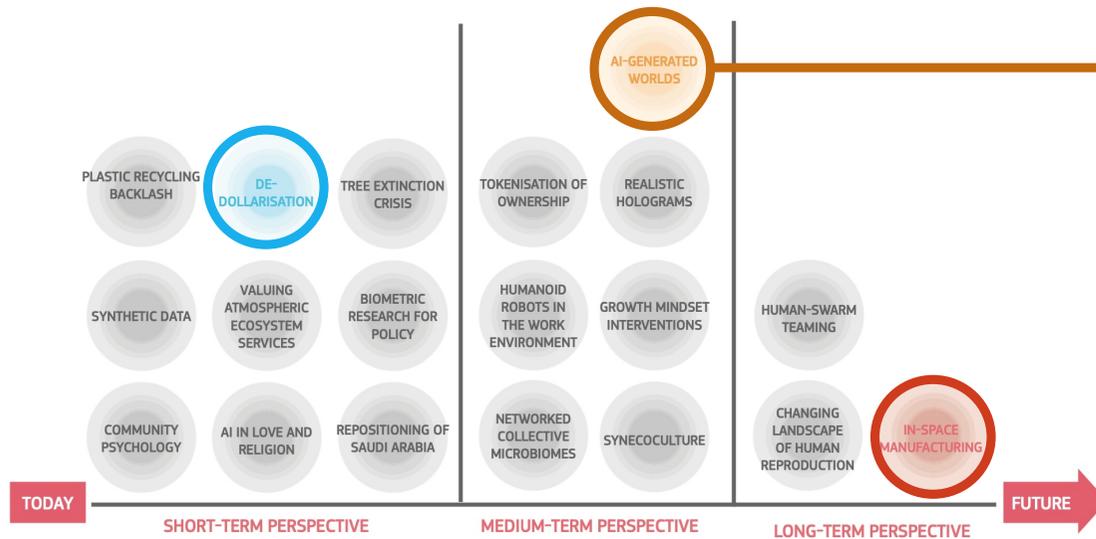
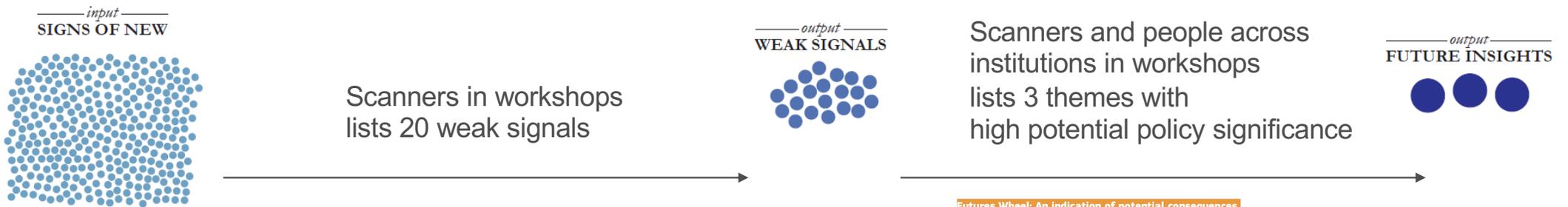
### WILD CARDS AND BLACK SWANS

Wild cards are low-probability, high-impact events that can significantly alter the future. Black swans are unforeseen events with major consequences. Strategic foresight incorporates these into planning to build resilience

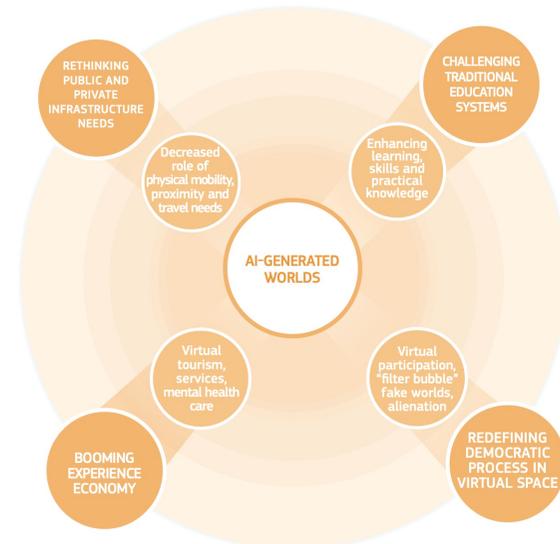
Example [https://knowledge4policy.ec.europa.eu/foresight\\_en](https://knowledge4policy.ec.europa.eu/foresight_en)

# Horizon scanning

## *emerging issues for policy makers*



Futures Wheel: An indication of potential consequences



# Wild cards

*a significant alteration of the future*

**Low probability with high impact  
difficult to predict**

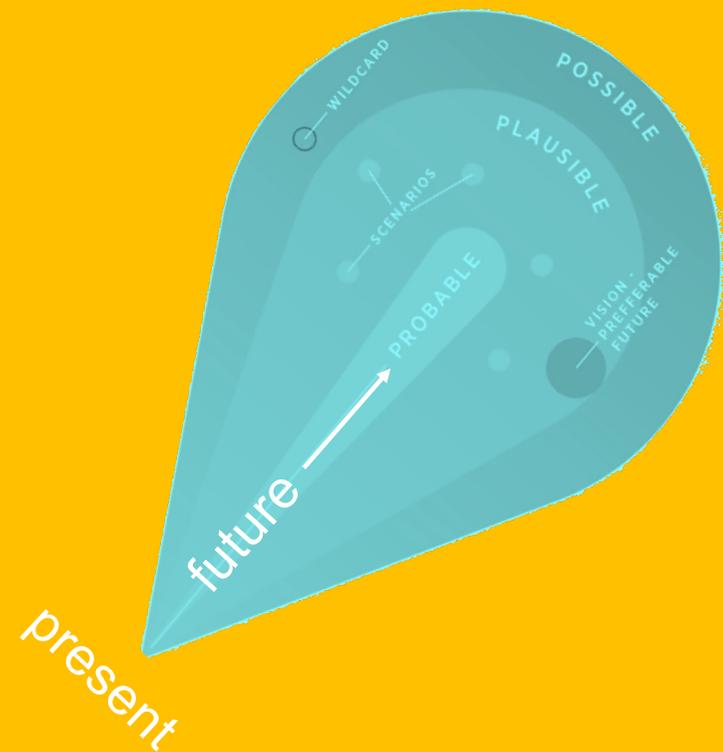
**An asteroid colliding with earth**

**Major earthquakes, tsunami, volcanic eruptions**

**Pandemics (e.g. COVID19)**

**Technological breakthroughs (rapid development and deployment of CRISPR gene-editing technology,...)**

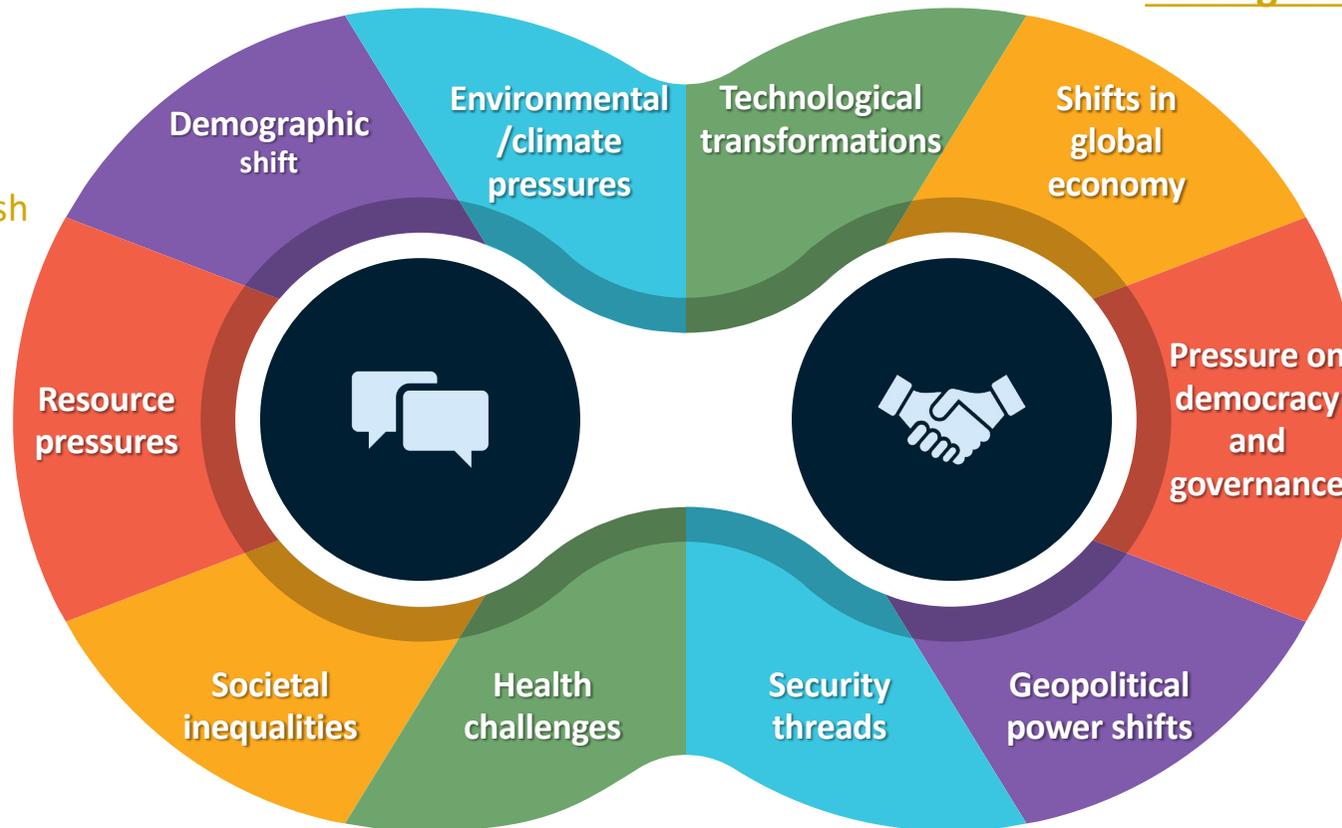
**Political upheavals (fall of Berlin wall, BREXIT,...)**



# From megatrends to action

## *navigating strategic options*

### Strategic choices to be made



How can the EU establish itself as a **smart global power**?

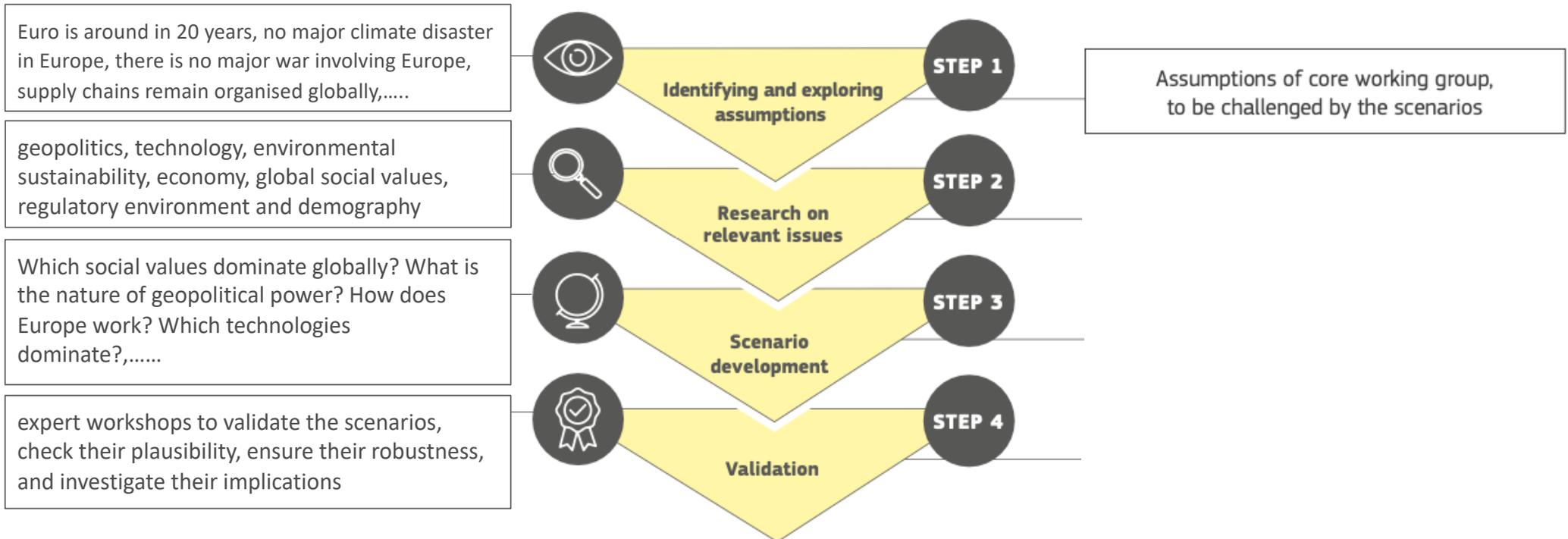
How can the EU ensure a **green transition** effective in a socially and economically equitable way?

How can the EU strengthen **opportunities** for all citizens, to prevent social fragmentation and consolidate support for the transitions?

But also on:  
**EU economic model**  
**economic risks and frictions**  
**EU regulatory framework**

# Scenario planning

*Preparing for an uncertain future*



4 foresight scenarios

Reference foresight scenarios of the global standing of the EU in 2040, 2023

Not predictions

Not projections  
extrapolated from the  
present or the past

Do not necessarily  
describe desirable futures

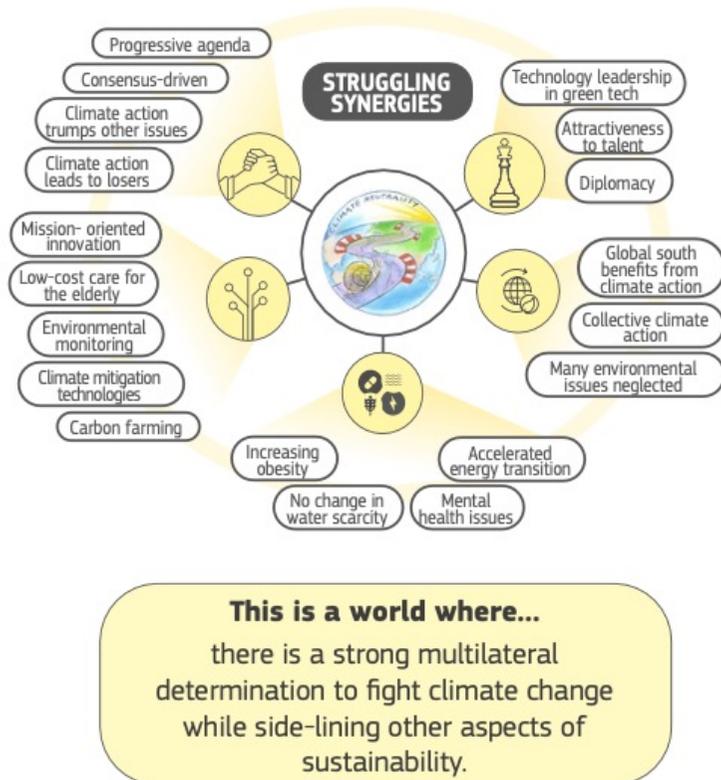
Represent plausible  
futures with diverse trends,  
uncertainties, and events  
that interact in specific  
coherent and systematic  
ways



Reference foresight scenarios of the global standing of the EU in 2040, 2023

# The European Union in 2040

## *struggling synergies and the question of leadership*



**We are struggling, stagnating**

economic prosperity and multilateralism

we navigate our way towards climate neutrality and a more enduring planet

Oceans and food supply chains need attention.

Mental health is a major concern. Anger in a lonely civil society has been amplified

# Using foresight for policy making

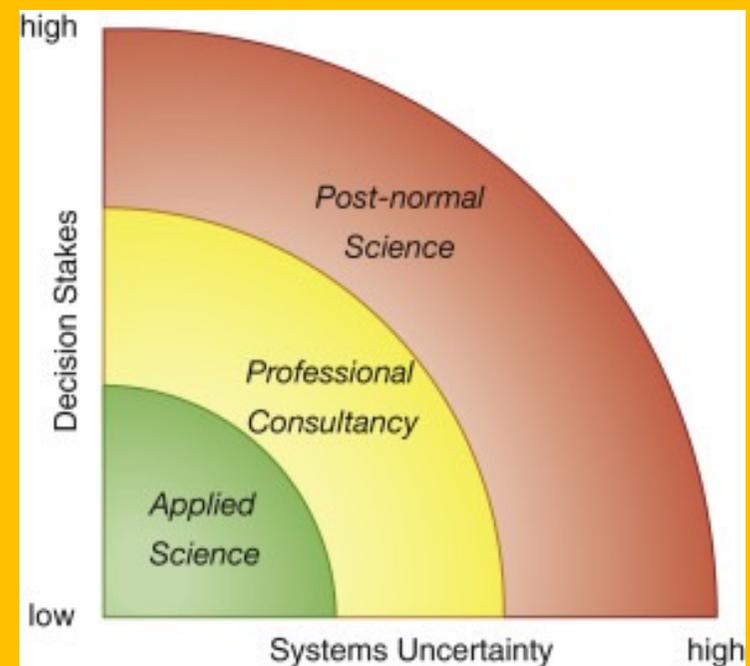
*example: green transition, changes, economies and societies*



(\*) <https://publications.jrc.ec.europa.eu/repository/handle/JRC133716>, 2023

# What is Post-Normal Science?

**Post-Normal Science** (PNS) is a framework developed to address situations where traditional scientific methods are insufficient due to high levels of uncertainty, complexity, and societal relevance.



4 conditions to be met: "facts are uncertain, values are in dispute, stakes are high, and decisions are urgent"

**Funtowicz & Ravetz, 1993**

🤔 What are examples of post-normal problems?



# Context in which Post-Normal Science emerged

In response to growing recognition that many modern challenges could not be adequately addressed by conventional scientific approaches

## Increasing complexity

Climate change, biodiversity loss, and pandemics revealed the **limitations** of reductionist, disciplinary science. They span multiple scales, with dynamic systems, and are often **unpredictable** due to feedback loops and nonlinear interactions

## Uncertainty in science

Modern problems often involve uncertainties that **can't be resolved** by more data or better models. Rather than attempting to eliminate uncertainty, PNS **acknowledges** it and **incorporates** it into decision-making processes

## Pluralism in societal challenges

Many contemporary challenges are not only technical but also deeply **political, ethical, and social**. Different stakeholders (e.g., governments, businesses, NGOs, local communities) have **competing interests** and **perspectives**

## Urgency of decisions

Problems like climate change or pandemics require **rapid decision-making** under high uncertainty. Waiting for perfect scientific certainty is impractical, and policymakers **must act** despite incomplete knowledge

# From normal to Post-Normal

*a paradigm shift in science*

Characteristic	Applied (Normal) Science	Post-Normal Science
<b>Type of problems addressed</b>	Well-defined, controlled, routine, "puzzle solving"	Complex, uncertain, high-stakes, value-laden
<b>Values</b>	Treated as separate or external to science	Recognized as integral, value-laden science
<b>Goal</b>	Truth, accuracy	Quality, robustness, fitness-for-purpose
<b>Knowledge production</b>	Within disciplinary boundaries, expert-driven	Transdisciplinary, extended peer communities, co-production
<b>Peer community</b>	Accredited experts only	Extended peer community (stakeholders, citizens, local knowledge)
<b>Policy interface</b>	Clear boundary between science and policy	Blurred boundaries; science and policy co-evolve
<b>Public participation</b>	Limited to communication of results	Embedded in framing, knowledge production, and evaluation

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# Quality in the heart of PNS

*quality of what? how to get it?*

Focus on *quality* of knowledge, not just “truth”

“**Quality in policy-related research** must encompass a **plurality** of perspectives and the **recognition** of different sorts of uncertainty. In this way, quality replaces truth as the focus of science deployed for the resolution of complex socio-environmental policy decision-making.”  
(Saltelli .....)

Obtained through the assessment of an “***extended peer community***”: those who has interest in the issue. Involvement of **accredited experts** and **non-experts**—such as stakeholders, affected or interested citizens, indigenous populations, journalists—in the scientific and decision-making processes

## Post-Normal Science in practise

*the Netherlands Environmental Assessment Agency (PBL) case*

The PBL traditionally followed a technocratic model until a **1999 uncertainty-management scandal** triggered transformation: a senior statistician publicly criticised PBL to suggest too high an accuracy of the environmental results published in the State of the Environment report

The scandal urged changes in PBL working styles at the science-policy interface

**Trouw**

**RIVM wil af van  
onderzoeker De  
Kwaadsteniet**

Petersen et al, 2011

# Post-Normal Science in practise

## *the Netherlands Environmental Assessment Agency (PBL) case*

Interventions made:

**2003:** Launch of “Uncertainty Assessment & Communication” guidance—developed with the PNS originators

Teaches scientists to **explicitly identify, characterize, and report uncertainties** in their assessments

Encourages **transparent discussion** of where knowledge is incomplete, what assumptions were made, and what confidence levels exist

**2007:** Introduction of “Stakeholder Participation” guidance to embed broader knowledge and values

Provides a framework for **meaningful involvement of stakeholders** (e.g., citizens, NGOs, local authorities) in the assessment process

Supports “extended peer communities,” in line with PNS, to improve quality, legitimacy, and social robustness of outcomes

**Petersen et al, 2011**

# An interface with three faces

**Science**



**Policy**



**Society**

🤔 Consider a real-world problem you are familiar with. What aspects of this problem suggest it might be better addressed through a PNS approach rather than traditional science?



"What do you mean you can't figure it out? It's not rocket science! Oh wait."

@Bradford\_Veley via CartoonStock

## Recap foresight and post-normal science

*what do they have in common?*

**They both accept uncertainty as unavoidable.** Foresight anticipates multiple futures, and post-normal science accepts multiple interpretations of reality.

**They both encourage broader participation.** Foresight often includes stakeholders, while post-normal science explicitly involves extended peer communities.

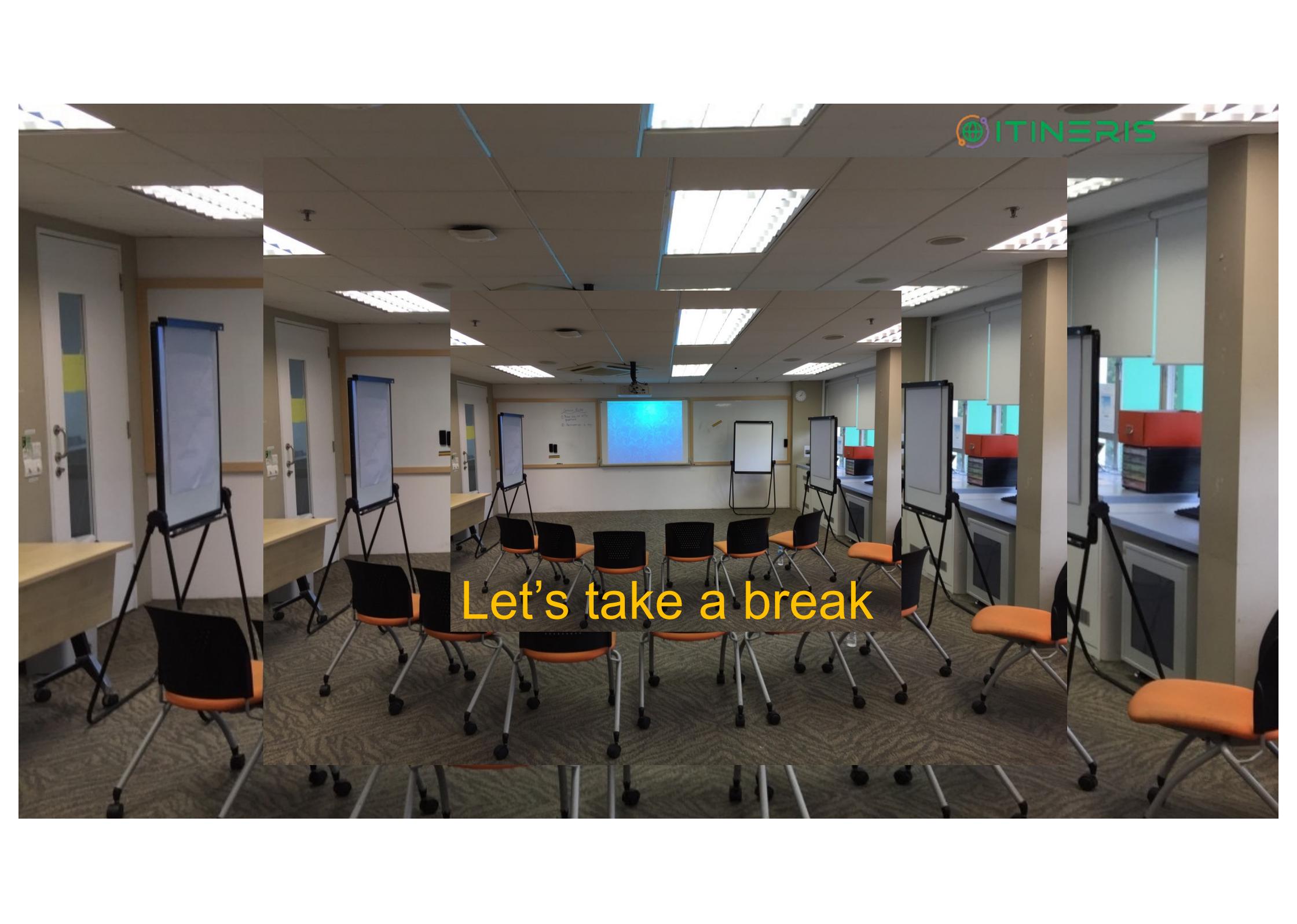
**They both challenge purely technocratic, expert-led decision-making** by recognizing the role of values, politics, and legitimacy in knowledge production.

**They both help make sense of complex, ill-defined problems** where “normal” science alone cannot give a single definitive answer.

# Questions?



"Great news from the science journal. They want us to rethink our methodology, but they love our results."

A wide-angle photograph of a modern conference room. The room is carpeted with a grey and brown pattern. In the center, there is a circle of black office chairs with orange seats. Several whiteboards on black tripods are arranged around the room. In the background, a large screen displays a blue abstract image. The room has a drop ceiling with recessed lighting and a door on the left side.

Let's take a break

# Outline

## 1) **Shaping tomorrow: science in an uncertain world**

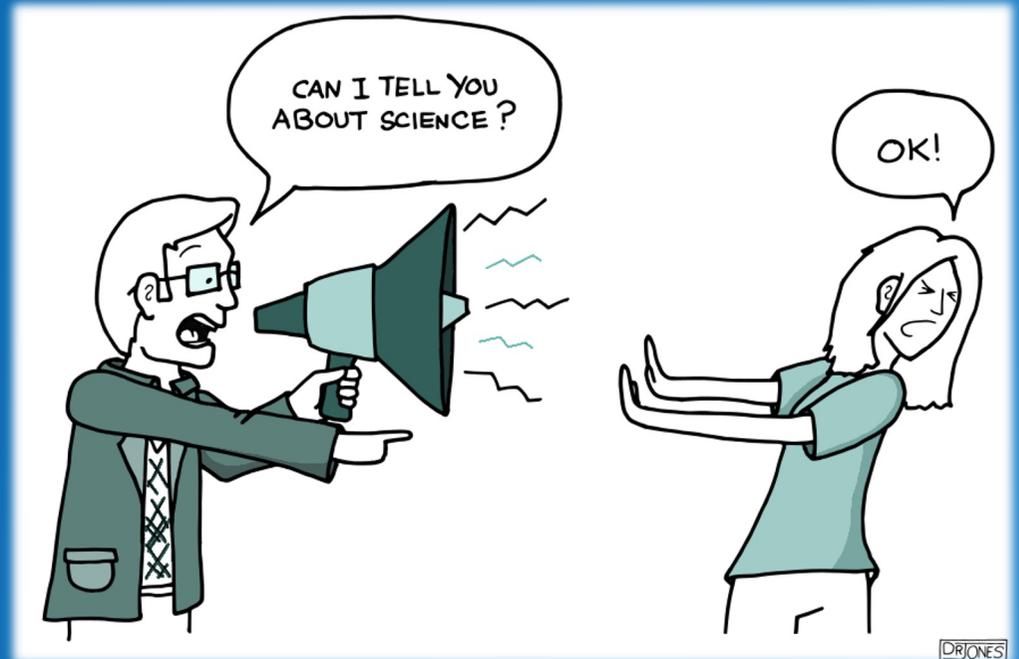
Exploring the science–policy interface through foresight, megatrends, and post-normal science

## 2) **The power of connection: science, stakeholders and strategic communication**

**Strategies for effective communication and engagement with policymakers, stakeholders, and the public**



Think of a time when a piece of scientific evidence didn't lead to action—why not?



# Framing the problem

Scientific knowledge alone is not enough to drive change — it needs to be **understood**, **trusted**, and **acted upon** by society. This gap between science and action is often due not to lack of data

## Disconnection

Scientific insights are often produced in **isolation** from societal values, political priorities, or real-world decision-making contexts

## Complexity & uncertainty

Many environmental and public health issues have no single solution and require **cross-sectoral** coordination and **value-based** decisions



## Mistrust & miscommunication

Misinformation, competing narratives, and technical language contribute to **public confusion** and **policy inaction**

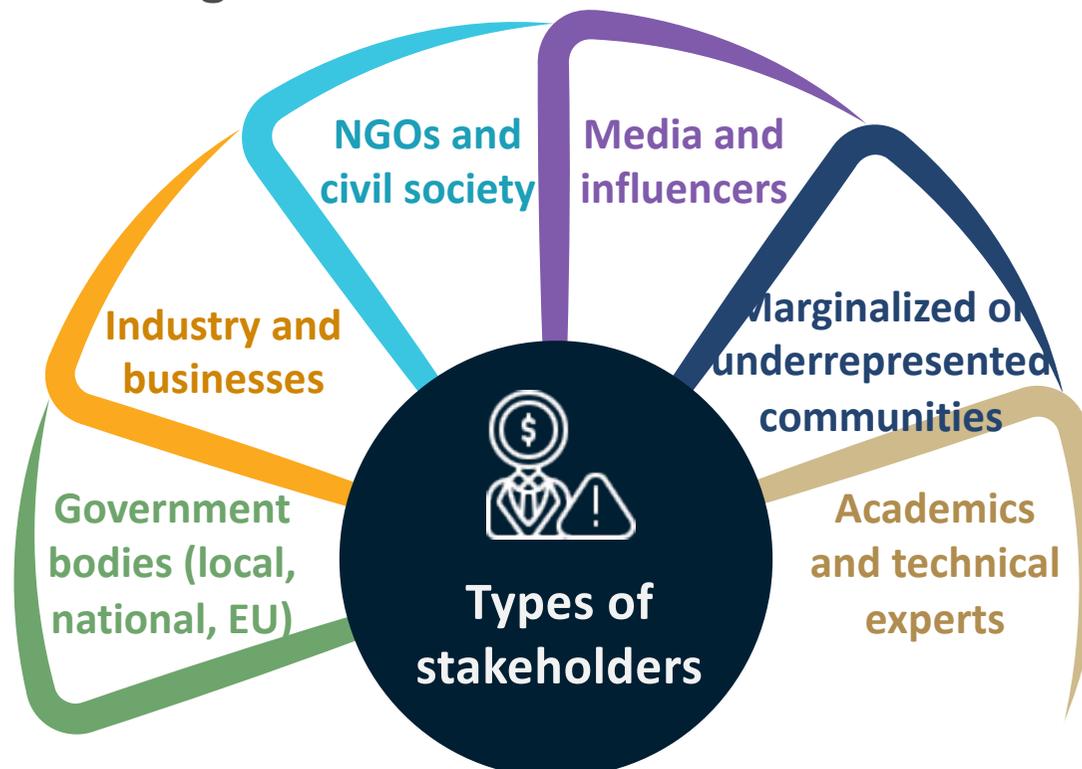
## Limited engagement

Stakeholders are often only involved at the **end** of the scientific process, reducing ownership and applicability of results

# Who is at the table?

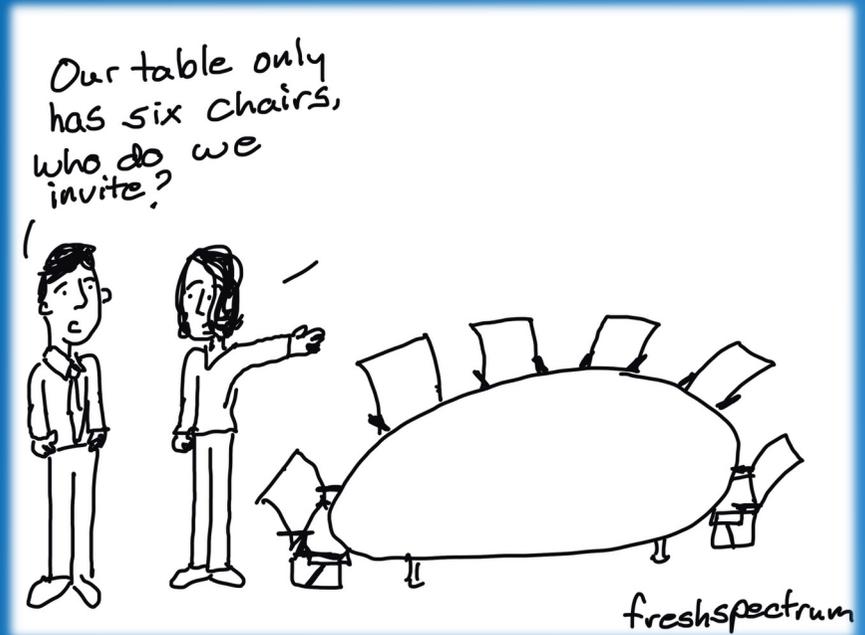
*mapping stakeholders*

A stakeholder is any individual, group, or organization **affected by** or **capable of influencing** science-based decisions



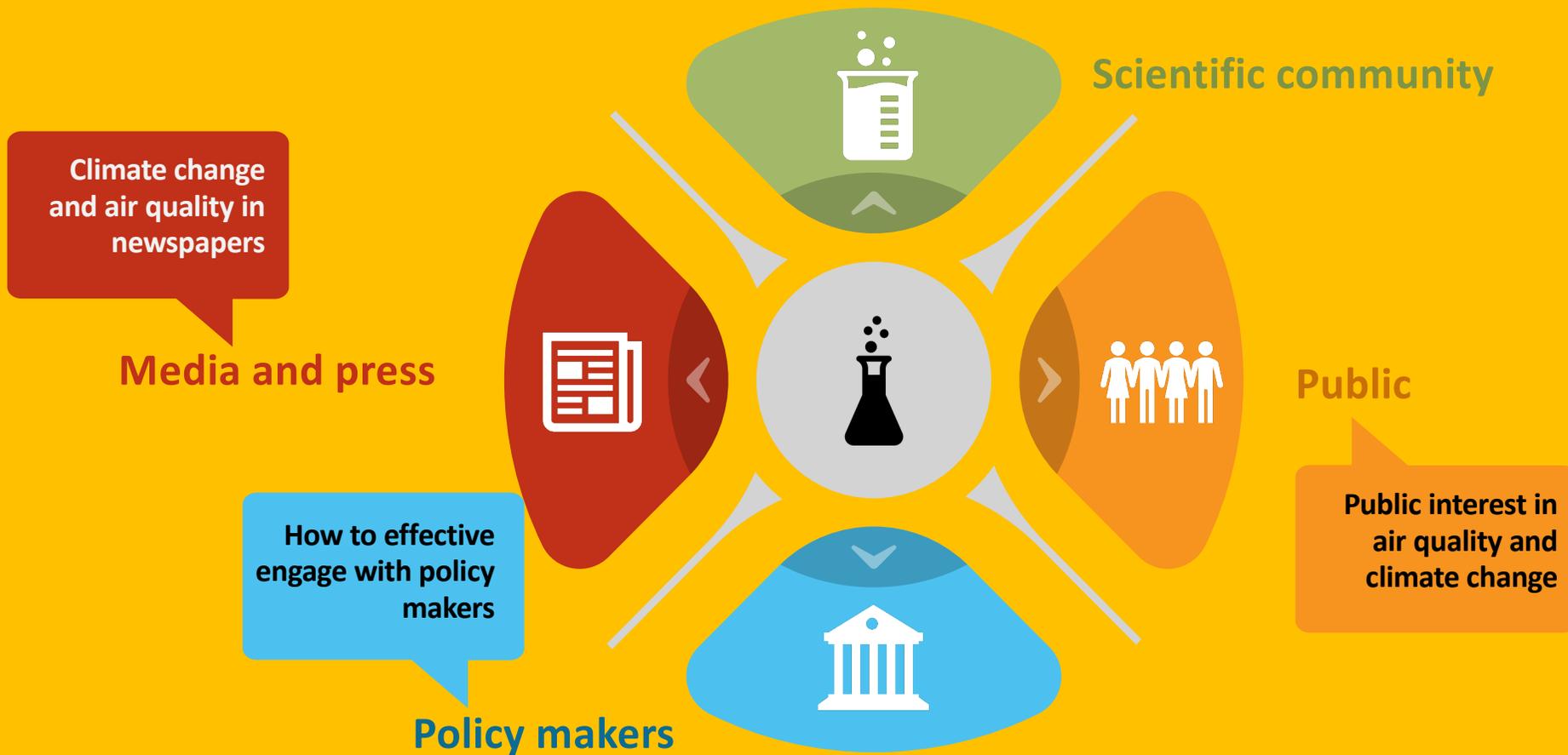


Who are the stakeholders for a scientist working on climate change or air quality?



# Scientists and audiences

*looking at the interests of some stakeholders*



# Challenges of communicating air quality

**01 – complexity and technical jargon**



**02 – variability and sources of air pollution**



**03 – public perception and awareness**



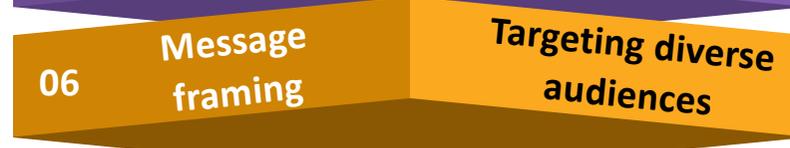
**04 – misinformation and misinterpretation**



**05 – policy and regulatory challenges**



**06 – effective communication strategies**



# Challenges of communicating climate change

**01 – complexity of Climate Science**



**02 – scientific community challenges**



**03 – public perception and cognitive bias**



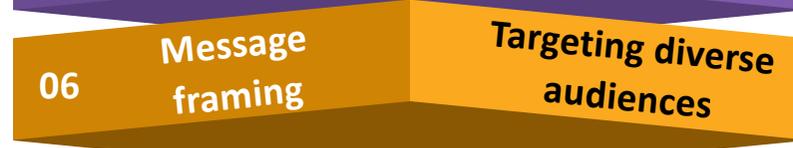
**04 – misinformation and misinterpretation**



**05 – political and economic interests**



**06 – effective communication strategies**

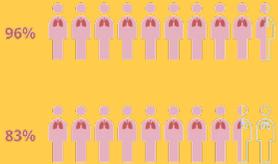


# Strategies to address the challenges - general



**Clear, non-technical language, maintaining the integrity of scientific message**

**Use visual aids, infographics, maps, to make the message more digestible**



96%  
83%

**Engage narratives, use storytelling to make data more relatable**



**Use of social media to disseminate information and engage with the public**



**Participate in educational campaigns with schools, communities,...**



**Building trust, engaging with public and stakeholders transparently and honestly**



# Effective communication and engagement *with policy makers*

**1** **Understand the policy context**  
Know the Audience  
Policy Timing

**2** **Clear and concise messaging**  
Simplify complex info  
Executive summaries

**3** **Relevance and impact**  
Policy Implications  
Actionable recommendations

**4** **Visual aids and infographics**  
Data Visualization  
Clear Layouts

**5** **Engagement and relationship building**  
Regular Interaction  
Workshops and briefings

**6** **Written communication**  
Policy Briefs  
Letters and reports

**7** **Media and public outreach**  
Opinion pieces  
Social Media

**8** **Collaborative networks**  
Interdisciplinary collaboration  
Policy networks

**9** **Training and capacity building**  
Communication training  
Mentorship and guidance

# Bad communication and consequences

## The 2009 Climategate Scandal

- Email from East Anglia University were hacked
- Climate change skeptics argued about scientists transparency
- Public trust was undermined



## Failure to clearly communicate uncertainties of climate models

- Scientists have unintentionally fed into the narrative that climate science is unreliable
- Climate change skeptics cast doubt on the reliability of climate models and resist policy changes, arguing that science is not settled



## Incomplete communication about Air Pollution

- Scientists failing to communicate the full range of pollution sources in urban areas
- Policies only targeting vehicle emissions
- Leading to continued poor air quality and public health impacts



## Cold fusion announcement in 1989

- bypassed peer review process, announced their findings through a press conference
- scrutiny and skepticism, other scientists could not replicate the results
- damaged the credibility of research



# Science communication in the age of social media

*opportunities and risks*

**Misinformation and  
disinformation**

**Loss of nuance**

**Polarisation**

**Undermining expertise**

**“Infodemic” dynamics**



**Direct communication**

**Speed and reach**

**Visual storytelling**

**Community-building**

**Democratisation**

# Navigating social media

*a strategic guide for scientists*

Be present where the public is

Use storytelling

Fact-check and link to sources

Acknowledge uncertainty without sounding unsure

Engage, don't preach

## EXAMPLES

Join threads, posts, create reels

Frame science in human terms—personal stories

Share short threads with links to peer-reviewed work

“Based on current evidence, we know...”

Answer questions, encourage discussion, admit  
when more research is needed



Newspaper and media

# Historical media coverage of climate change

## *the early signals*

THE RODNEY AND OIAMATEA TIMES,  
WEDNESDAY, AUGUST 14 1912.

### Science Notes and News.

#### COAL CONSUMPTION AFFECTING CLIMATE.

The furnaces of the world are now burning about 2,000,000,000 tons of coal a year. When this is burned, uniting with oxygen, it adds about 7,000,000,000 tons of carbon dioxide to the atmosphere yearly. This tends to make the air a more effective blanket for the earth and to raise its temperature. The effect may be considerable in a few centuries.

**1912**

## The Washington Post

### Report on Global Warming

The Arctic Ocean is warming up, icebergs are growing scarcer and in some places the seals are finding the water too hot, according to a report to the Commerce Department yesterday from Consul Ifft, at Bergen, Norway.

Reports from fishermen, seal hunters and explorers, he declared, all point to a radical change in climate conditions and hitherto unheard-of temperatures in the Arctic zone.

**1922**

### Warming Arctic Climate Melting Glaciers Faster, Raising Ocean Level, Scientist Says

By **GLADWIN HILL**  
Special to THE NEW YORK TIMES.

**1947**



**1950**

### Is the World Getting Warmer?

By **ALBERT ABARBANEL** and **THORP McCLUSKY**

Was this past mild winter just part of a natural cycle? Will the old-fashioned blizzard someday disappear? Here are the startling facts revealed by world-wide weather surveys now going on.

**NEXT GREAT DELUGE FORECAST BY SCIENCE**  
*New York Times (1857-Current file); May 15, 1932; ProQuest Historical Newspapers The New York Times (1851 - 2003)*  
pg. X34

### NEXT GREAT DELUGE **1932** FORECAST BY SCIENCE

Melting Polar Ice Caps to Raise the Level of  
Seas and Flood the Continents

**SCIENCE IN REVIEW**  
By **WALDEMAR KAEMPFERT**  
*New York Times (1857-Current file); Oct 28, 1956; ProQuest Historical Newspapers The New York Times (1851 - 2003)*  
pg. 191

**1956**

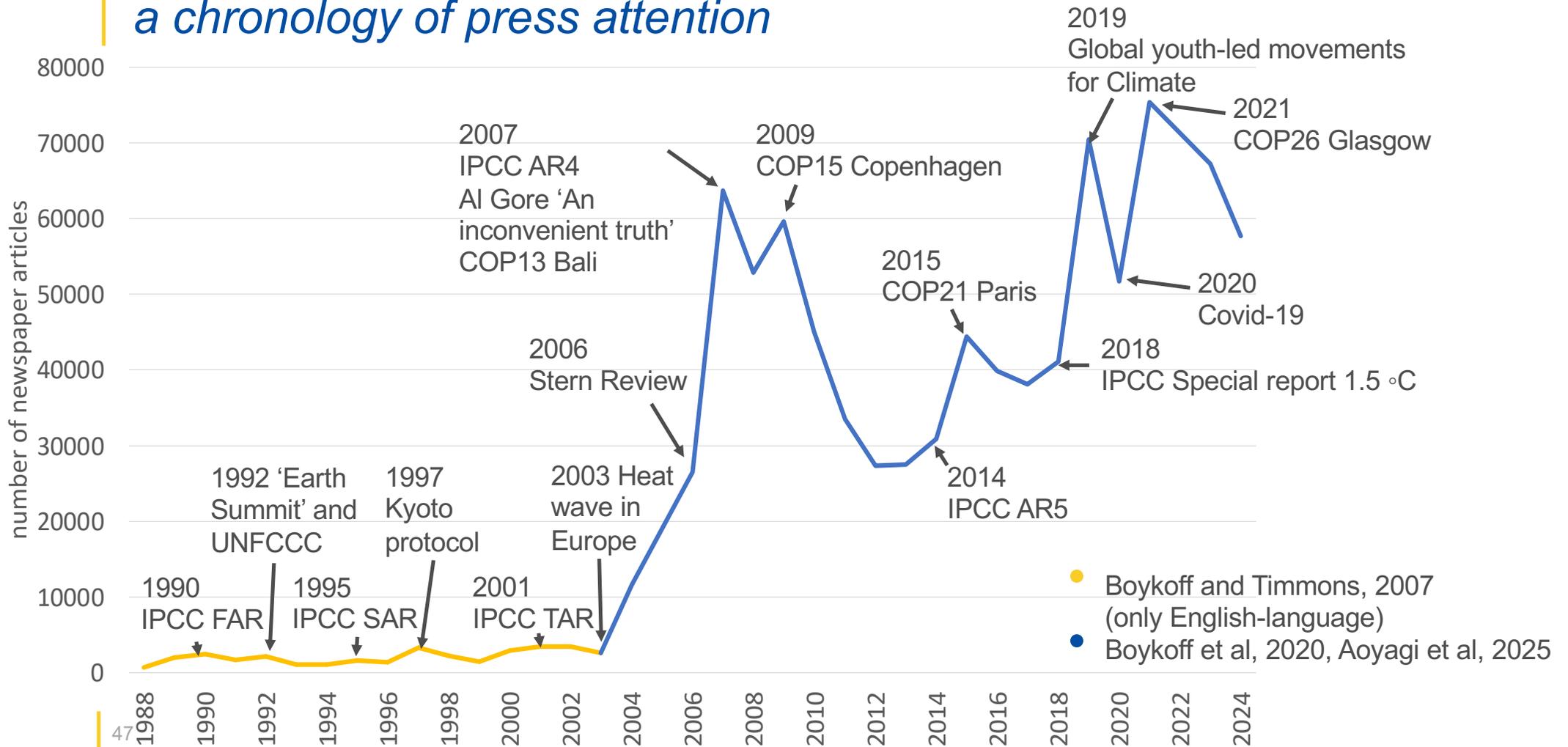
### SCIENCE IN REVIEW

Warmer Climate on the Earth May Be Due  
To More Carbon Dioxide in the Air

By **WALDEMAR KAEMPFERT**

# Media narratives on Climate Change

## *a chronology of press attention*



# Why people avoid news about climate change? *a lesson also for scientists?*

ALL COUNTRIES

The news related to climate change is untrustworthy or biased



I feel like there is nothing really new in the news related to climate change



The news related to climate change has a negative effect on my mood



I am worn out by the amount of news related to climate change there is these days



There is too much news coverage related to climate change



I don't feel like there is anything I can do with the information



The news related to climate change leads me to having arguments that I'd rather avoid



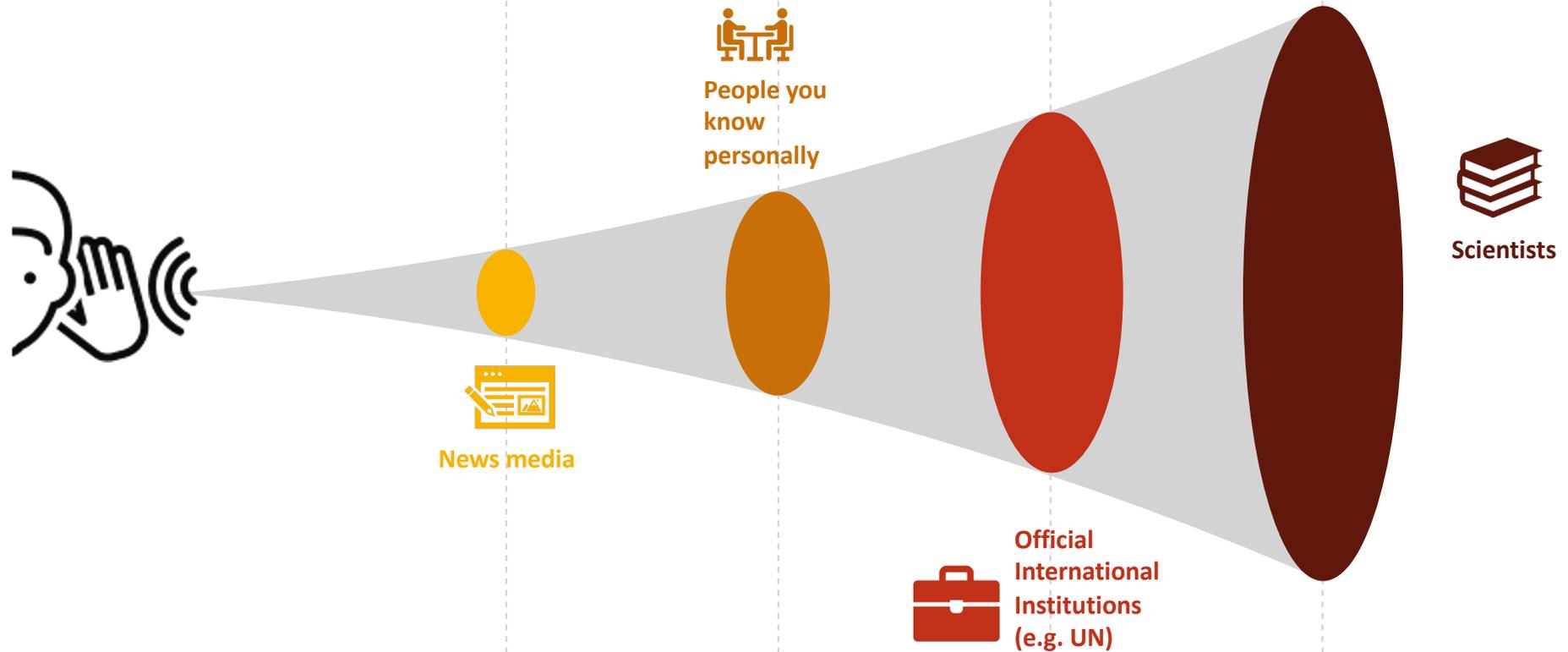
The news related to climate change is hard for me to follow or understand



I don't have the time for news related to climate change

**How we follow climate change: climate news use and attitudes in eight countries (UK, Germany, USA, Brasil, India, Japan, Pakistan), 2022**

# Who do people trust more with climate change news?



How we follow climate change: climate news use and attitudes in eight countries (UK, Germany, USA, Brasil, India, Japan, Pakistan), 2022

BY RAY REBAN

# Air pollution in historical media public perception and policy precursors



GIRL STABBED WITH STILETTO IN FOG

FOURTH NIGHT OF FOG  
CHAOS IN LONDON

1952

## Air Pollution's Crop Damage Estimated at \$132 Million

**BY DOUGLAS WILLIAMS**  
*For Press Business Wire*

A three-year study by Stanford Research Institute scientists has concluded that U.S. air pollution causes \$132 million per year in direct damage to plants and crops.

The California researchers split that into \$85.5 million for commercial crops and \$46.5 million for ornamental plants. They estimated the losses attributable to autos at \$30 million to \$40 million.

The calculations are "substantially lower than previous ones," said Alan E. Zenzel, project manager of the Coordinating Research Council. The CRC sponsored the study for the Environmental Protection Agency, the American Petroleum Institute and the Motor Vehicle Manufacturers Association.

The Stanford scientists worked from a systematic analysis of crop yield, emission sources and weather conditions in 51 of the 1,134 counties in the U.S.

Dr. Harris M. Benedict, plant physiologist and chief researcher on the project, said no previous estimate — they've ranged from \$200 million to \$500 million — "has been based on such extensive data collection and analysis."

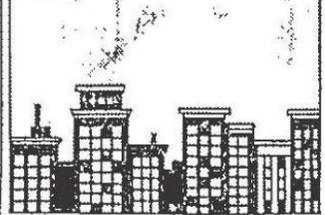
The SRI study found that citrus fruits were the hardest hit by air pollution with losses annually of about \$28 million or about 33 percent of the total crop loss. The study said this is because a large percentage of the country's citrus fruits "are grown in areas where weather conditions concentrate pollutants."

The scientists said weather conditions are as important a factor as the pollution itself. That's particularly true,

1973

## TODAY'S SMOKE

1941



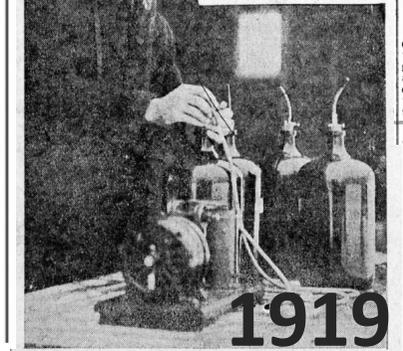
Smoke density over Salt Lake City, as recorded at 9 a. m. Friday and shown in the above chart, continued to be 10 percent. Readings showed 20 percent density for the north section, 15 per cent for the east section, with the west and south being clear.

## Smoke Expert Makes Flight Studies Currents Over City

**G. ST. JOHN PERROT**, government smoke expert, who yesterday observed Salt Lake's smoke bank from an airplane.

Causes of Murky Atmospheric Conditions Probed by New Methods.

FLYING in a Curtiss biplane, G. St. John Perrot, the government smoke expert, who is making study of smoke abatement in Salt Lake, yesterday took samples in the smoke bank above the city. Mr. Perrot carried with him latrine apparatus which has been especially constructed for the study of smoke abatement here. This is the first time in history according to the government author



1919

## SMOKE ABATEMENT ASSOCIATION IS RAPIDLY GAINING MEMBERS

*Desires to Interest Every Woman in the City, and Cordial Invitation to Join in the Work Is Extended—Name May Be Telephoned.*

The Indianapolis Smoke Abatement Association continues to meet and formulate plans with enthusiasm. During the past week the aims of the association have been made clear at the meetings of many local women's clubs with gratifying results. The members of the association are emphasizing the fact that they do not urge the imposition of fines and that they do not wish to attack anybody. Realizing that a great deal of smoke is produced by kitchen ranges and household furnaces, they mean to improve the management of their own fires before they criticize manufacturing plants. Each woman is asked to do all she can to decrease the production of smoke in her own home, and in any other property she may own or control; and to inform herself as rapidly as possible about what has been accomplished in smoke prevention in other cities. The association holds that to not one is the material prosperity of Indianapolis of more importance than to its women. Upon the financial success of their husbands depends the amount of money available for the comfort and pleasure of their families. But a study of the smoke question here and elsewhere forces the women to the conclusion that smoke does not mean prosperity—smoke means waste! Also that the interests of the town and state demand the continued and extended use of Indiana coal. Soft coal is the natural fuel of the middle West and must continue to be so.

**INDIANA COAL O. K.**

The Smoke Abatement Association is convinced that Indiana coal may be used with very little or no smoke, and with greatly increased efficiency. They are assured that an increased sense of individual responsibility on the part of all the burpers of coal and a determination to improve the present methods of firing will be of direct benefit.

1. To the coal consumer, because improved combustion means a saving in the coal bill.
2. To the local coal dealer and producer, because combustion will demonstrate that Indiana coal, if properly managed, is equally efficient with higher-priced coal produced elsewhere.
3. To the public, because the improved combustion will lessen the present enormous expense of laundry and cleaning bills and the loss from destruction and deterioration of household articles. It will lessen the injury to health caused by smoke-laden atmosphere and to plants and shade trees.

They would like to post these slogans on every billboard in town:

**Smoke Means Waste!**  
**Use Indiana Coal Intelligently!**  
**Improve Your Method of Firing!**

The association is interested in the assertion gleaned from an official report on the Cleveland smoke nuisance that the loss to Cleveland through destruction and deterioration of property by smoke in 1907 was equal to the sum of all the city taxes that year.

**INSTRUCTION IS GIVEN.**

It is also interested to learn that the Prussian government employs traveling instructors who teach proper methods of firing throughout the empire. The St. Louis Smoke Abatement Association gives instructions to firemen and posts printed rules for proper firing in every engine room.

The membership list of the Smoke Abatement Association is growing rapidly and already contains many of the most influential women in Indianapolis. It needs the sympathy and support of every woman in the city, and it extends a most pressing invitation to all to join its ranks. Those interested should call or telephone to Mrs. Charles Sherman or Mrs. John M. Judah and give their names as new members. They will be glad to help and enthusiastic in their efforts to help at the free monthly lectures on the smoke nuisance.

**SMOKE FACTORY**—The smoke from this lead smelting plant in Salt Lake is held partly responsible for the smog in the city.

**CONTRIBUTING FACTOR**—Another example of the smoke producers blamed for the smog in the city. Why has Los Angeles been plagued by more irritating smoke and noxious fumes this year than ever before in its history?

Is it becoming a second Pittsburgh?

Are the fog, haze, fumes, vapors, soot, dust and smoke due to the tremendous impending of water in Lake Mead?

Has some weird climatic cycle event so late the Southeast with repeated irritants?

Questions like these are on everyone's lips nowadays. Health officers, investigating chemists, engineers and public health men are analyzing the problem with their fingers crossed. They're happy about one thing—Los Angeles doesn't get its electricity and its inland coal for fuel.

Practically all agree that Lake Mead's water has no more effect on atmospheric conditions in Los Angeles County than a dose of table salt on the stage of Shriners Auditorium. Practically all agree that no word "30-year cycle" is in it.

Yes, here's how the experts themselves describe the mess which some have called smog (smoke and fog):

"A community of more than 2,000,000 people is shut up in a that downtown Los Angeles is down to a few feet above the ground."

On a typical day—not on a day when the smog is particularly bad—there are 100,000 tons of dust and dirt in the air. The dust is so thick that it is impossible to see more than a few feet ahead. The dust is so thick that it is impossible to see more than a few feet ahead. The dust is so thick that it is impossible to see more than a few feet ahead.

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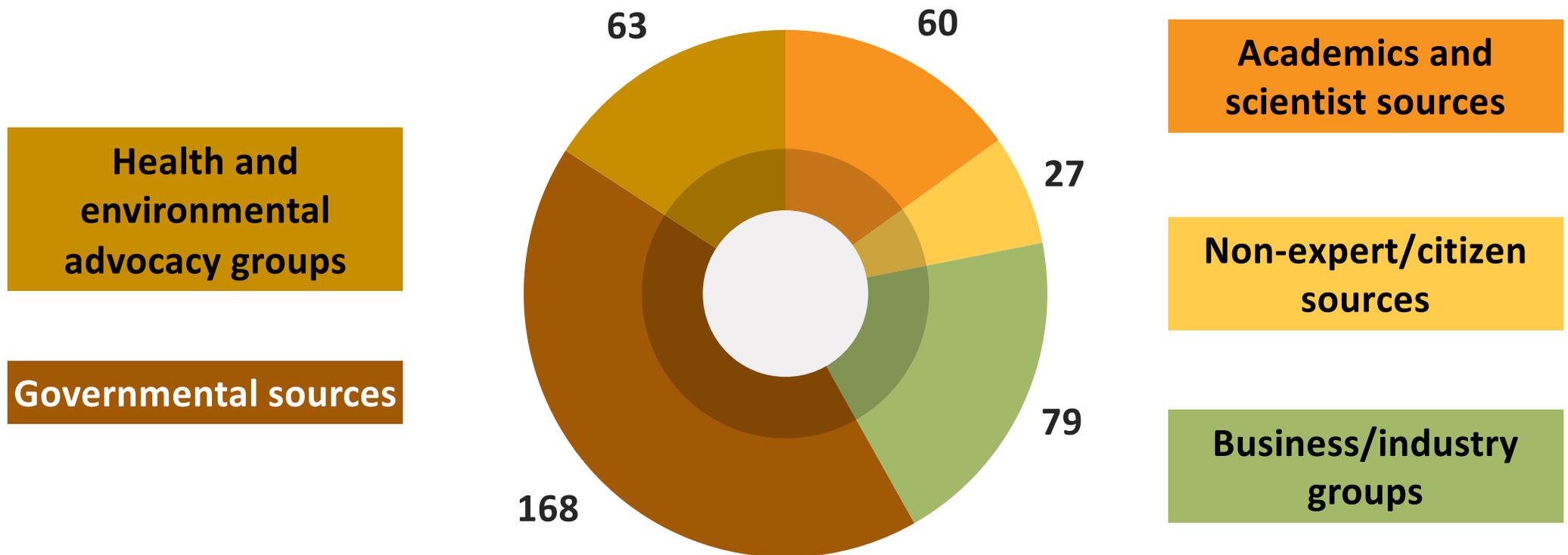


CONTRIBUTING FACTOR—Another example of the smoke producers blamed for the smog in the city. Why has Los Angeles been plagued by more irritating smoke and noxious fumes this year than ever before in its history?

1947

# Air pollution in newspapers

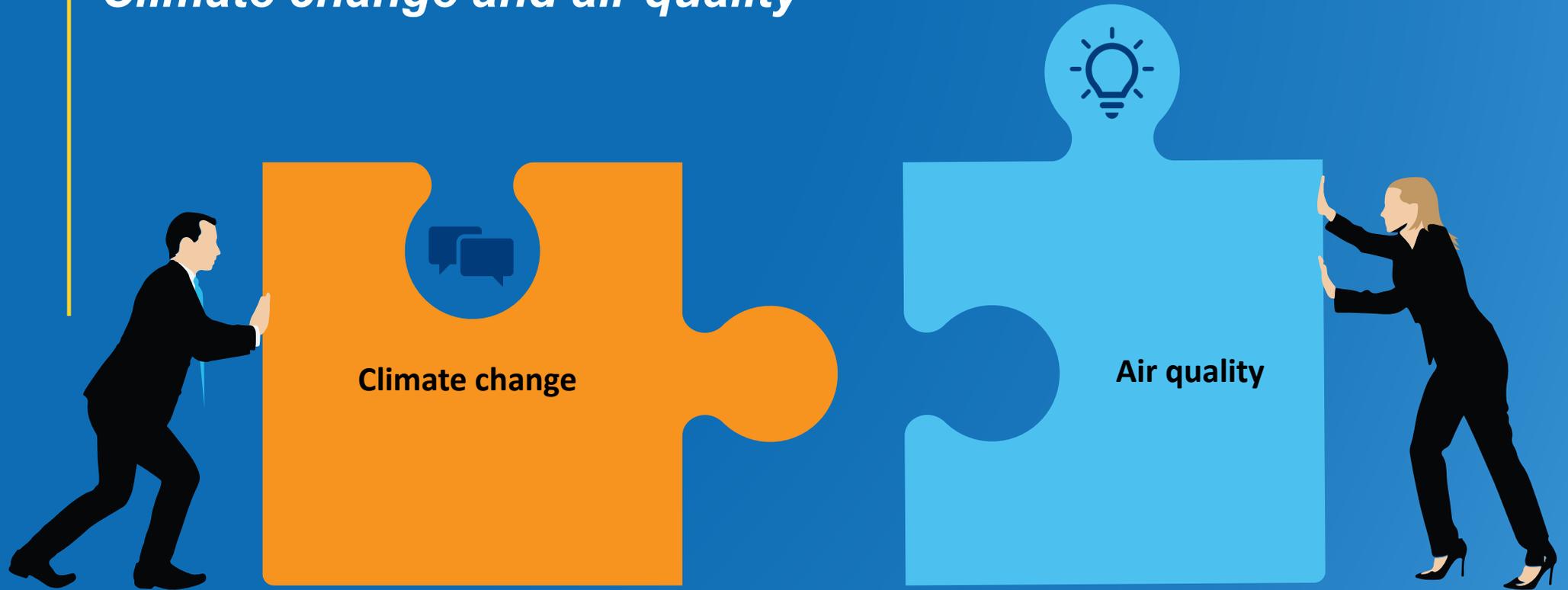
*media reporting on air pollution – who are the information sources?*



Ramondt and Ramirez, Environment research and public health, 2020

# Public voice

*Climate change and air quality*





# Climate Change

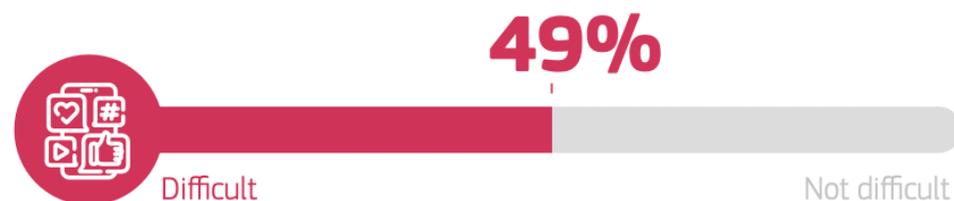
## *EU citizens' perception*

# Climate Change

Information gaps remain:

While 84% agree that climate change is caused by human activity.....

Around half of EU citizens **find it difficult to differentiate between reliable information and disinformation** about climate change on social media



Just over half of EU citizens **don't think the traditional media from their country provides clear information** on climate change and its causes and impacts



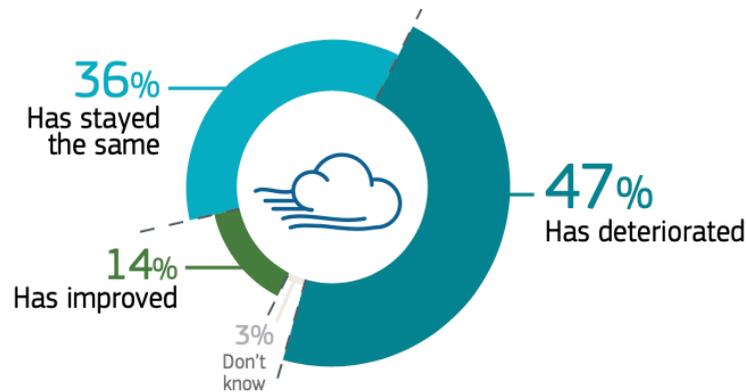
<https://europa.eu/eurobarometer/surveys/detail/3472>, 2025

# Air Quality

## EU citizens' perception

# Attitudes of Europeans towards Air Quality

With regards to the past ten years, Europeans think that air quality...



How air quality problems should be addressed?



**65%**

International  
or global level



**42%**

EU level



**42%**

National  
level



**32%**

Regional  
or local level

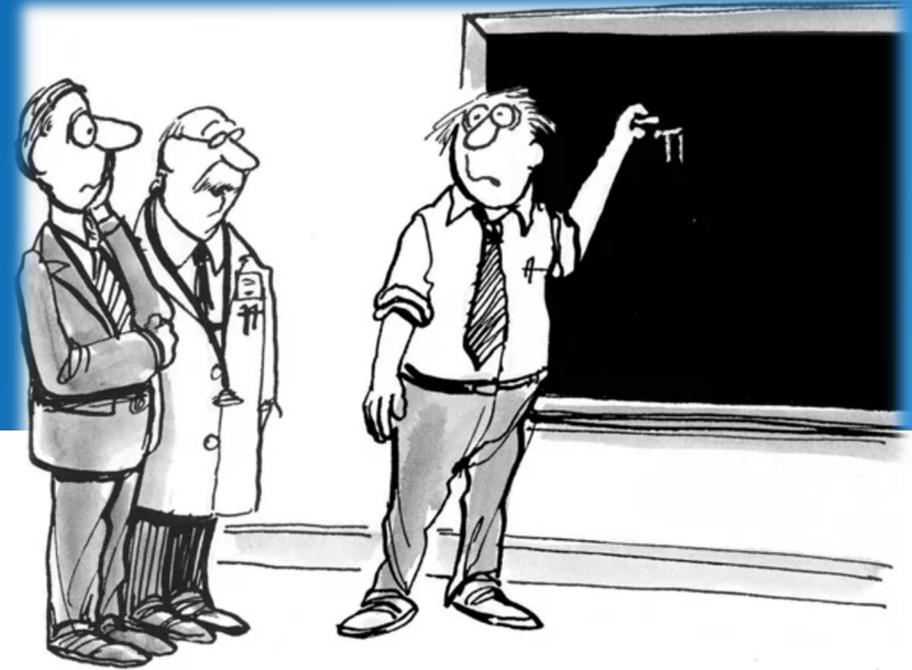
**19%**

**All levels**



<https://europa.eu/eurobarometer/surveys/detail/2660>, 2022

# Questions?



“I’ve seen this before. A communicator paralyzed by poor listening skills.”



What's one thing you'd change about how scientists communicate?



Reflect on your potential role as a scientist or policymaker.



How can you contribute to bridging the gap between scientific evidence and policy implementation in the context of air quality and climate change?





# THANKS!

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