

Models of science advice: Advantages and disadvantages

Dr. Jan Marco Müller

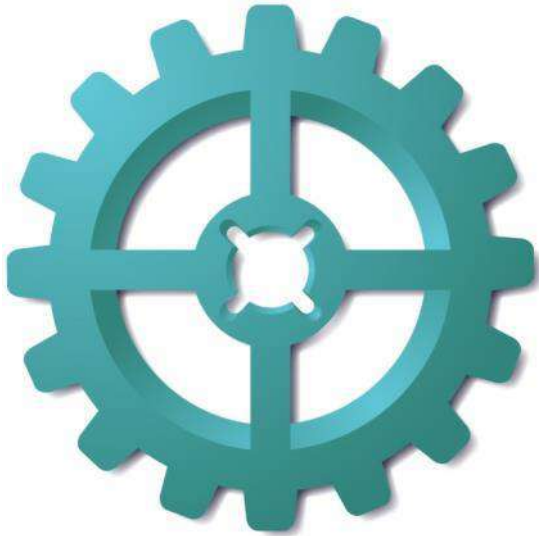
Head of Directorate Office

Coordinator for Science to Policy
and Science Diplomacy

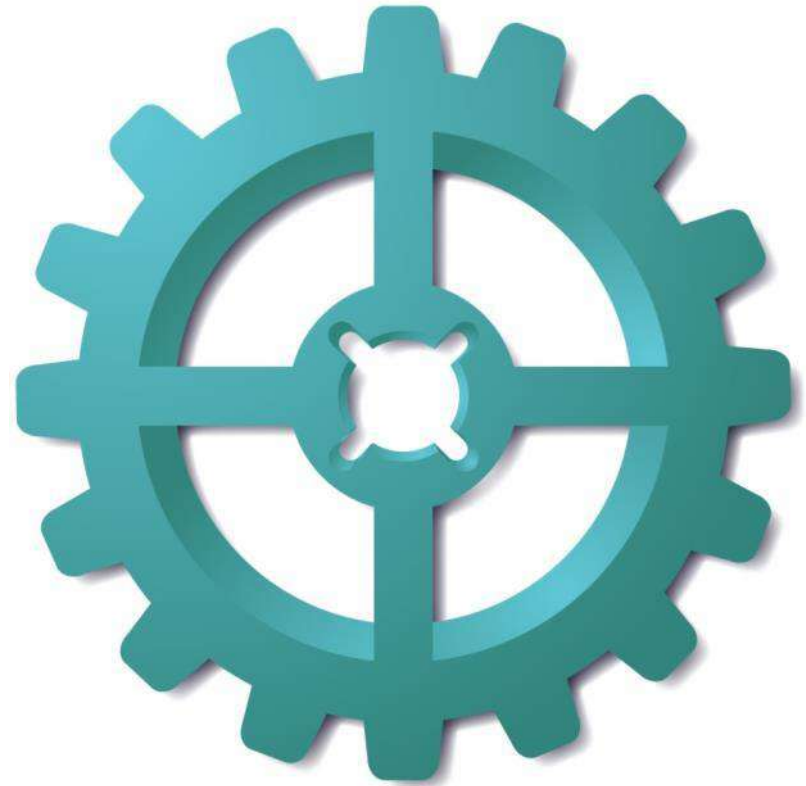
Content

1. Linking policy and science: some general remarks
2. Advantages and disadvantages of different science advisory structures
3. An example of how things can go wrong
4. Suggestions for improving the dialogue between science and policy

Linking policy and science

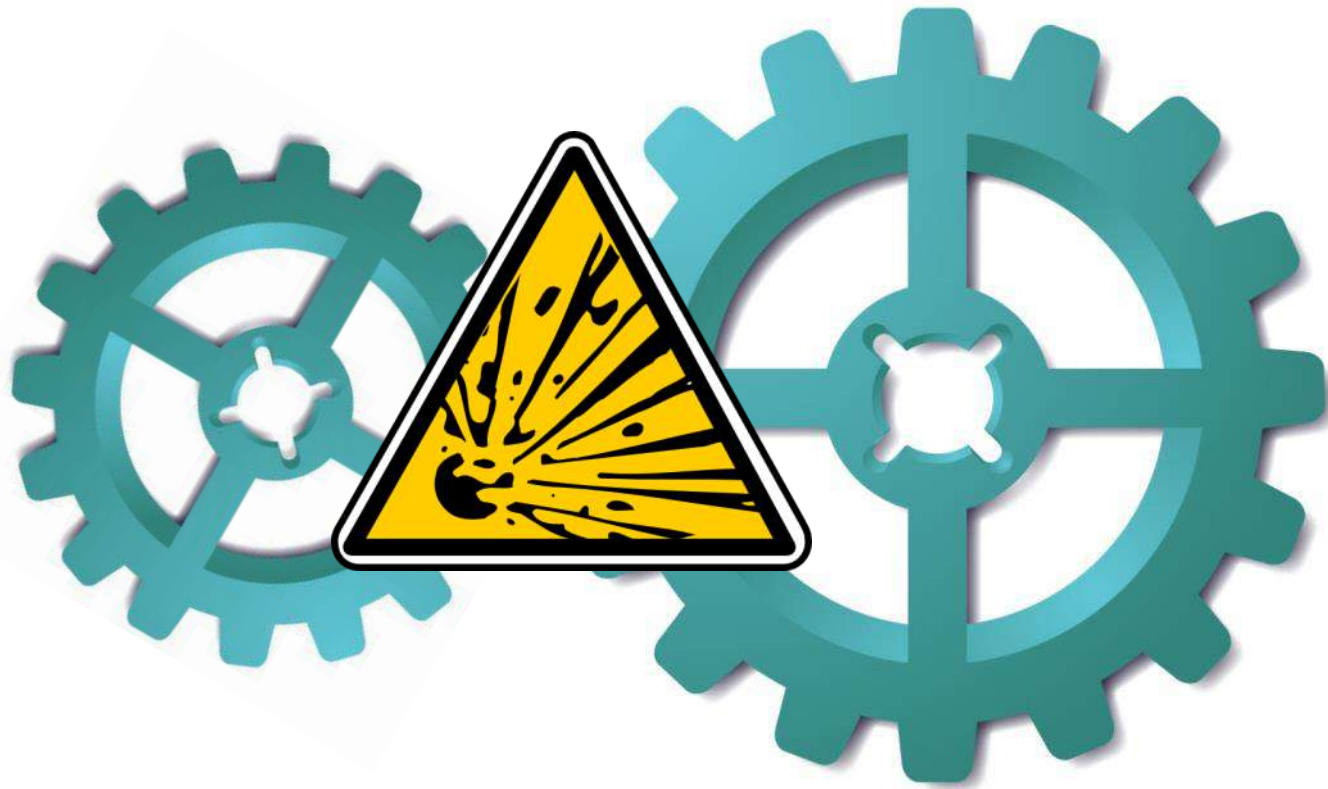


Policy



Science

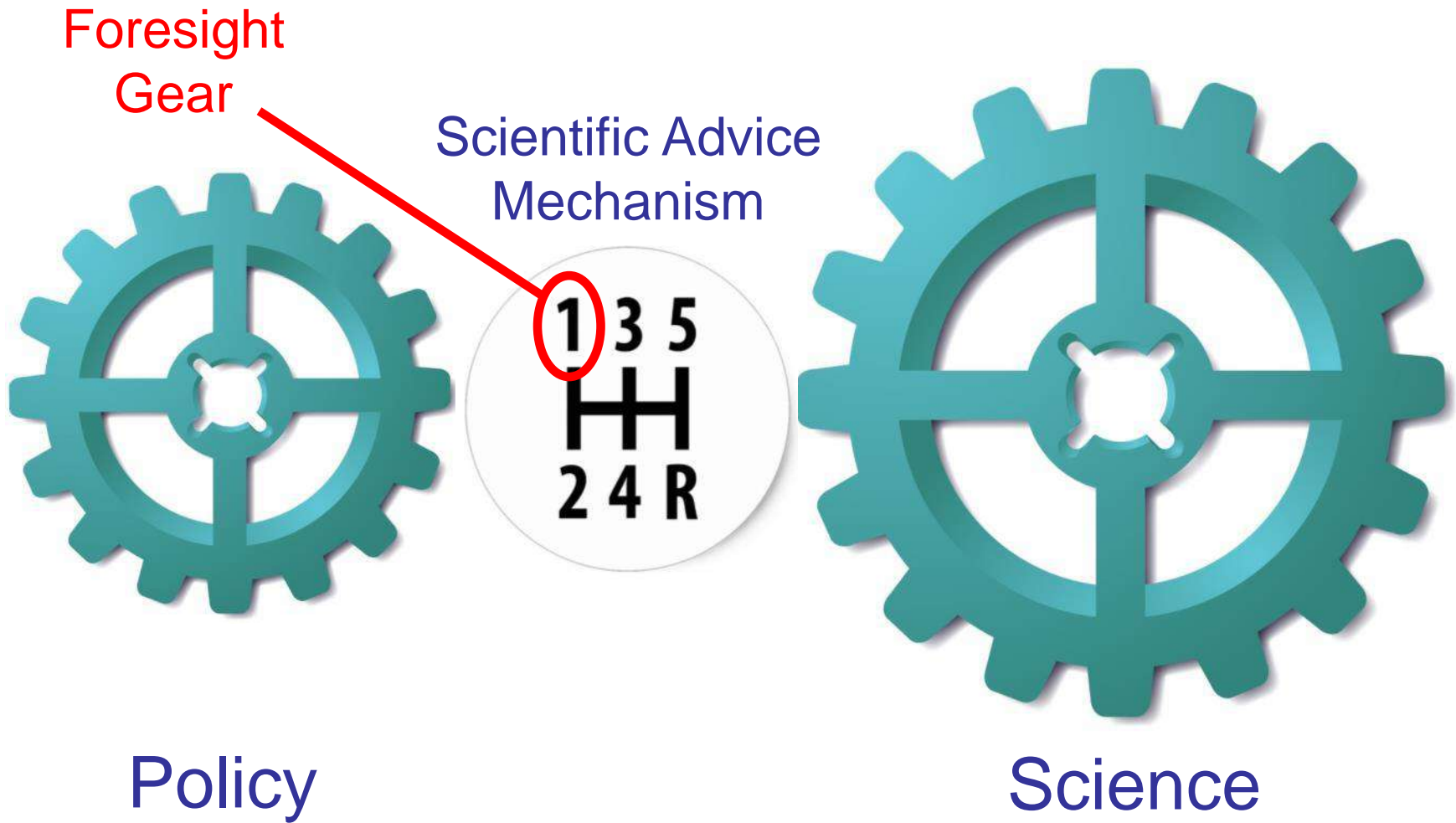
Linking policy and science



Policy

Science

Linking policy and science



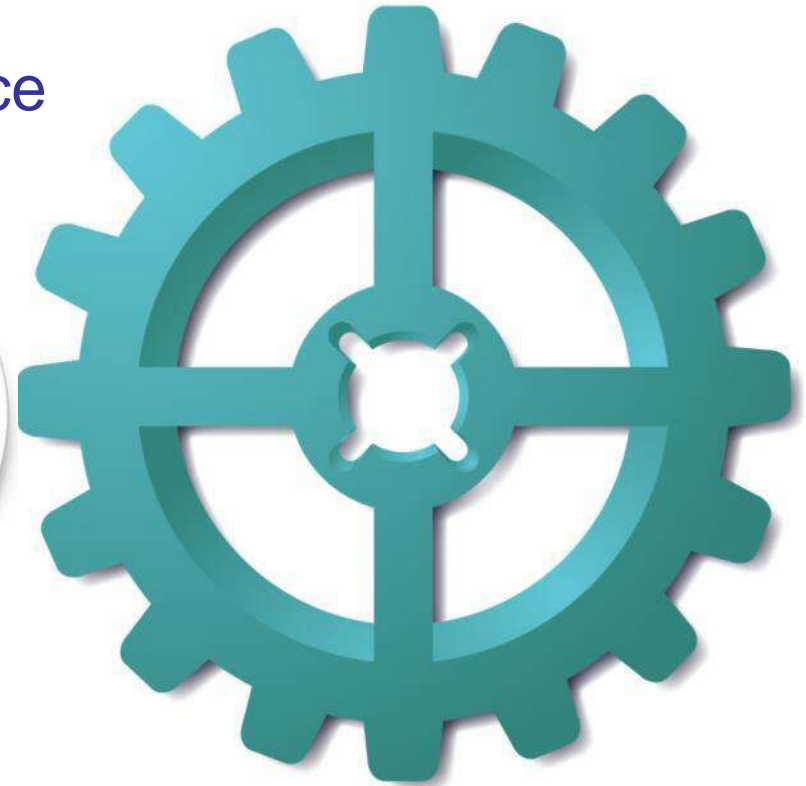
Linking policy and science

Foresight
Gear

Scientific Advice
Mechanism

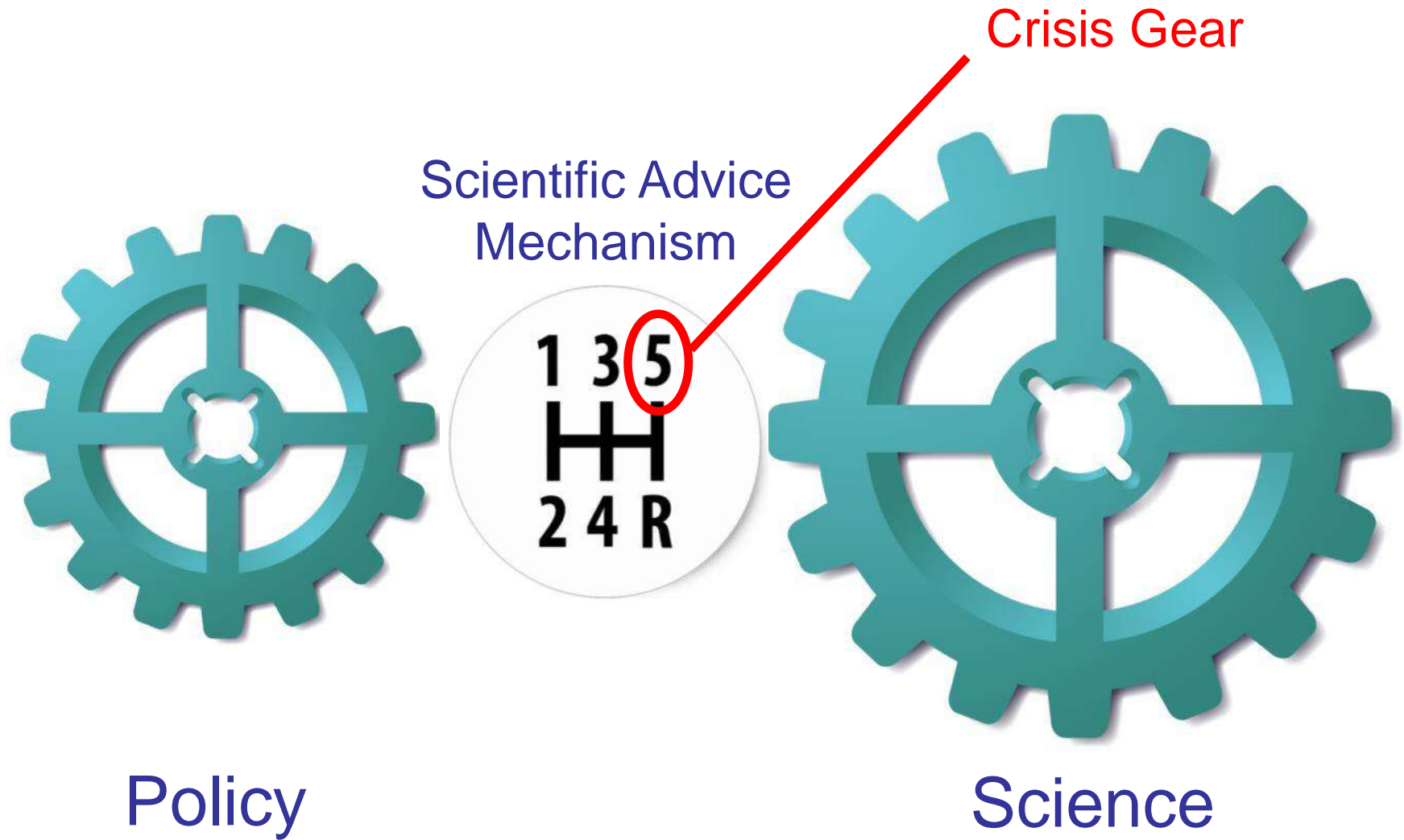


Policy

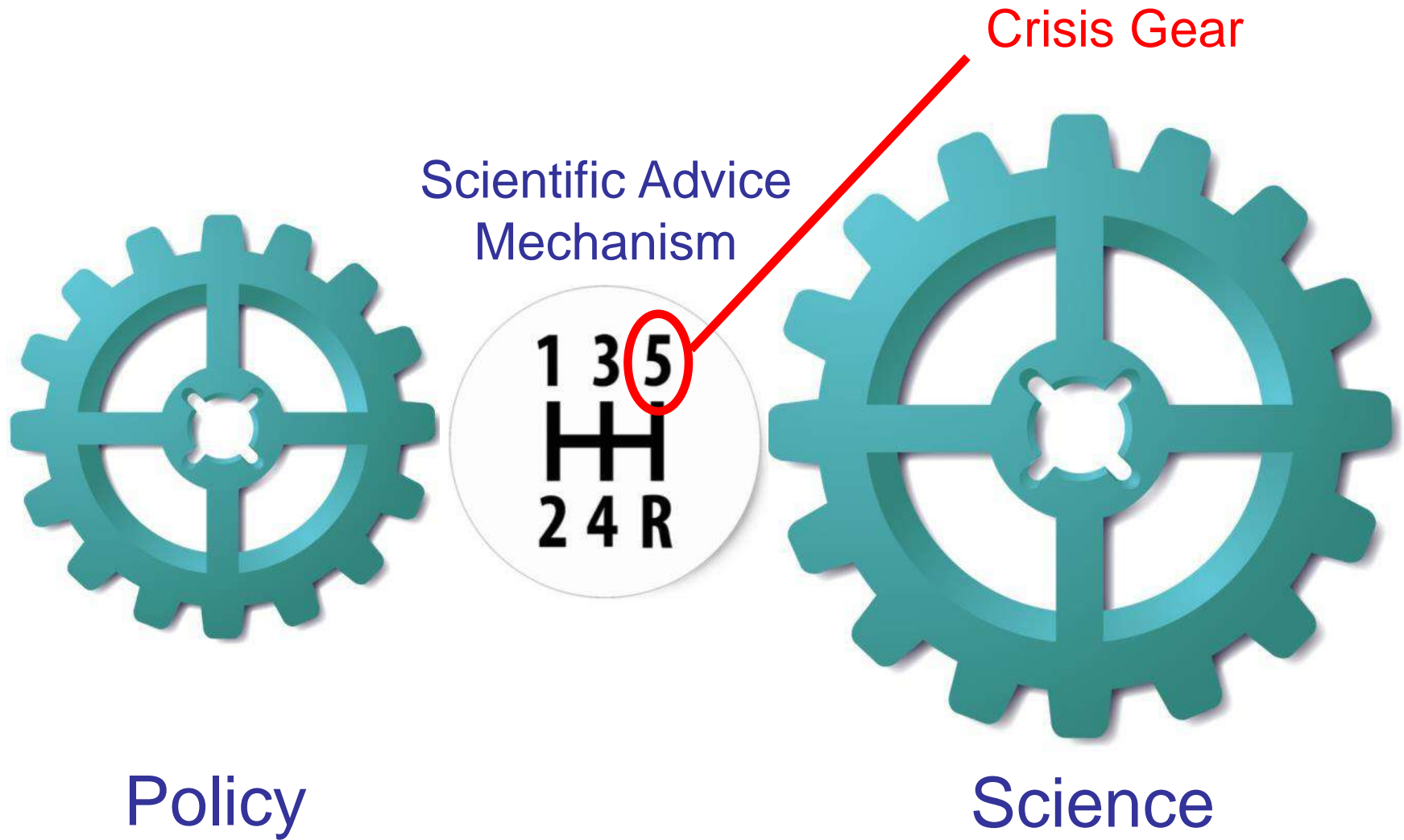


Science

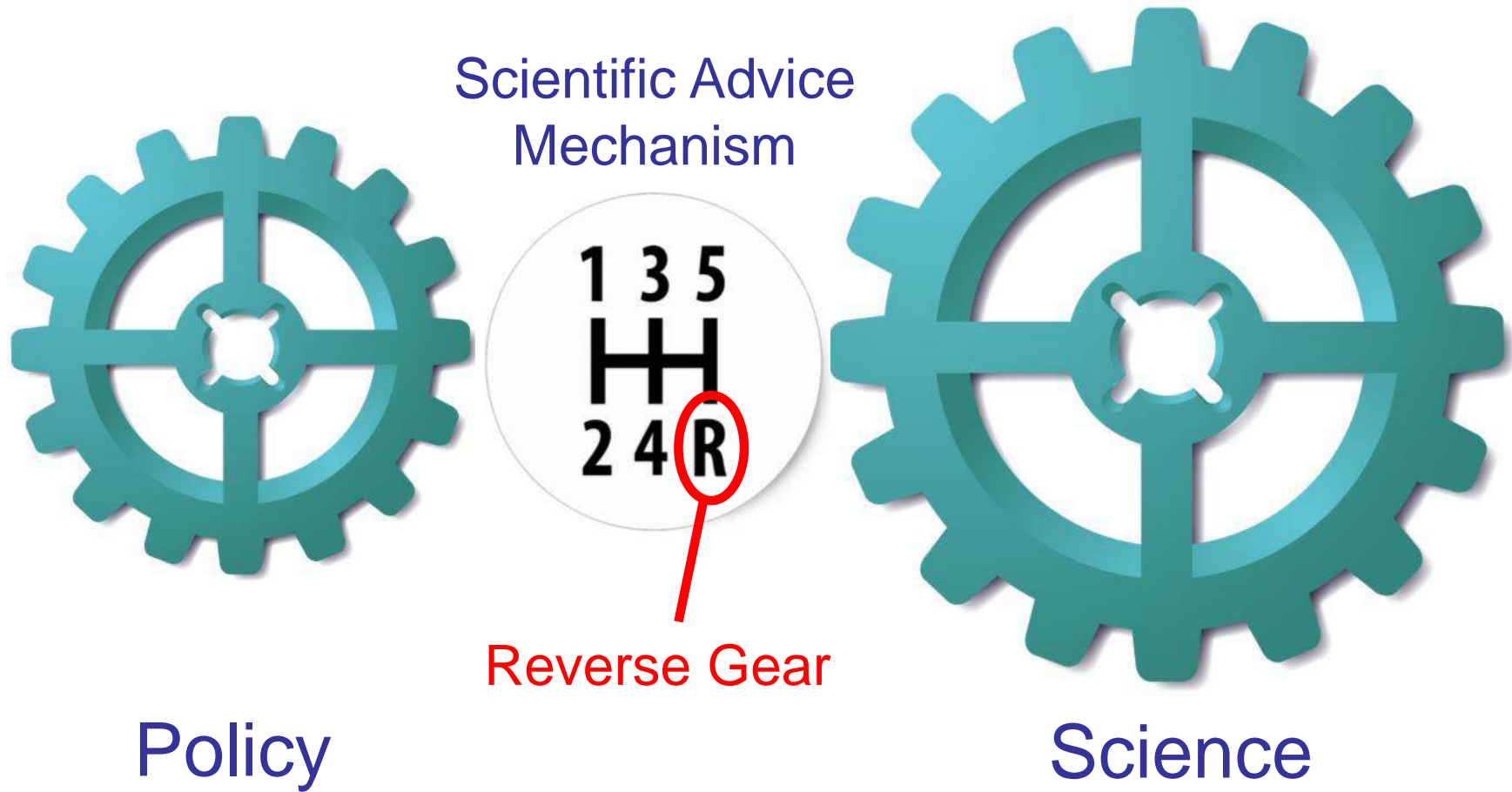
Linking policy and science



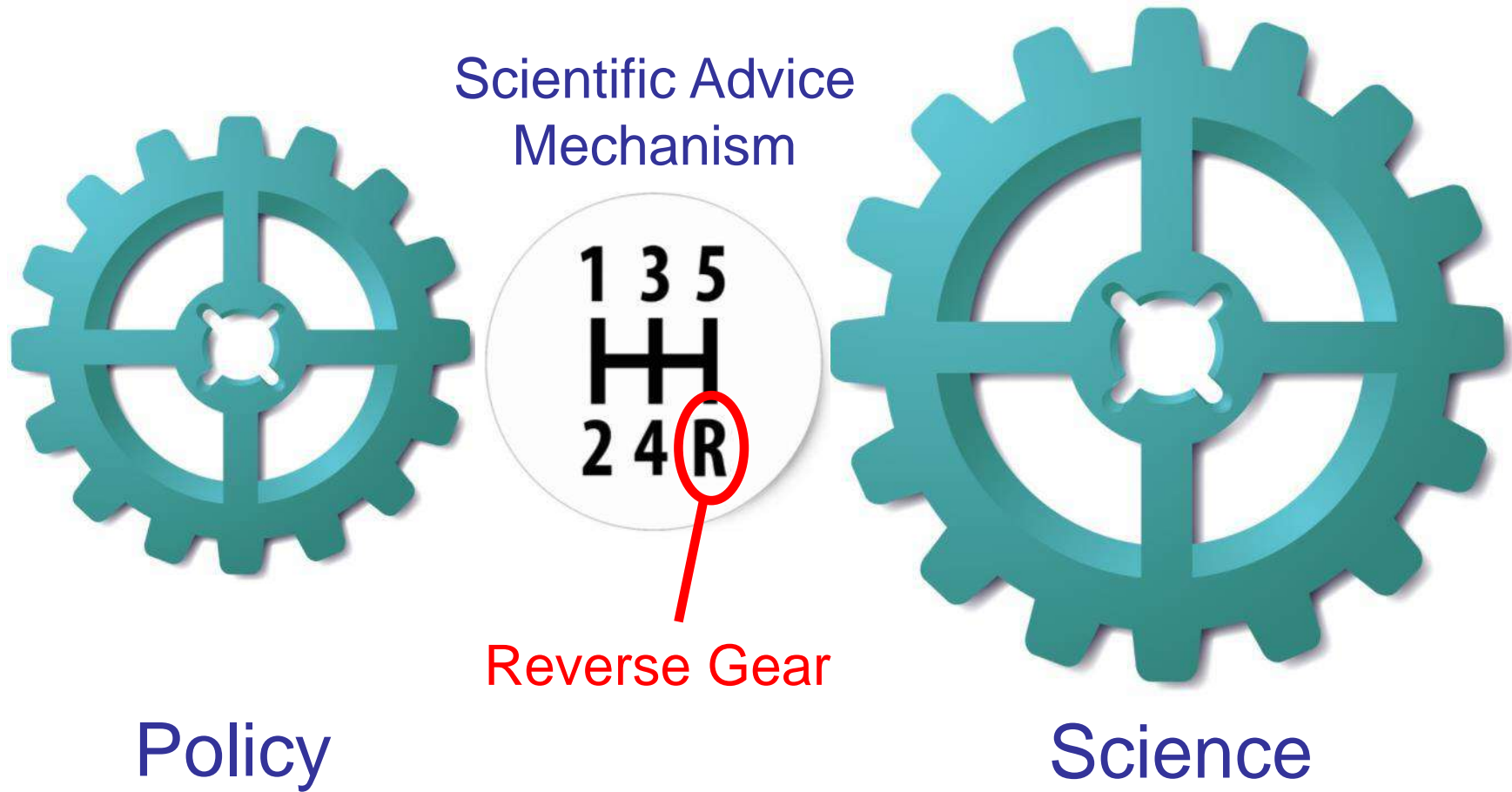
Linking policy and science



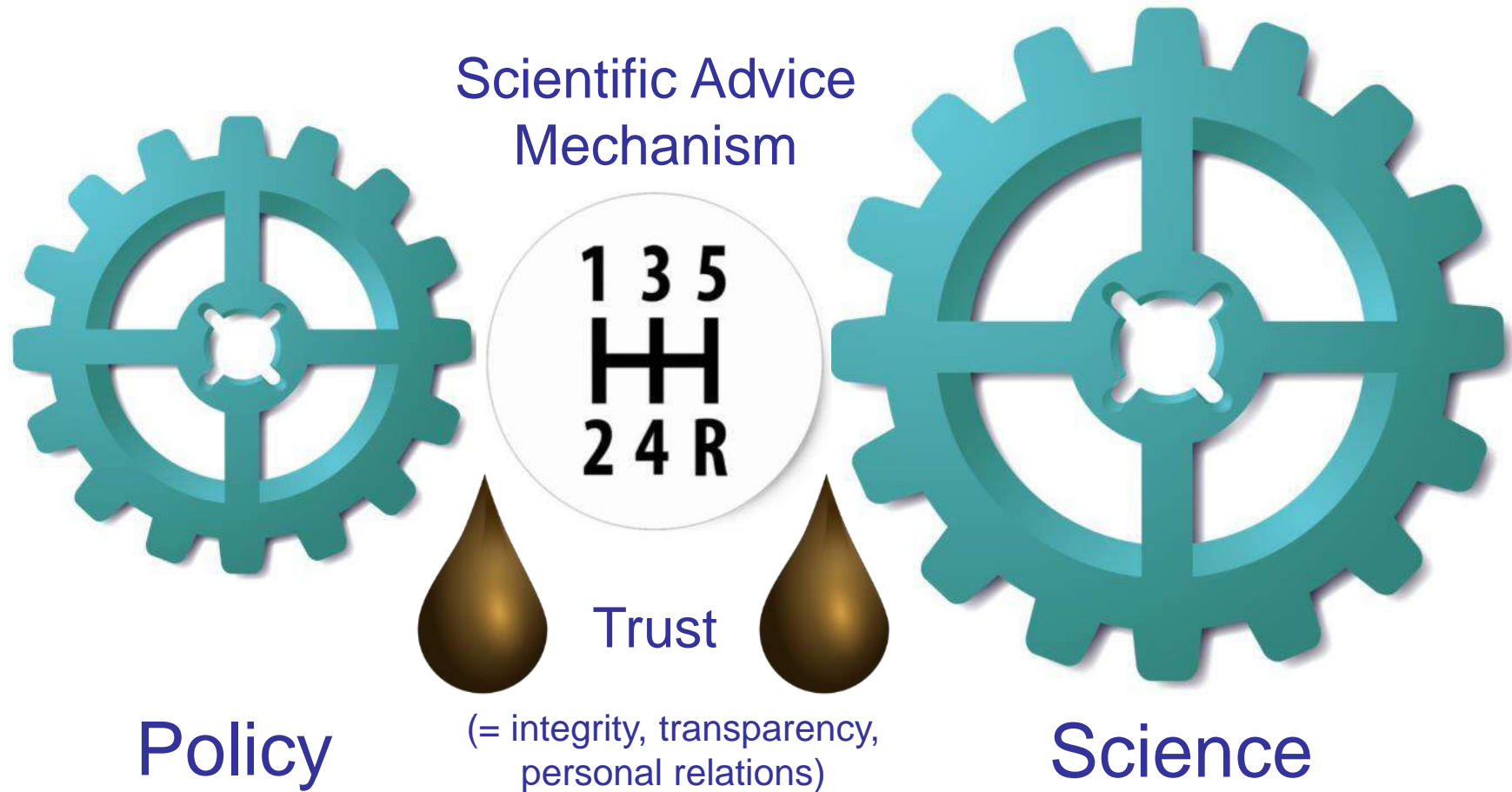
Linking policy and science



Linking policy and science



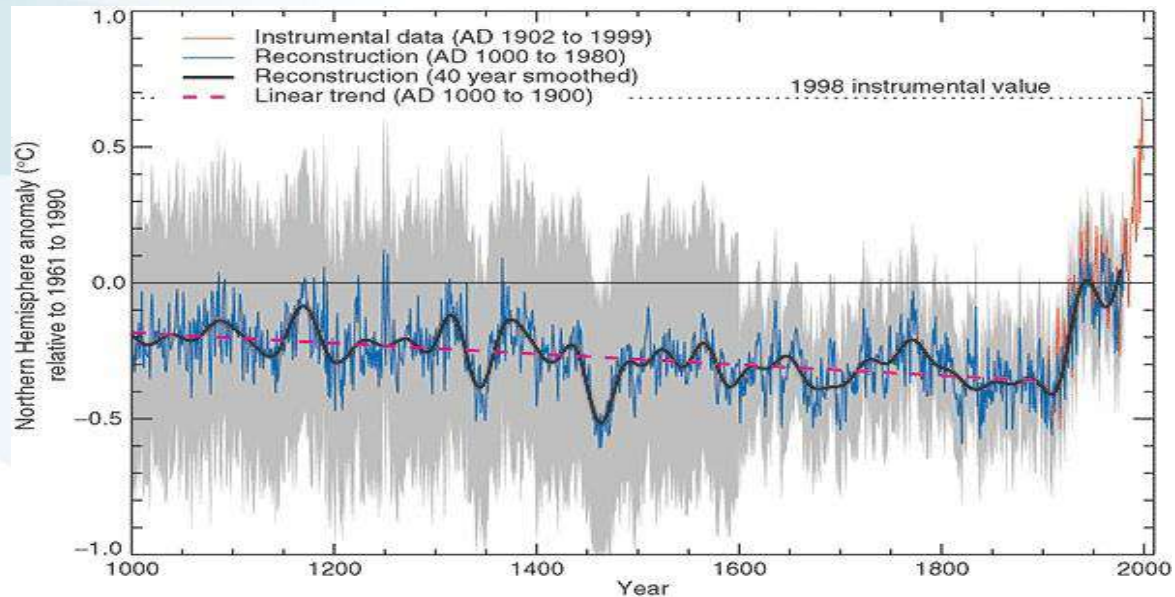
Linking policy and science



THE FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION

HORIZON 2020

Policy for Science vs. Science for Policy





Scientific support to policy vs. science advice to politics





Science advice to government vs. science advice to parliament

WORKSHOP

STOA | SCIENCE AND TECHNOLOGY OPTIONS ASSESSMENT

Tuesday 02.06.2015 – **15:30-18:00**

PAUL-HENRI SPAAK BUILDING – ROOM **7C050**

REGISTRATION by 26.05.2015 on <http://www.stoa.europarl.europa.eu/stoa/>



European Parliament

GRAPHENE IN EUROPE
From Nobel Prize to technology, innovation
and industrial competitiveness

The screenshot shows the European Commission website for 'Banking and Finance'. The header includes the European Commission logo and the text 'BANKING AND FINANCE'. Below the header, there is a breadcrumb trail: 'European Commission > Banking and finance > Consultations > 2015 > Financial regulatory framework review'. A navigation menu on the left lists 'Policies' such as 'Capital markets union', 'Banking union', 'Progress of financial reforms', 'Prudential requirements for banks', 'Retail financial services', 'MiFID', and 'Company Reporting'. The main content area features a call for evidence titled 'Call for evidence: EU regulatory framework for financial services' with a date range of '30.09.2015 to 31.01.2016' and a link to 'Respond to the consultation'. A sidebar on the right contains 'Quick links' and 'Documents' including 'Consultation document (75 KB)', 'Specific privacy statement (158 KB)', 'Protection of personal data', and 'Transparency Register'.

Solicited science advice vs. unsolicited science advice

The cover page features the logo of the Royal Netherlands Academy of Sciences (KNAW) at the top center. Below the logo, the text 'KONINKLIJKE NEDERLANDSE AKADEMIE VAN WETENSCHAPPEN' is displayed in a large, spaced-out font. The title of the paper is 'POSITION PAPER BIOFUEL AND WOOD AS ENERGY SOURCES Effect on Greenhouse Gas Emissions'. The section 'Introduction' is highlighted, followed by the text: 'The combustion of oil, coal and gas produces CO₂ and other greenhouse gases. Plants, on the other hand,'

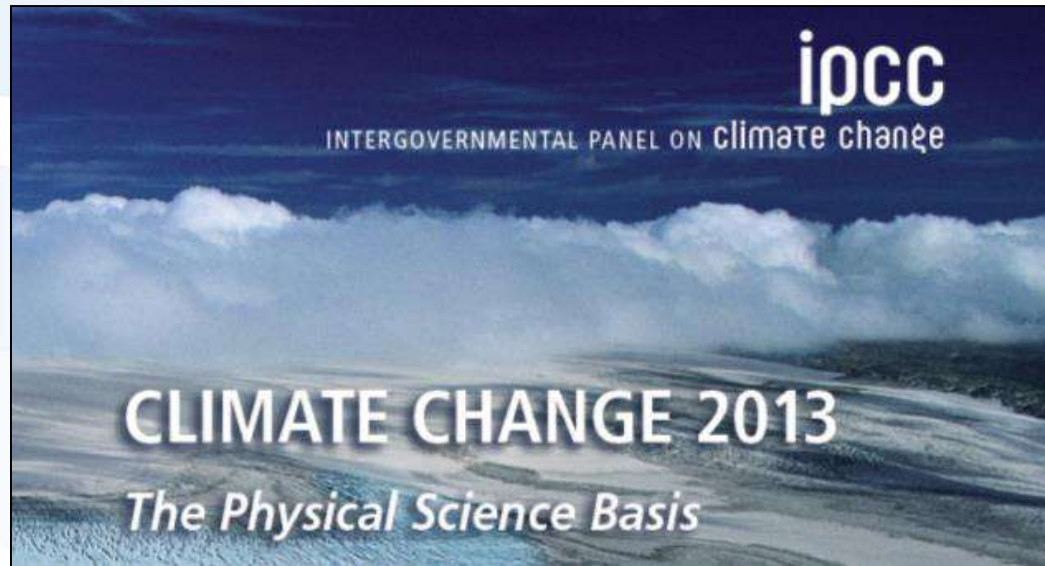
SCIENTIFIC REPORT OF EFSA

**Scientific support for preparing an EU position in the 47th Session of the
Codex Committee on Pesticide Residues (CCPR)¹**

European Food Safety Authority²

Formal science advice vs. informal science advice





Direct science advice vs. indirect science advice

ENCYCLICAL LETTER

LAUDATO SI'

OF THE HOLY FATHER

FRANCIS

ON CARE FOR OUR COMMON HOME

2. Advantages and disadvantages of different science advisory structures

Types of science advisory structures

EXTERNAL

- a) Academies and learned societies
- b) Not-for-profit research institutes, universities, and related scientific associations
- c) Think tanks and scientific consultancies

MANDATED

- d) Scientific advisory committees (permanent or ad-hoc)
- e) State agencies

INTERNAL

- f) In-house science services
- g) Individual science advisors (e.g. chief scientific advisors)

Types of science advisory structures

Important:

- All approaches are equally valid!
- No approach provides the "golden bullet", therefore in any given science advisory system one can find a mix of approaches
- The choice of the advisory body depends on the problem at hand (e.g. technical vs. philosophical, time frame, confidentiality), and is often influenced by personal relationships
- Science advisory systems depend significantly on the institutional and cultural traditions and structures in both science and policy of the country / organization

a) Academies and learned societies

Description:

Institutions made up of individual academics, members are usually selected based on scientific merit

Advantages:

- Access to top scientists and the scientific mainstream
- Highly reputed/respected (also by the public)
- Stringent procedures and quality control

Disadvantages:

- Somewhat disconnected from the policy world
- Reports are often more difficult to read (scientific jargon)
- Assessments usually take some time (> 1 year)

A typical question you would ask an academy or learned society:

Which are the options for developing a sustainable ocean economy?

Typical output:

Authoritative academy report (some 20-80 pages)

Typical timespan: 1 year

b) Not-for-profit research institutes, universities, and related scientific associations

Description:

Public or private research-performing organizations and higher education institutions (or groupings thereof)

Advantages:

- Access to experts for a specific problem
- Close involvement of the policy-maker

Disadvantages:

- Call for proposals needed (by ministry or research agency)
- The results may not reflect the opinion of the wider scientific community (issue of advocacy)
- Reports end with the words: more research is needed

A typical question you would ask a not-for-profit research institute, university, or related scientific association:

Which is the environmental impact of mining the sea floor?

Typical output:

Detailed project report (some 50-200 pages)

Typical timespan: 6 months – 4 years

c) Think tanks and scientific consultancies

Description:

Usually private-funded, semi-scientific policy advisory bodies.

Advantages:

- Deep understanding of policy processes and customer demands, deliver quick and on time
- Present in the capital

Disadvantages:

- Often do not stand up to scientific scrutiny
- Biases and hidden agendas (e.g. party-funded think tanks)
- Tend to confirm what you would like to hear

A typical question you would ask a think tank or scientific consultancy:

How will the public and the media react to our National Ocean Economy Strategy?

Typical output: Think tank analysis (some 5-20 pages) or consultancy report (20-80 pages)

Typical timespan: 1-4 weeks (think tank), 1-6 months (consultancy)

d) Scientific advisory committees (permanent or ad-hoc)

Description:

Committees of independent scientists mandated to advise government on specific issues, either on a permanent or temporary basis.

Advantages:

- A relatively quick and cheap way to get an opinion from a range of experts
- Can serve as sounding board for ideas

Disadvantages:

- They meet only once in a while
- Limited resources

A typical question you would ask a scientific advisory committee:

Which are the elements to be considered in a National Ocean Economy Strategy?

Typical output: Committee report (some 10-50 pages)

Typical timeline: 3-9 months

e) State agencies

Description:

Legally mandated bodies set up to implement policies (e.g. Collection of data, monitoring, risk assessments, certification, accreditation)

Advantages:

- They need to act upon request of government
- Highly-skilled staff with expert knowledge
- Holders of “official” data and statistics
- Largely trusted by the public (more than government)

Disadvantages:

- Very technical
- Need to follow (lengthy) procedures

A typical question you would ask a state agency:

Is it safe?

Typical output:

Detailed assessment report (some 50-200 pages),
websites and databases

Typical timeline: permanent (monitoring), 1-2 years (reports)

f) In-house science services

Description:

A research-performing body within government (e.g. a research branch within a ministry)

Advantages:

- Ability to share confidential files
- They understand well your needs
- They cover the whole policy cycle
- Will always deliver on time

Disadvantages:

- May not ask whether your question is the right one
- May down-tone inconvenient messages

A typical question you would ask an in-house science service:

We intend to launch this policy, but it's not public yet, can you assess which impacts it is likely going to have?

Typical output: Policy report (some 20-100 pages)

Typical timeline: Whatever the need is

g) Individual science advisors (e.g. chief scientific advisors)

Description:

An individual science advisor employed by government to advise the Prime Minister or a Minister directly

Advantages:

- Single number to call
- Available 24/7, can react quickly (e.g. in a crisis)
- Sits in the same building or a few blocks away
- Can give you informal, confidential advice

Disadvantages:

- Is not an expert on all matters (but knows whom to ask)
- Limited resources

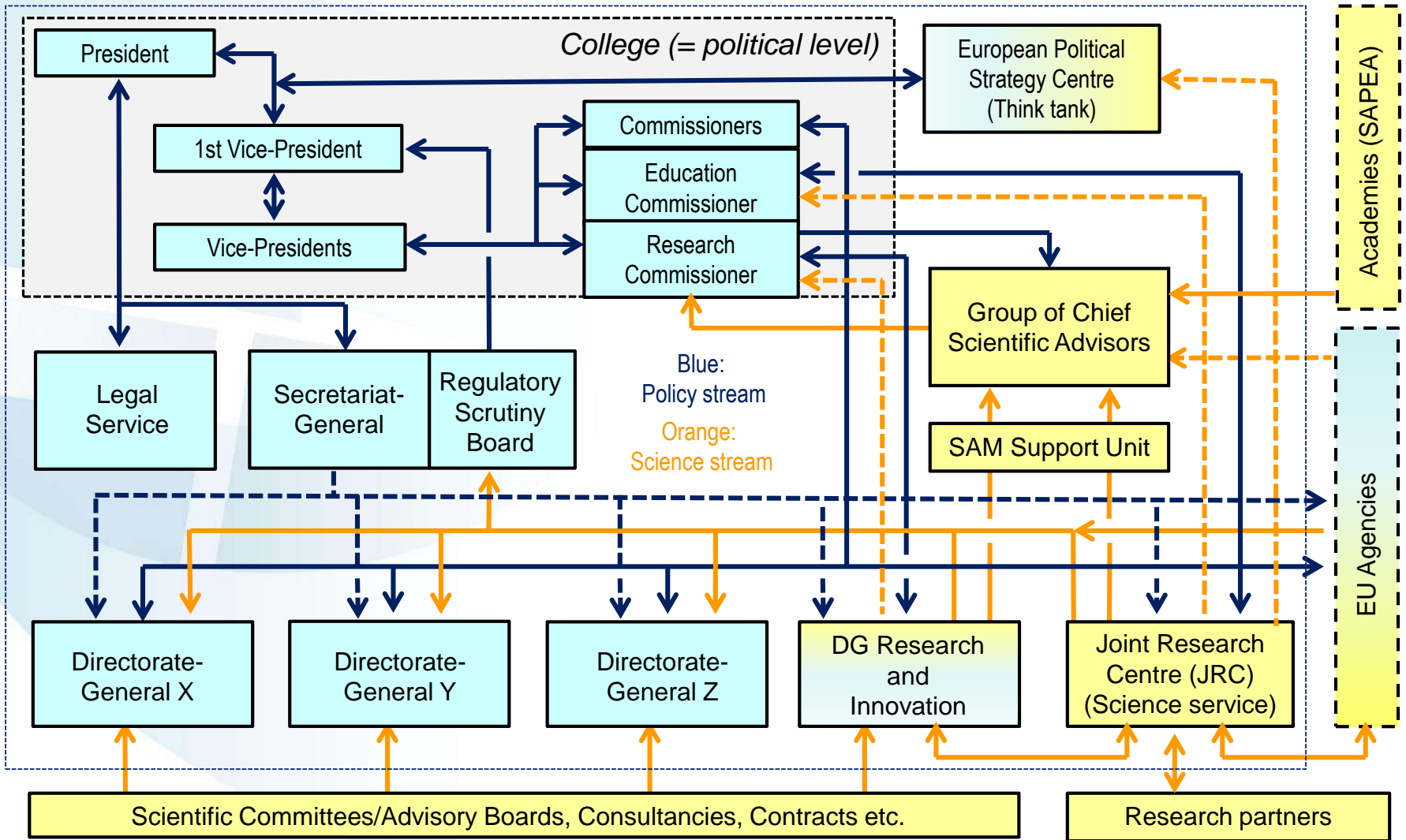
A typical question you would ask an individual science advisor:

I just got this draft for a National Ocean Economy Strategy from Ministry X, could you have a look and give me an opinion whether this makes sense from a scientific point of view?

Typical output: Briefing (some 2-10 pages), oral advice

Typical timespan: NOW – 1 week

That's how the science advisory ecosystem in the European Commission looks like



3. An example of how things can go wrong

The EU Ecodesign Directive



In December 2008 EU Member States adopted the 20-20-20 targets to be reached by 2020:

- 20% reduction in CO₂ emissions
- 20% of the energy consumption coming from renewables
- 20% increase in energy efficiency compared to 1990 levels

**DIRECTIVE 2009/125/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 21 October 2009**

establishing a framework for the setting of ecodesign requirements for energy-related products

Article 16 (2)

The Commission shall, as appropriate, **introduce by anticipation:**

(a)
implementing measures **starting with those products which have been identified as offering a high potential for cost-effective reduction of greenhouse gas emissions,** such as heating and water heating equipment, electric motor systems, lighting in both the domestic and tertiary sectors, domestic appliances, office equipment in both the domestic and tertiary sectors, consumer electronics and HVAC (heating ventilating air conditioning) systems.



Work on Preparatory Studies for Eco-Design Requirements of EuPs (II) Lot 17 Vacuum Cleaners TREN/D3/390-2006 Final Report

Report to European Commission

Restricted Commercial
ED 04902
Issue 1
February 2009

 **ETL SEMKO**

Consumer**ResearchAssociates**™

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COMMISSION REGULATION (EU) No 666/2013

of 8 July 2013

implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for vacuum cleaners

After light bulbs and TVs... now EU officials BAN our vacuum cleaners

THEY have forced us to change our light bulbs and banned our power-hungry plasma TVs.

Opinion: This vacuum cleaner ban is a reason to leave EU

By [Derby Telegraph](#) | Posted: August 29, 2014

Meddling eurocrats to ban supercharged hoovers as Brussels lays down new rules



Nick Webb
EMAIL

PUB
24/0

Brits say 'EU sucks' over vacuum cleaner ban

By [Jim Boulden, CNN](#)
Updated 12:51 PM ET, Mon September 1, 2014

NOW KETTLES FACE EU BAN

Brussels meddlers in another assault on our way of life

By [Nathan Rao](#)

THE British way of life is under fresh threat from the EU as it targets the nation's kettles, toasters and even lawnmowers. Campaigners last night vented their fury as Brussels bureaucrats unveiled their latest plan to erode the "lifestyles and choices of ordinary people". One labelled the EU meddlers as Lunatics who have only revealed their economic illiteracy as most high quality devices are



After vacuum cleaner ban, the EU targets hairdryers, kettles and even smartphones

The great vacuum cleaner stampede: Panic buying hits shops as deadline looms for Brussels ban on high-powered machines

- Shoppers are panic-buying powerful vacuum cleaners to beat European Union ban that comes into force next week
- Last night, retailers reported that sales had soared by nearly 50 per cent, with many running out of powerful models
- Brussels diktat will prohibit companies from manufacturing or importing vacuum cleaners that are above 1,600 watts
- EU is now considering measures to ban most powerful hairdryers, lawn mowers and electric kettles, it was revealed



Environment

Shoppers rush to buy extra-strength vacuum cleaners before EU ban comes into force

'Which?' accused of encouraging the stampede by panicking its readers

Money Home | Markets | Saving & banking | Investing | Bills | Cars | Holidays | Cards & loans | Pensions | More

Buy a powerful vacuum cleaner before they are BANNED: New EU rules 'will outlaw best models in 10 days because they're not eco-friendly'

Home > Analysis > Policy

Vacuum cleaner manufacturers urge Cameron to back EU ban

EXCLUSIVE: Chief executive of Miele tells Prime Minister that the Ecodesign Directive provides a welcome boost to innovation

By Jessica Shankleman | 06 Oct 2014 | 0 Comments

All Of Europe Is Panic-Buying High-Powered Vacuum Cleaners Before They Become Illegal



Dina Spector | Sep. 4, 2014, 11:06 AM | 15,460 | 10

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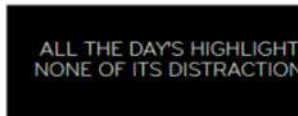
TRENDING | LABOUR PARTY CONFERENCE 2015 | JEREMY CORBYN | VOLKSWAGEN | REFUGEE CRISIS | DAVID CAMERON | Technology | Money | Travel | Fashion | More

News - UK News - European Union

Vacuum cleaner ban: Britons clean out stores ahead of EU power limit on dust-busting machines

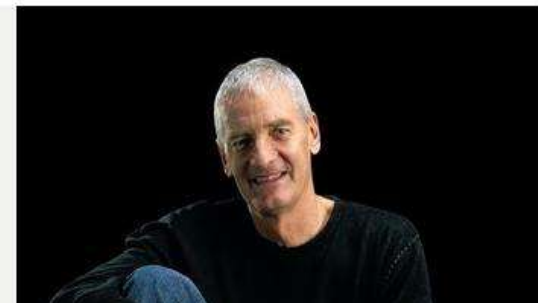
17:42, 28 AUG 2014 | UPDATED 20:02, 28 AUG 2014 | BY RUKI SAYID

Panic buying has swept through Britain after consumer watchdog Which? warned Brits to "act quickly" if they wanted an appliance that is 1,600-2,200 watts



Sir James Dyson backs EU directive on vacuum power rated above 1,600 watts

By Western Daily Press | Posted: September 01, 2014 | By Josie Clarke



Such stories feed the agenda of populists



In other words: One of the reasons for Brexit was the ecological design of vaccuum cleaners

Britain Votes to Leave

U.K. votes to quit European Union after more than four decades

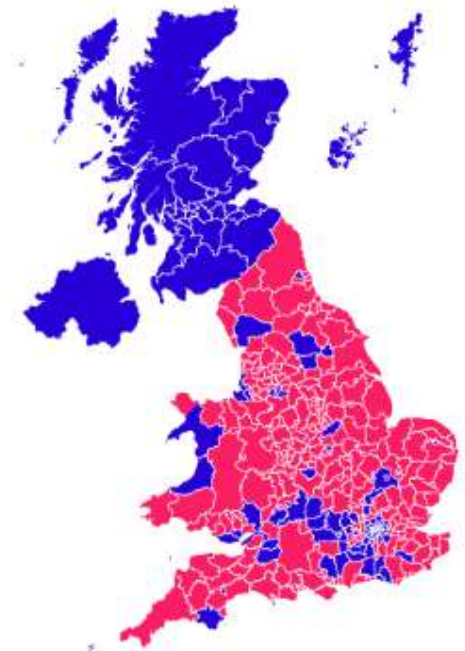
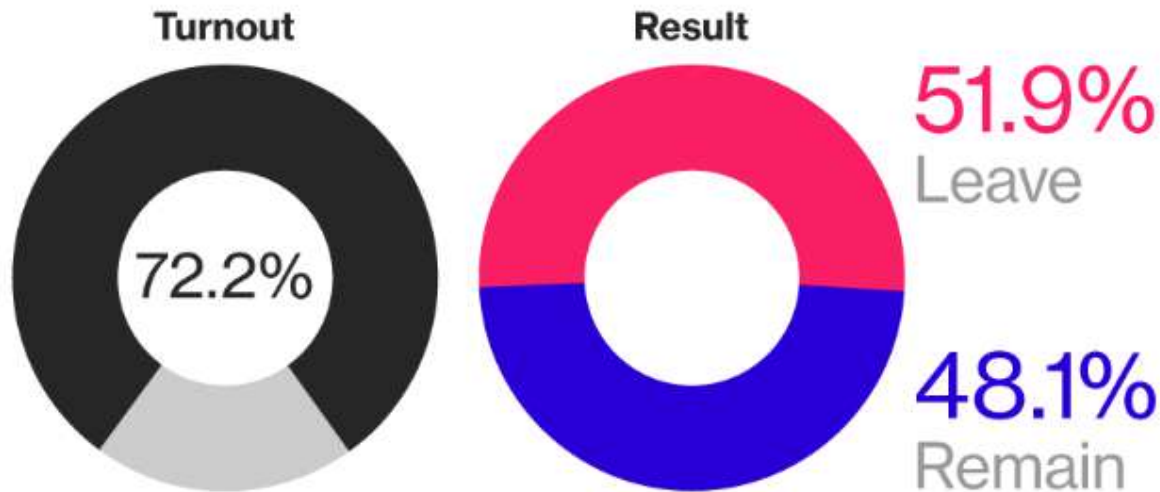


Image: Bloomberg

Lessons learnt from the ecodesign case

- The science-policy interface is messy
- Even the best science advisory system will not save you from political trouble
- Scientists need to understand the dynamics of politics
- Political decisions need to be informed by science, but cannot be “outsourced” to scientists
- Behavioral science and engagement with the public are needed

4. Suggestions for improving the dialogue between science and policy

Some practical tips and tricks to enhance the science-policy interface



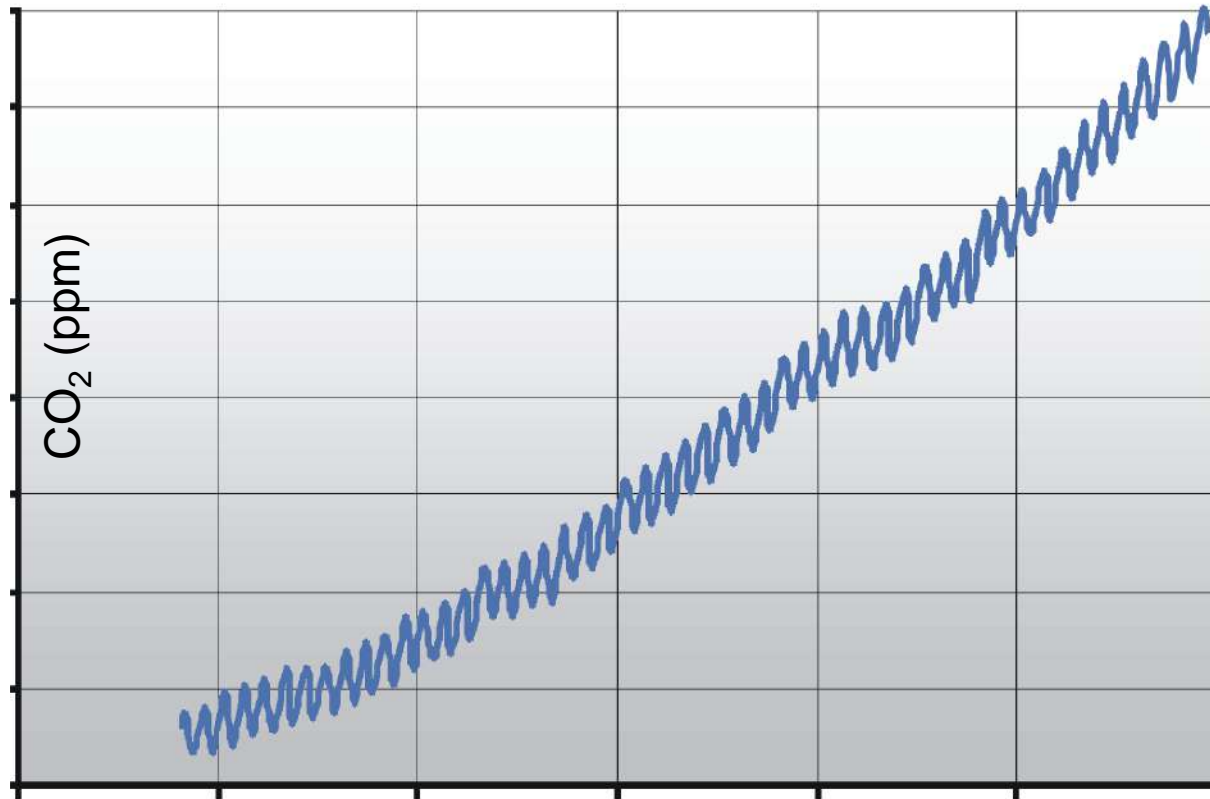
We need to use a language everybody understands!



Photo credits: Background Stadium Thomas Favre-Duboz,
forest taken from H.-D. Viktor Boehm (globalcarbonproject),
Photo montage by Alan Belward, Joint Research Centre

Narratives are very powerful

Mauna Loa Monthly Mean Carbon Dioxide
(NOAA ESRL GMD Carbon Cycle)



Emotions matter in politics



The elevator pitch: You have 5 minutes to get the message across



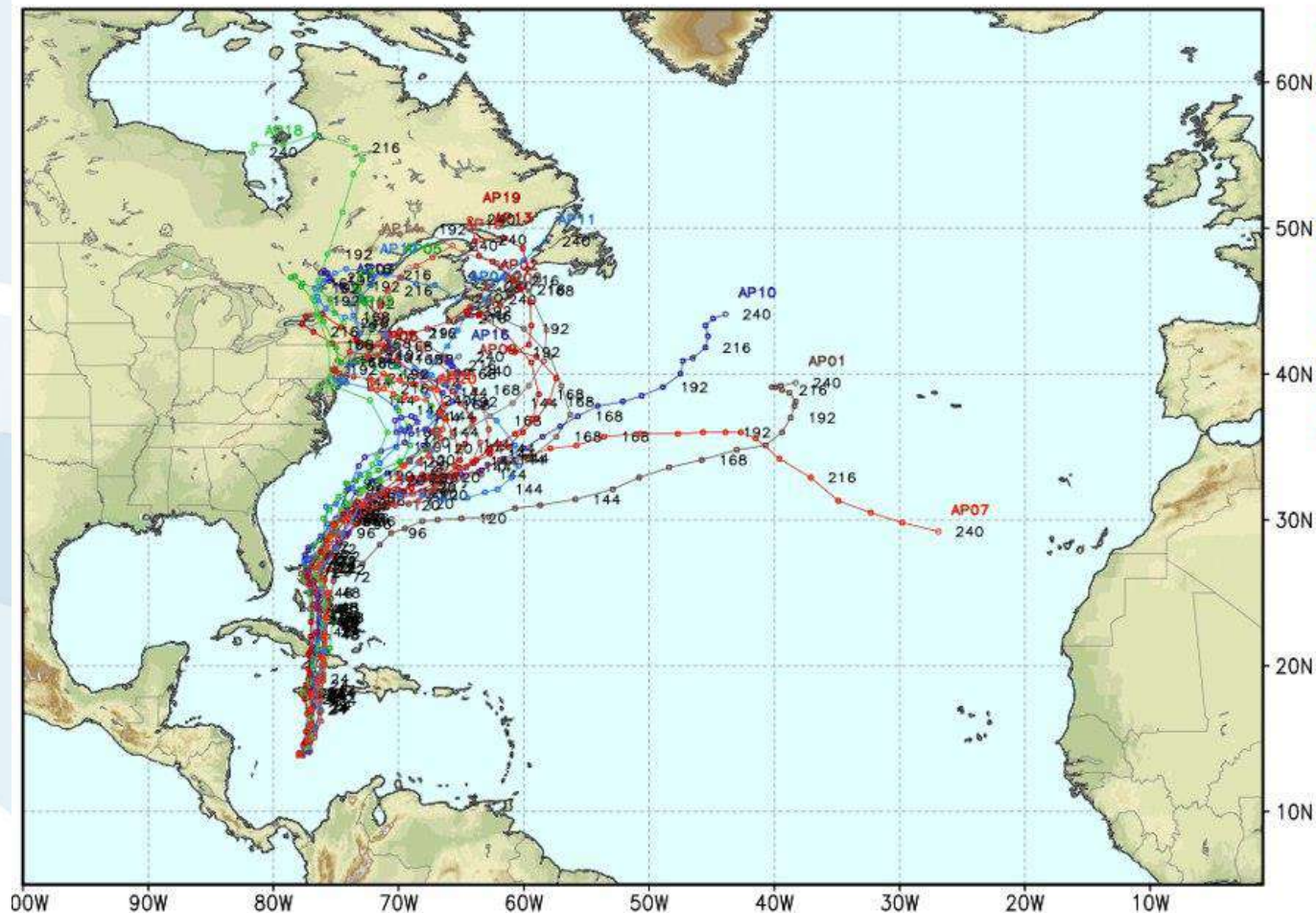
Timing is extremely important



Communicate uncertainty – and what it means

AL18 SANDY NCEP Ensemble Guidance [20-members] valid: 2012102318

Track Models



Model guidance only -- expert interpretation required. Check NHC Official Forecasts
Created by Dr. Ryan Maue, WeatherBELL Analytics.

Refresh Image every 30-minutes for most recent data

Be aware of biases

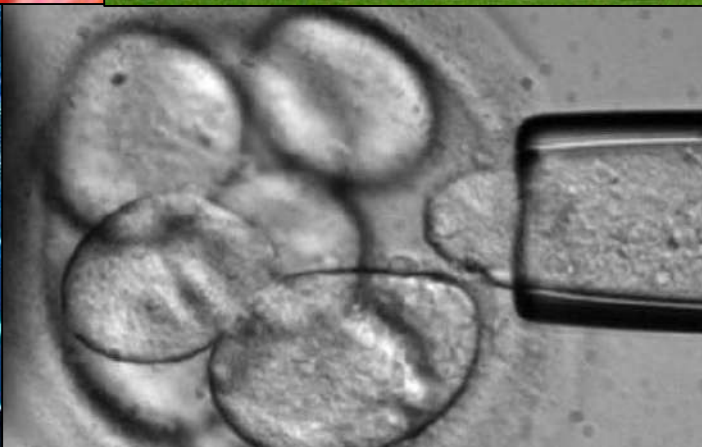
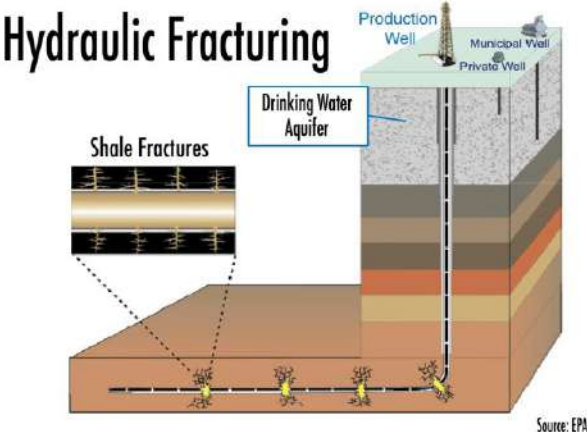
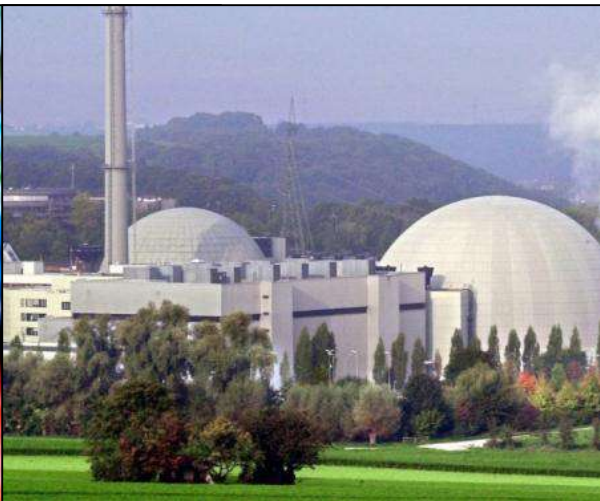
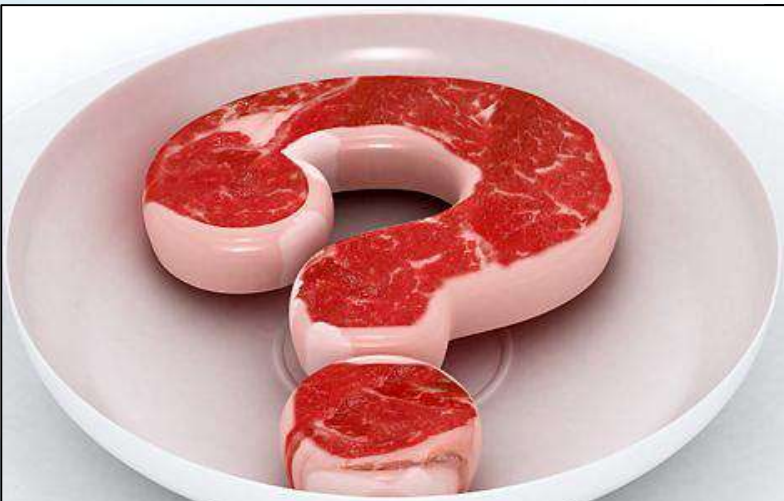


Source: Paul Leonard

Scientists need to be humble – politicians don't like to be told what to do



Show empathy for public concerns and ethical issues



Engage with the public (there is no point in preaching to the converted)



Equip the politician with the arguments to defend the evidence in public



Shukran!



muellerj@iiasa.ac.at / Twitter: [@JanMarcoScience](https://twitter.com/JanMarcoScience)