

NATIONAL INFRASTRUCTURE  
COMMISSION  
TECHNOLOGY STUDY  
CALL FOR EVIDENCE

# CONTENTS

---

---

1. Introduction	3
2. Call for evidence	4
3. Context	5
4. Questions	7
5. How to respond	8

---

## 1. INTRODUCTION

### 1.1

The National Infrastructure Commission (NIC) was established by the Chancellor of the Exchequer in October 2015 with Andrew Adonis appointed as its interim Chair. The other members of the commission are:

- Sir John Armitt (Deputy Chair)
- Professor Tim Besley
- Demis Hassabis
- Lord Heseltine
- Sadie Morgan
- Bridget Rosewell

The NIC was permanently established as an executive agency of HM Treasury on 24 January.

### 1.2

The Commission was established to carry out independent and unbiased assessments of the UK's long-term infrastructure needs and monitor the government's and industry's progress in meeting them. It will periodically publish a National Infrastructure Assessment looking across all key sectors and geographies. That will identify the UK's long-term infrastructure requirements and prioritise the most important projects for further development.

### 1.3

Alongside this, the commission will carry out specific studies on pressing national infrastructure challenges in order to support the long term competitiveness of the UK economy.

### 1.4

On 23 November 2016, the Chancellor asked the commission to:

“conduct a study to identify which new technologies have the greatest potential for improving the productivity of our infrastructure, and what steps government should take to support the deployment of these technologies.”

### 1.5

The commission's assessment and recommendations will be reported back to government by the end of 2017. The detailed terms of reference are available [here](#).

## 2. CALL FOR EVIDENCE

### 2.1

The commission is launching a 4 week call for evidence on the identification of the key technologies which should be considered as a part of this work and their means of selection. The commission encourages all interested parties to submit ideas and evidence.

### 2.2

The key questions the commission seek to address in this call for evidence, are:

- what are the key technologies which the NIC should take forwards to consider for this study?
- which technologies will have the greatest potential impact over a timescale of 10 – 30 years?

Further detail on these questions can be found below.

### 2.3

Those making submissions are asked not to exceed 5 pages in length and are strongly encouraged to provide details of the evidence and data which support their positions (which can be provided in addition to submissions) to enable the commission to understand more fully the basis on which those conclusions have been reached. In addition, the commission will work with key stakeholders as part of an open and transparent process of engagement to support the call for evidence.

## 3. CONTEXT

### 3.1

How new technology can enhance our infrastructure is a critical issue. Innovation and infrastructure are at the heart of the government's economic and industrial strategy, and emerging technologies have the potential to radically improve the way we manage our infrastructure.

### 3.2

The UK has a large existing infrastructure asset base. In some areas we need to expand our networks, hence the government's decisions, for example, to back HS2, Hinkley Point C, and the expansion of Heathrow airport. But it is also vital that we maximise the value of our infrastructure networks by making them as productive as possible.

### 3.3

Emerging technologies have the potential to radically improve the way we manage our infrastructure. Data management and analytics already play a very important role. Areas like digitalisation, the internet of things, big data, and artificial intelligence will all create opportunities for improving the way we operate infrastructure, maintain existing assets, and enhance the capacity and resilience of our networks.

### 3.4

The government has asked the Commission to:

- a) Identify which emerging technologies have the most potential in terms of optimising the management, performance and maintenance of existing and future infrastructure assets to support economic growth;
- b) Make recommendations to government on what actions it should consider to support the deployment of those technologies across infrastructure areas and sectors, including identifying where trial approaches may be appropriate.

### 3.5

The government has suggested the Commission may focus on a subset of technologies that it judges to have the biggest potential impact. The Commission agrees and believe it is important to focus on the technologies that are likely to present the greatest opportunity to improving the operation and management of the UK's infrastructure over a 10 – 30 year time horizon. The Commission is particularly interested in focusing on the transformative opportunities presented by digital technologies such as artificial intelligence and machine learning, big data, the internet of things and sensing.

### 3.6

The following criteria will be adopted to select the best candidate technologies for further consideration:

- Timing and availability of technology; the technology must be at a readiness level which enables production of the maximum gains over a timescale of 10 – 30 years. This is likely to mean technologies which are at a relatively high readiness level already, unless they are developing at such a pace that they can equally be expected to be deployable over a 10-30 year timescale;
- Scale of potential value technology could bring to UK infrastructure; the technology must have the potential to be transformative to the way we manage our infrastructure systems. It will need to present significant opportunities to improve the way we operate infrastructure, maintain existing assets, or enhance the capacity and resilience of our networks. In considering the impacts of new technologies, both costs and benefits from introduction will be taken into account.

### 3.7

The input received through the call for evidence will be assessed by the Commission, alongside other evidence, to identify the priority technologies it will take forward for further assessment, and on which it will make recommendations to government by the end of 2017. The commission is therefore eager to have input from as full a range of stakeholders as possible in order to gather evidence and ideas to inform thinking. Submissions should look to focus on the key technologies which are able to make the biggest impact on current and future UK infrastructure, and provide supporting evidence for this.

### 3.8

It is expected that there may be one or more further calls for evidence to inform this study as it proceeds, for example to further explore the challenges the UK will face in enabling uptake and deployment of potential technologies and how to maximise their benefits for UK infrastructure.

## 4. QUESTIONS

### 4.1

The questions that the Commission are particularly keen to focus on are:

1. What are the key technologies which the NIC should take forwards to consider for this study? Which will have the greatest potential impact over a timescale of 10 – 30 years?
2. How will these technologies meet the criteria outlined in section 3. For example:
  - How does the new technology improve infrastructure productivity? What aspects of the management of infrastructure could the technology address - for example aspects of operation, maintenance, efficiency, capacity, reliability or resilience; would the uptake of the new technology for example reduce demand for pressurised services such as transport, energy and water?
  - What stage has the technology reached in terms of demonstration and uptake?
  - What evidence is there supporting the potential benefits that may be expected? Are there examples or case studies of deployment or demonstration in other sectors, or internationally? Any indicators of the benefits that could be expected and sectors to which applied.
  - What evidence is there supporting the likely costs of introduction.
  - What are the principal challenges and barriers which need to be addressed to enable the maximum uptake of the technology?
  - Would the introduction of the technology imply major changes to existing infrastructure, require new infrastructure, or does it fit with existing infrastructure? Would its introduction make previous infrastructure redundant?

## 5. HOW TO RESPOND

### 5.1

The evidence submitted will inform the Commission's understanding of the wider issues surrounding the review we have been asked to undertake.

### 5.2

Submissions of evidence should be no longer than 5 pages (5 sides) and should be emailed to **TechnologyEvidence@nic.gsi.gov.uk**.

### 5.3

Please provide submissions and evidence by 15 March 2017.

### 5.4

Evidence will be reviewed thereafter by the Commission. If further information or clarification is required, the Commission Secretariat will be in contact with you.

### 5.5

In exceptional circumstances we will accept submissions in hard copy. If you need to submit a hard copy, please send your response to the Commission Secretariat at the following address:

Technology Study Evidence  
National Infrastructure Commission  
11 Philpot Lane  
London  
EC3M 8UD

### 5.6

We may publish any submissions made; if you believe there is a reason why your submission or any part of your submission should be considered confidential please provide details.

### 5.7

The Commission is subject to legal duties which may require the release of information under the Freedom of Information Act 2000 or any other applicable legislation or codes of practice governing access to information.

