Embedding Open Science in research evaluation

A UK perspective

Ben Johnson
HEFCE

About HEFCE

- We invest in the teaching, research and knowledge exchange activities of English higher education institutions. £4bn / year

- We regulate and oversee their teaching and research quality and ensure they are financially sustainable

- We operate the UK-wide Research Excellence Framework (REF) www.ref.ac.uk

Open "science"?

- We should "science" in the broadest sense, including arts, humanities and social sciences research.

Motivations? Here are a few…

- Research is getting ever faster and bigger

- Researchers are part of a bigger global club

- Researchers need better ways to work together and communicate
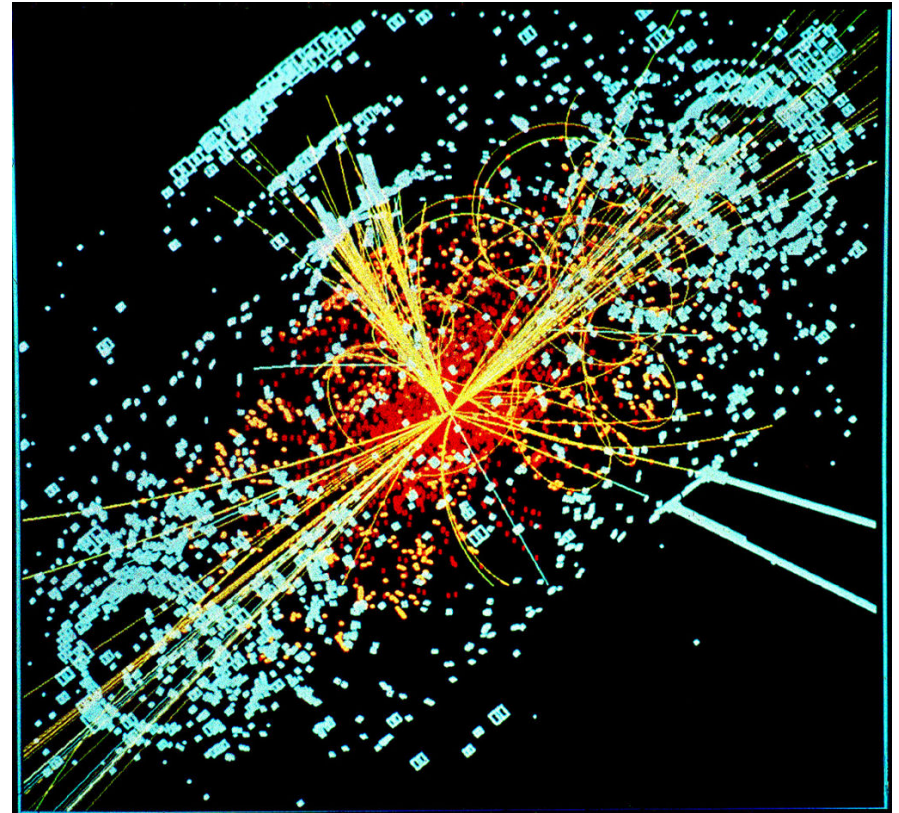
"To take full advantage of modern tools for the production of knowledge, we need to create an open scientific culture where as much information as possible is moved out of people's heads and laboratories, and onto the network."

Michael Nielsen
Reinventing Discovery

Scientific publishing: is it serving the public interest?

- People cannot (easily) access research
- Subscriptions "have become unaffordable"
- The publishing market is dysfunctional
- PDFs are "yesterday's technology"
- Networked science requires open licensing, but publishers can't sell open material
- Researchers want to do new and innovative things, but feel they cannot
- Universities want to do modern open science but their researchers "only want to further their careers"
- **Whose job is it to fix this?**

The actors in Open Science

Government

- Provides strategic direction and policy framework

Research funders

- Provide funding and incentives to universities and researchers

Universities

- Provide incentives to researchers and support/services for open science

Research groups, societies, subject associations

- Provide scientific framework, publish, sometimes challenge open science

Individual researchers

- Conduct research, deliver open science

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Publishing

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Should *they* fix it?

Publishers

For Open Science to be embedded…

...ection and policy framework

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Individual...searchers

- Conduct research, deliver open science

Incentives

(positive and negative)
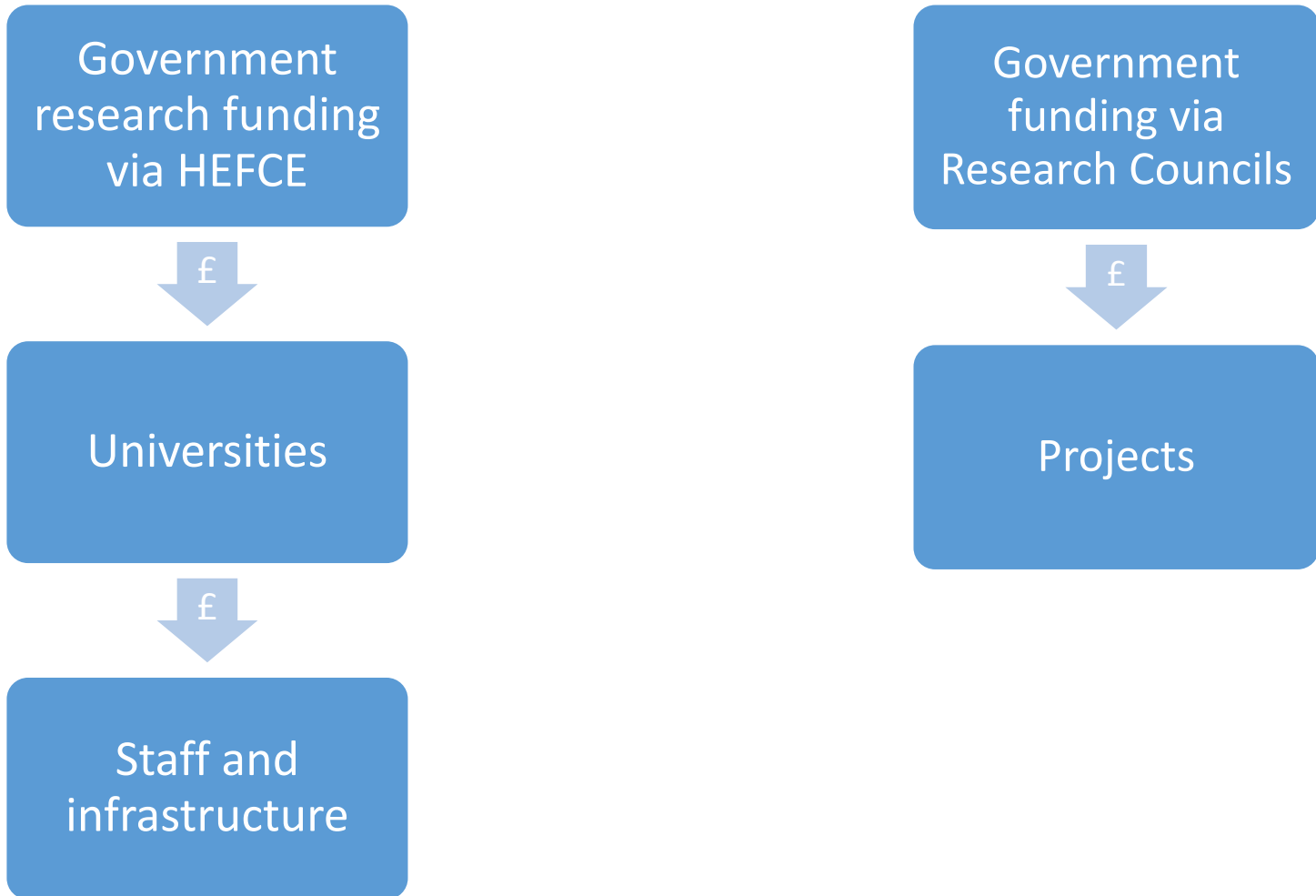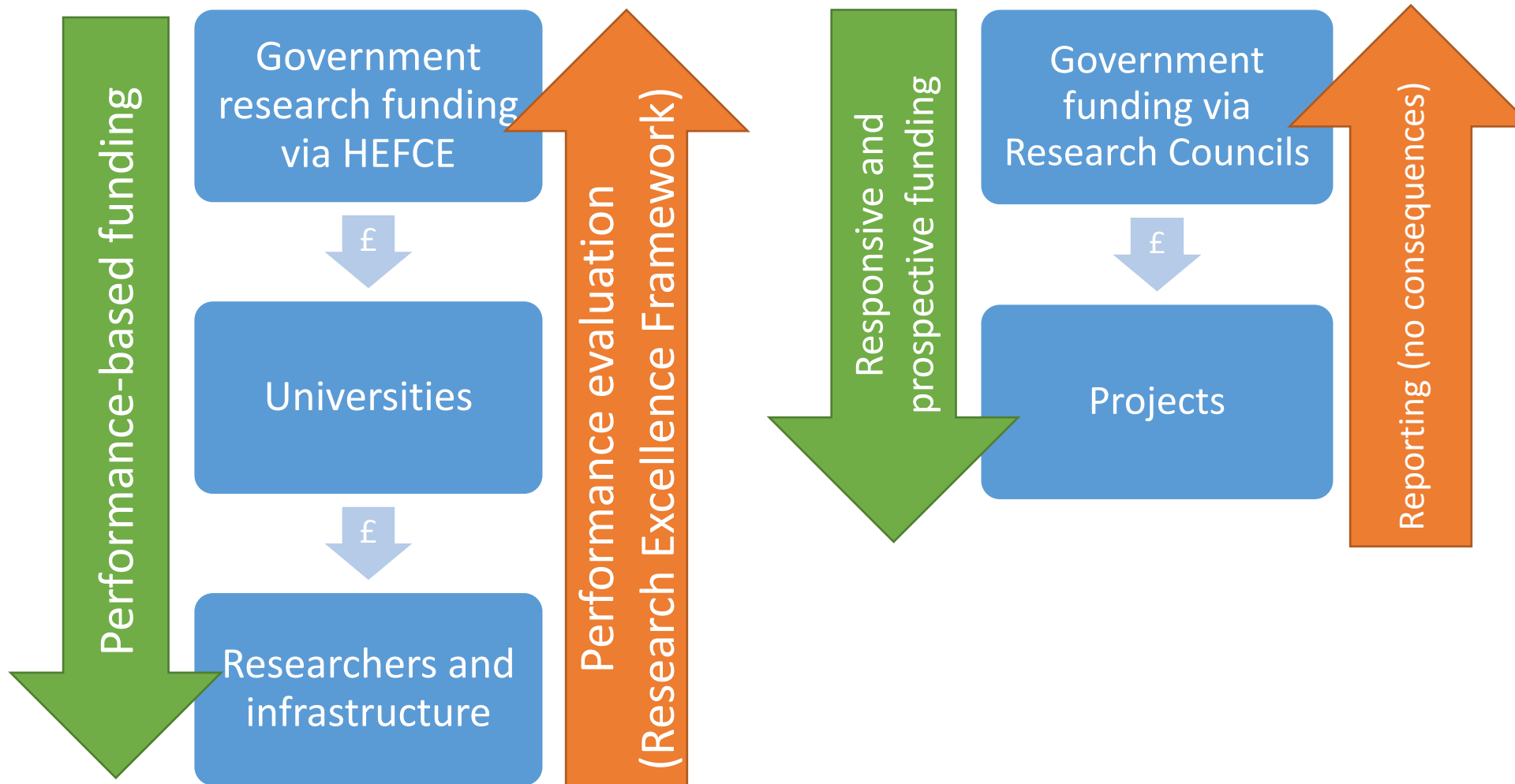
Responses

(behaviours, ideas)
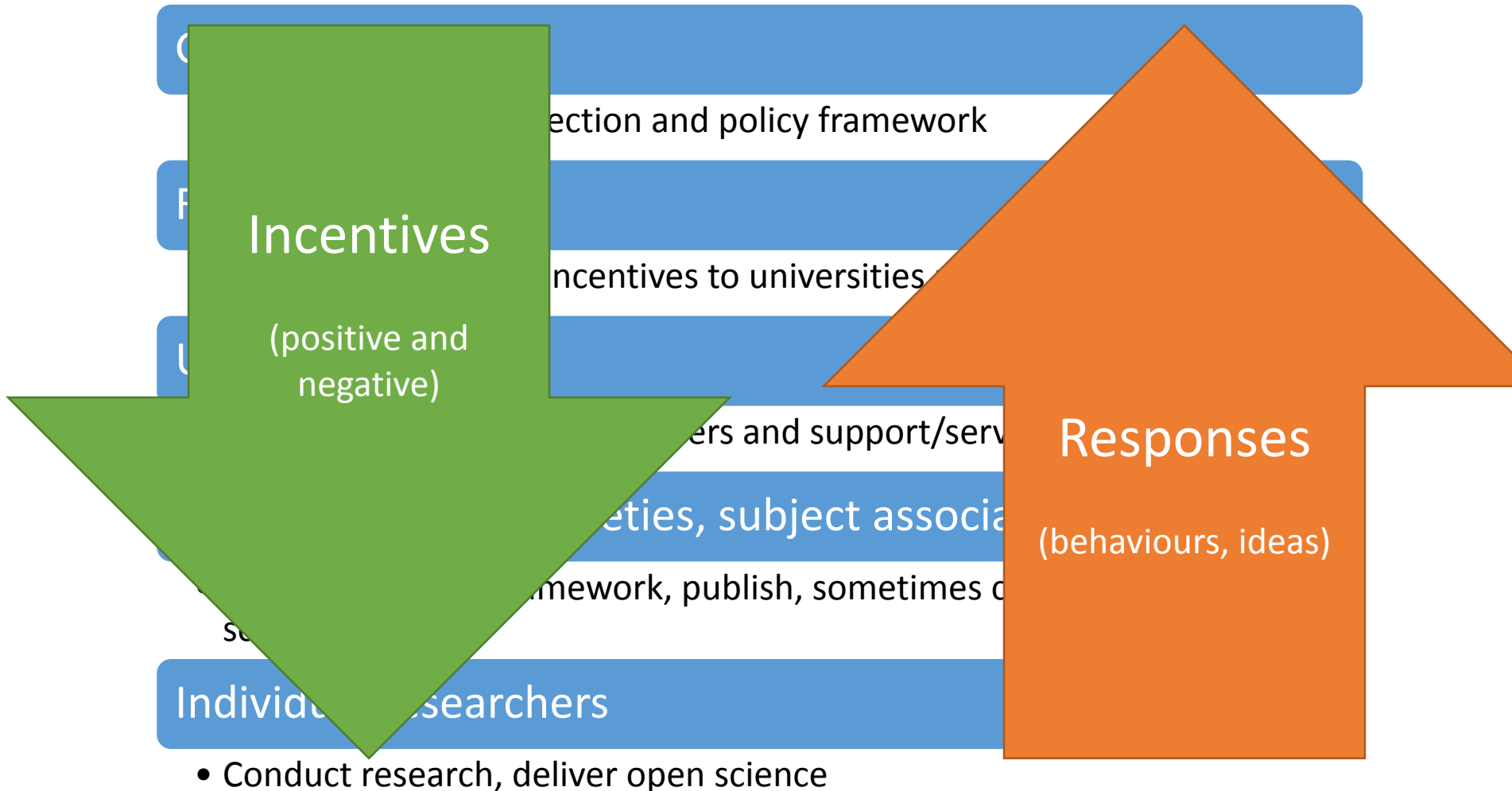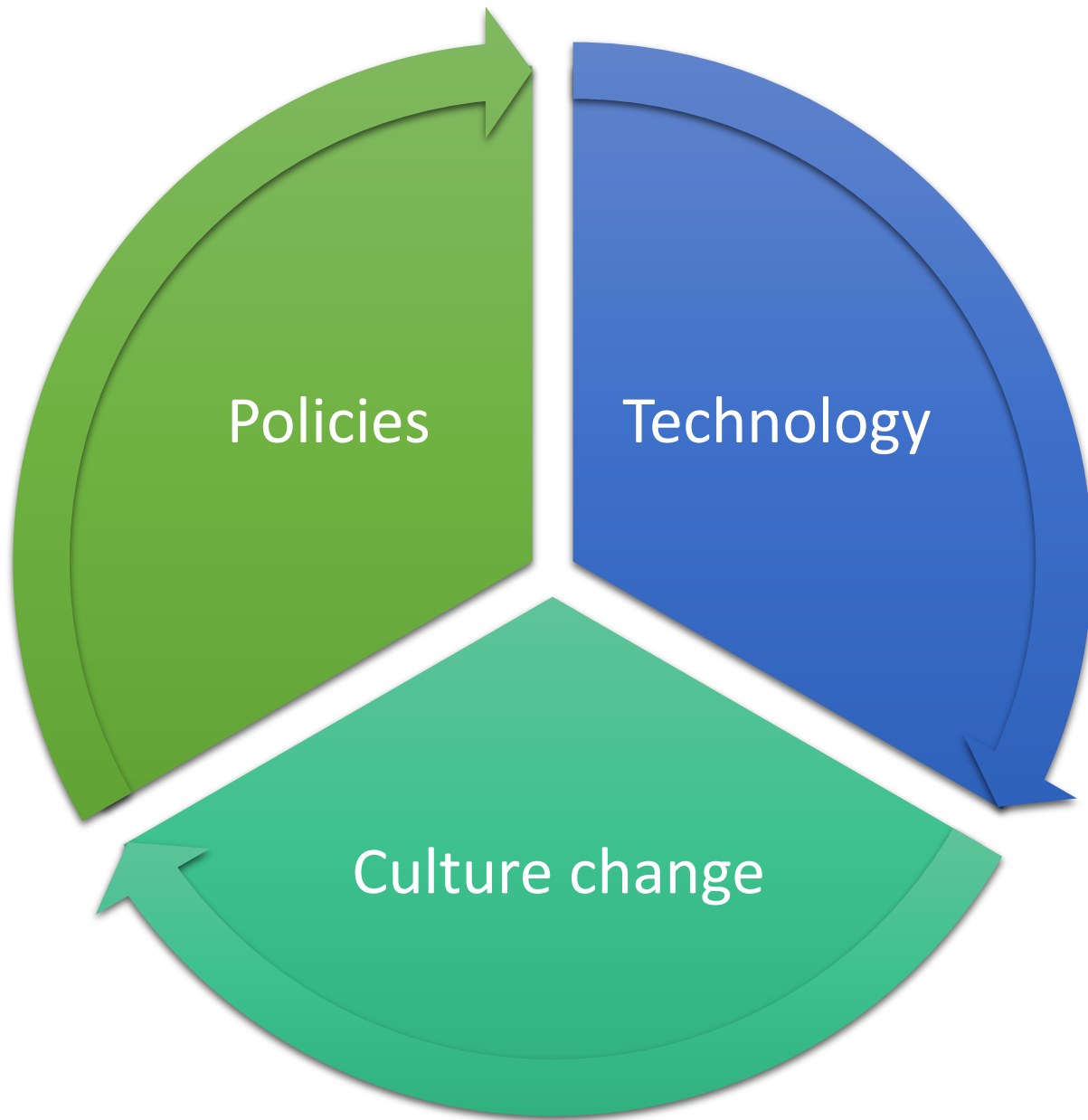
Key questions for policymakers

- What can we do to make sure that there are consequences for not delivering Open Science and rewards for doing so?

- How will we ensure our policies are flexible enough to protect academic freedom and quality, but strict enough to deliver change?

- How will we monitor and enforce our policies?

- How will we support implementation?

Publicly funded research in the UK

Government research funding via HEFCE

£

Universities

£

Staff and infrastructure

Government funding via Research Councils

£

Projects

Publicly funded research in the UK

Research Excellence Framework

- National research evaluation process

- Happens every 5-6 years

- Universities submit their best outputs (among other things)

- These are assessed by 36 expert panels

- The results are used in a HEFCE funding formula, delivering £10bn research funding for universities

Accessibility, sustainability, excellence: how to expand access to research publications

Report of the Working Group on Expanding Access to Published Research Findings

Image of Willetts: BIS

An Open Access REF…

NEXT TIME (REF2021):

- **Universities will not be able to submit outputs unless they meet our open access criteria**

- We took 18 months to discuss and develop the policy

- Main concerns:
  - Cost – particularly for Gold OA
  - Academic freedom
  - Diversity
  - Complexity
  - Licensing
 - Publisher sustainability

The policy
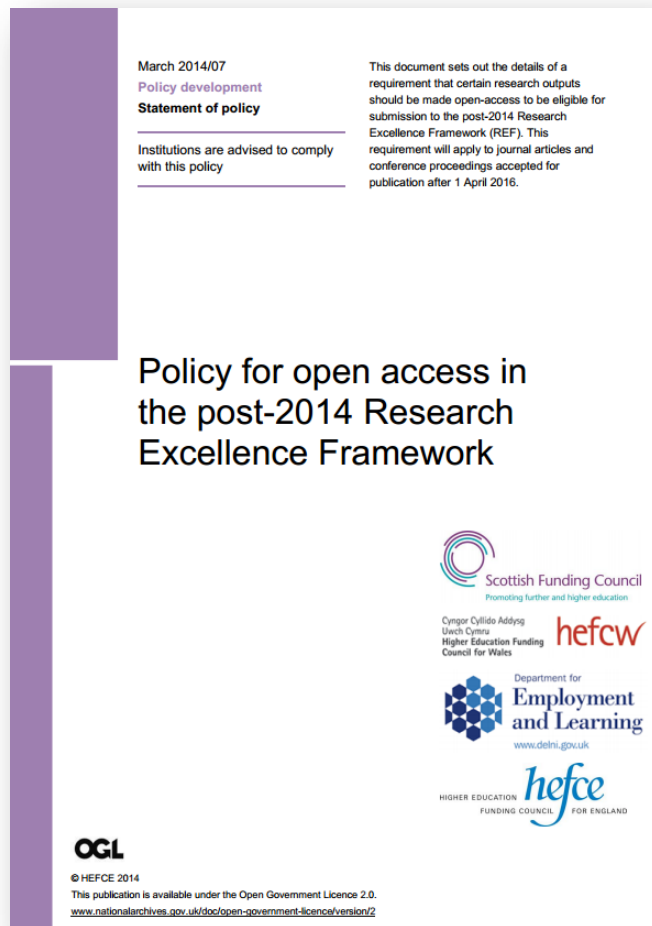
- Applies to journal articles and conference papers only
- **Green** route preferred
- We are not agitated about embargo periods at the moment...
- ...or licensing.
- For now, we just really want to change behaviour

How it works

- Universities want to make sure everything is admissible to REF2021, otherwise they lose money

- But they don't know yet what they will be submitting in 2021...

- ...so they are making EVERYTHING open access via their repository, just to be safe

- This provides a powerful incentive for increasing adoption of Open Access in the UK

How it leads to embedded Open Science
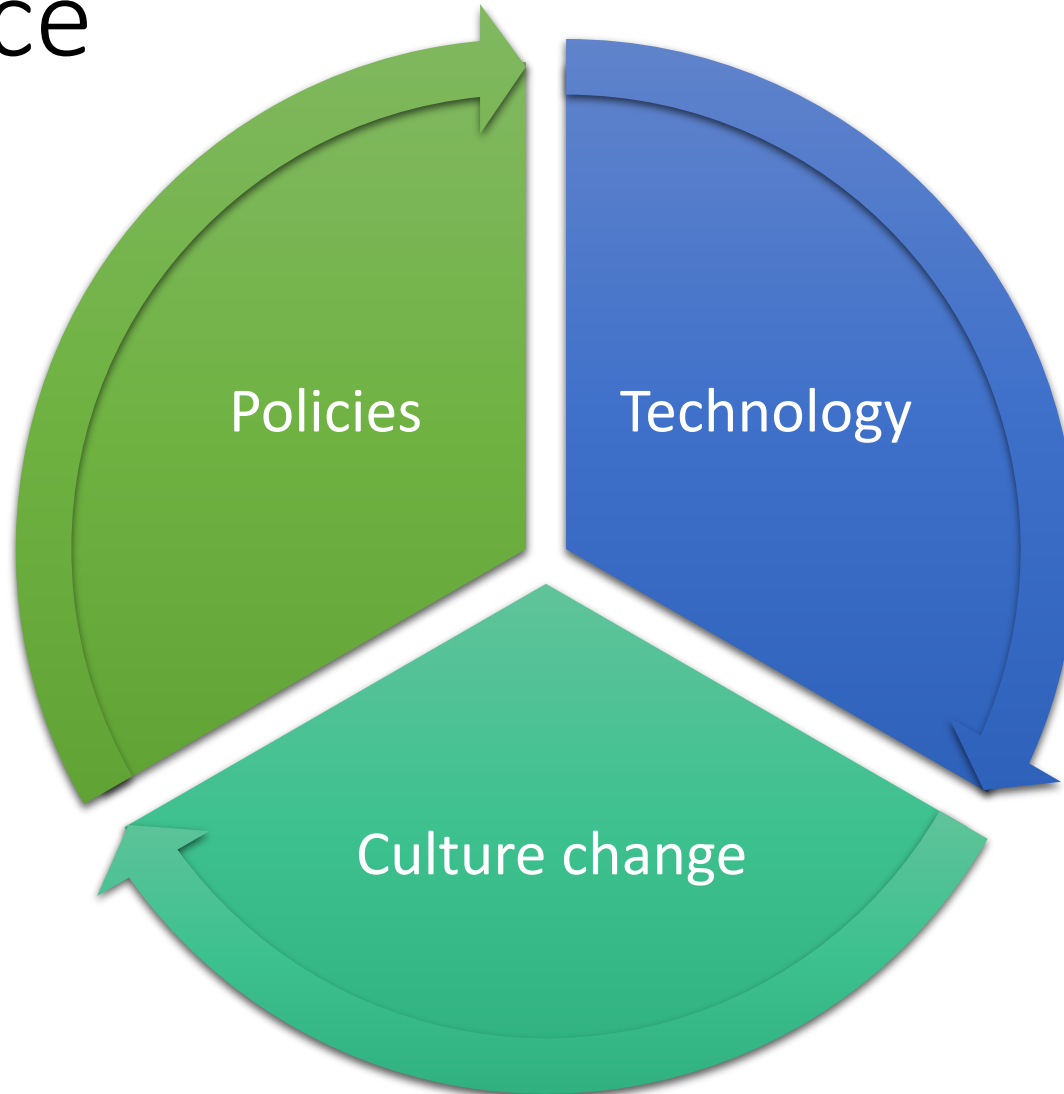
Action on policy

- Universities are now implementing **institutional Open Access policies** that their researchers must follow

- Universities are providing **specialist support for Open Access**

- Publishers are engaging with Open Access through **increased author options and advice**

- Discussions within universities about **the kind of research communication system they want** are happening at the highest levels

Action on technology

- Universities are improving their **repository software and CRIS systems** to make Open Access easier (and get a better understanding of researcher behaviour)

- Publishers and funders are working on **technical solutions to support Open Access** (on metadata, on policy language, on monitoring)

- Researchers and funders are **embracing new technologies** for collaborating and publishing

- Universities are **reinvigorating their presses**

- **European actors are developing new solutions** (e.g. OpenAIRE, Open Science Cloud)

Action on culture

- Universities are working with their academics to **start discussions** about the future of scholarly communication

- Universities and academics are **educating younger researchers** about the benefits of Open Science – and **rewarding those that do it**

- Some academics now feel free to **take radical steps** to change their practice and their discipline…

- …while many others are now simply **uploading their work** to a repository for the first time ever

- Open Access is slowly becoming an **embedded cultural expectation**

Other cultural observations

- Researchers now know that their university is taking OA seriously because of national policies...

- ...but that has led to a lot of positive discussions about how to build a future that works for all

- It has affected the UK's discussions with publishers on subscription negotiations and 'double dipping'

- And it has increased academic awareness of longstanding problems and the need for change

- And the increased uptake of OA has benefits for the researcher – they are now feeling these benefits

Where are we on the journey to Open Access?

National policy

- HEFCE policy for the REF
- Research Councils policy
- Other funder policies

Stakeholder responses

- University policies and initiatives
- New technologies and services
- Publisher reactions

Genuine culture change

- Open Access becomes 100% normal
- Policies and technologies reflect the norm and drive further change

Where are we on the journey to Open Access?

Public access	Open licensing	Unbundling

- Green OA
- Embargoes and licensing issues not resolved
- Old forms of output
- Institutional repositories
- Cultural change begins here

- Gold OA, CC BY
- New models and frames (e.g. PLOS ONE)
- Text and data mining, major repositories (e.g. OSC, PMC)
- Cultural change picks up pace

- Pre-print culture (e.g. arXiv)
- Post-publication peer review and overlay journals
- New forms of output
- Cultural change achieved

Open Science is a 'staged journey'

Open Access

- **Journals** – policies are now being enforced to address this after 25 years of inaction
- **Books** – we are monitoring for now and want more innovation before we have policies
- **Creative research outputs** – we are talking to the academic communities to find out more

Open Data

- Crucial to the future knowledge economy and to transparency and integrity of research
- Some **big** challenges including cost
- Incentives for researchers are not as obvious
- Funders not yet ready to enforce, but are setting clear direction

Open Educational Resources

Open peer review

Open source

Open methodology

- These things need to be encouraged, via support for opportunities for exploration and innovation.
- Academic societies, universities and publishers to work constructively on these issues.
- There is no need yet for mandates.

Obstacles

- Different stakeholders respond to incentives differently, leading to complexity
- Top-down policies can feel punitive (but weaker mandates are ineffective!)
- Some academics are still quite happy with the current models of publishing
  - Or print books! Or creative outputs etc.
- Some disciplines find open licensing and open data unpalatable or impossible
- Some academic societies rely on the status quo (but some are brave!)

A word about researchers

- Individual academic decisions are the only thing that can change the way science is done.

- Universities and policymakers need to create incentives for academics to take Open Science seriously.

- Incentives should be supported by :
  - Education
  - Practical support for creative bottom-up action
  - Brokered agreement across different groups on principles and standards
  - Good, modern and easy-to-use technology

A word about researchers

- Do researchers only care about their own careers? No, but the incentives and constraints they face sometimes prevent change:
  - Targets for publication and grant income
  - Cultural attachment to particular ways of doing things
  - Cultural obsession with metrics like Journal Impact Factor
- We need to think about what kind of environment we are creating for researchers. Is it enabling them to do the best science… or is it disabling them?
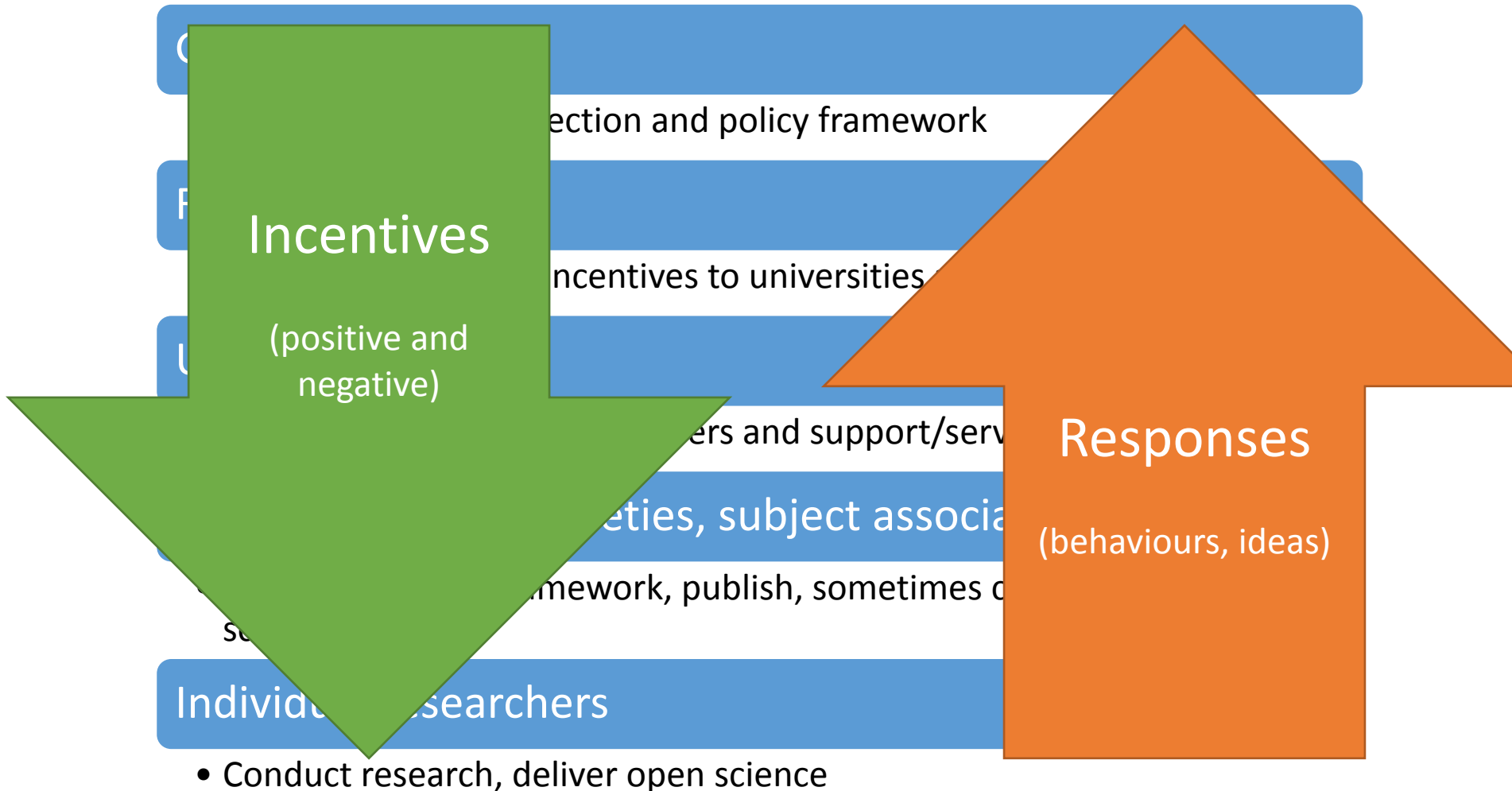
Whose role is it to deliver Open Science?
Who should feel the pain and who should benefit?
Are publishers critical part of the picture or just service providers?
Are universities more than just passive environments for science?
Should academic freedom come with academic responsibility?

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This means we have to incentivise the actors at every level

- Researchers should be **open** in order to secure funding, promotions and leadership positions

- Universities should be **open** in order to be classed as 'excellent' in national evaluations

- Funders should require research to be **open** in order to demonstrate value for money

- Government should be **open** in order to be accountable to the public

And…

- Publishers that are **open** can succeed in this world

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