



**An Roinn Caiteachais  
Phoiblí agus Athchóirithe**  
Department of Public  
Expenditure and Reform

# Infrastructure investment in an era of uncertainty

Conference on public investment governance, reform and innovation

**#PERInfraConf**



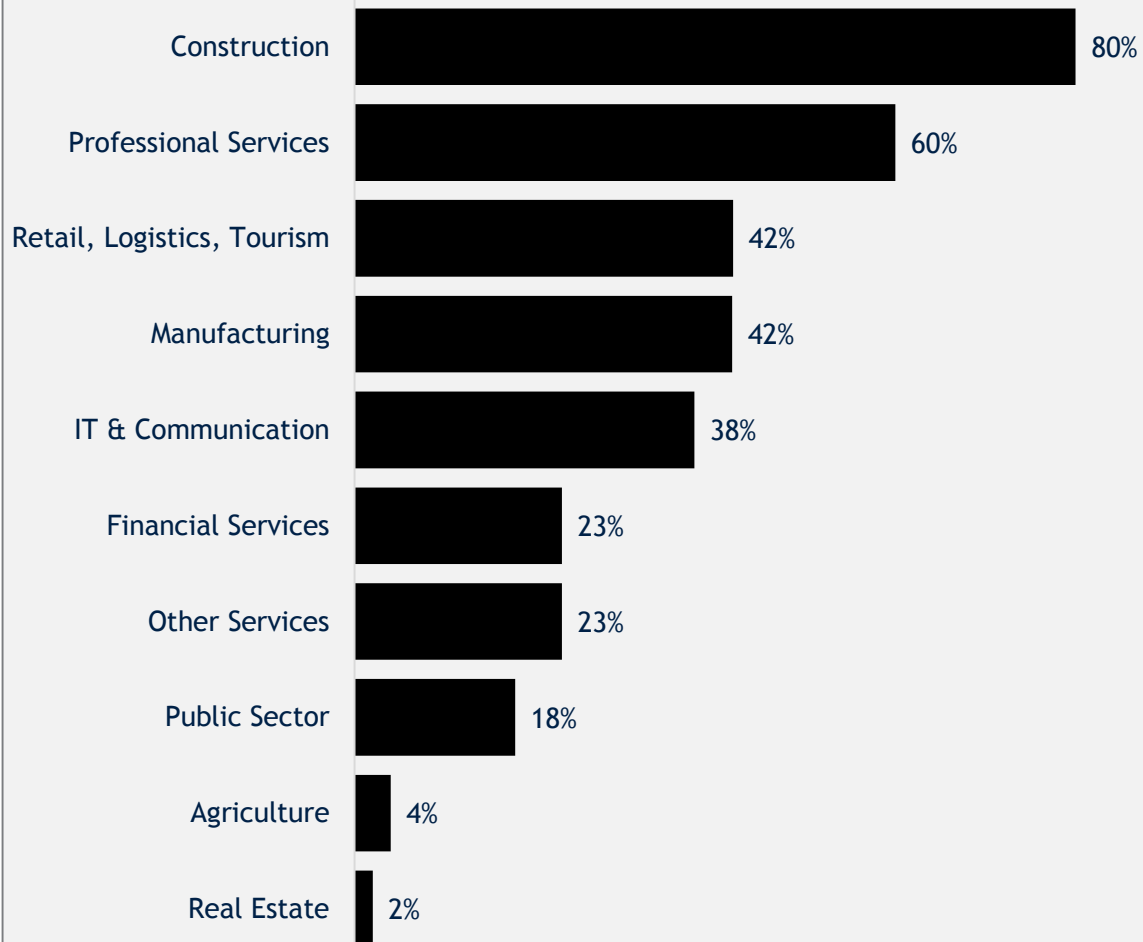
# Challenges, Causes, Cures of Major Project Management

Bent Flyvbjerg, University of Oxford

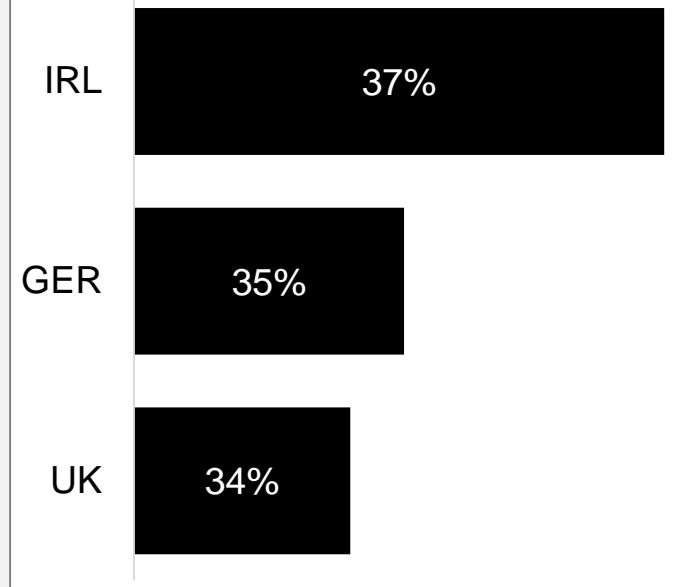
#PERInfraConf, Dublin, 31 January 2020

# Nearly 40% of Ireland's Economic Activity Takes Place in Projects

**Time worked on projects as % of total time worked p.a.**



**Share in total no. of hours worked p.a.**



# Why Major Projects Are So Appealing





# Dublin's New Children Hospital



Cost increase from EUR  
670m to EUR 1.7bn

Delayed from 2020 opening  
to 2023

# Dublin Port Tunnel (1989-2005)



**161% cost overrun in real terms**

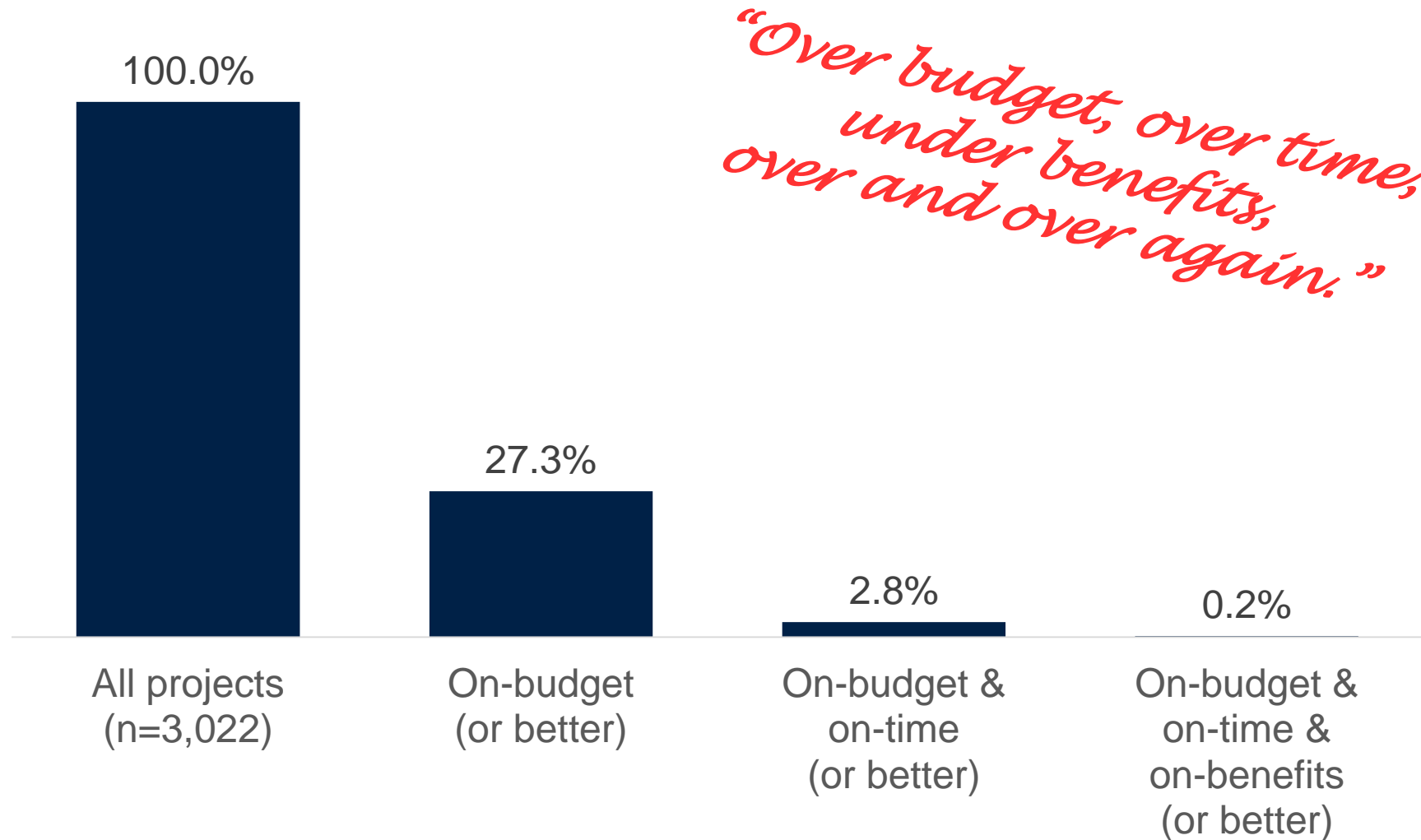
# Newbridge Bypass (1989-1994)



**-2% cost overrun in real terms**

# The Iron Law of Megaprojects

(A statistical, not a deterministic, law)





# How Do We Explain the Iron Law?



**Your biggest risk is you!!**

# Risk Is Internal, Not External

- Conventional wisdom sees causes of risk as mainly **external** to programs
- The root cause of risk is **internal**. It consists in the way leaders systematically misconceive of risk

**This is wrong!**

**Complete change  
in perspective**



# Example: Cost Overrun

- 
- **Cost overrun** is not caused by scope changes, geology, complexity, etc. (external causes)
- 
- Cost overrun is caused by **cost underestimation**, i.e., by not taking into account risks of scope changes, geology, complexity, etc. (internal cause)
- 



# Root Causes of Poor Delivery

1. Psychological bias

2. Political bias





# Reference Class Forecasting

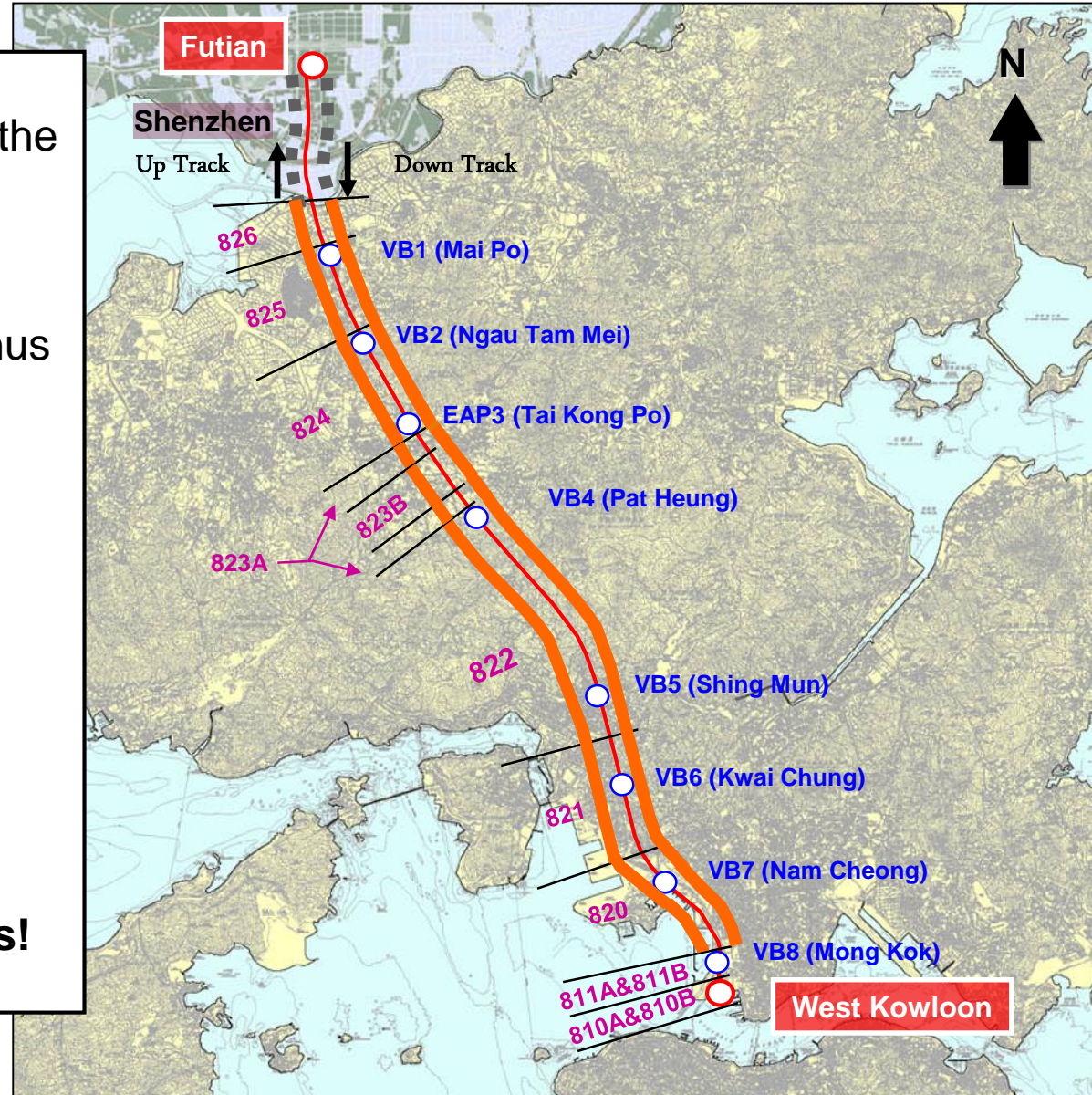
1. Identify relevant **reference class** of past, similar projects (minimum 15-25 projects)
2. Establish **probability distribution** for the selected reference class
3. Compare specific project with distribution, in order to establish **most likely outcome**



# RCF Example: HK Express Rail Link, XRL

- 26km Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link
- Fully underground, including largest high-speed rail terminus ever built
- 2000: project outlined in rail development plan
- 2008: planning started
- 2009: alignment authorized
- 2010: construction started, **planned opening mid-2015**
- 2014-15: reprogramming, **planned opening end-2017**

**A clear case of optimism bias!**



# RCF Example: Are XRL's Cost and Schedule Estimates Realistic?

**Situation XRL, at break  
Irrecoverability of delays  
acknowledged in 2014**

**New timeline, 2014**

- Opening moved from December 2015 to **October 2017**

- Increase of +54%

**New budget, 2014**

- Increased from HKD 65B to **HKD 71.5B** (USD 9.2B)
- Increase of +10%

**Reference Class Forecast**

**Reference Class** (189 projects)

- 39 high-speed rail projects
- 38 tunnelling projects
- 112 urban heavy rail projects

**Schedule and cost overruns  
are common**

- Schedule overrun on average +43%, 7 out of 10 projects
- Cost overruns on average +42%, 8 out of 10 of projects

**Forecast adjusted to estimate  
risks of the remainder of the  
works, from 2014**

**Results**

**Revised schedule is P70**

- Not P90 as planners claimed
- **30% risk that opening date will not be met**

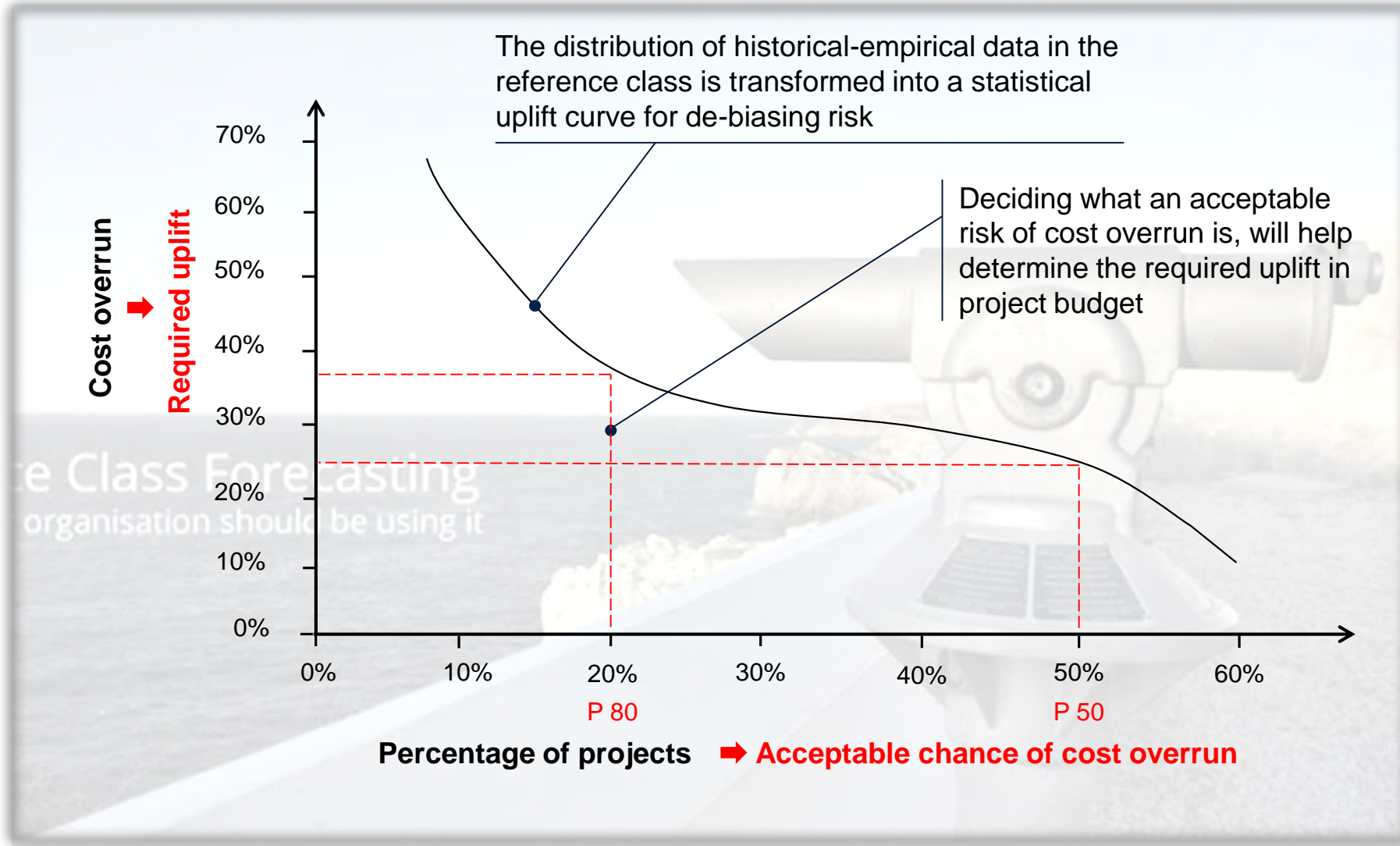
**Revised budget is P30**

- Not P90 as planners claimed
- Remaining contingency funds too low
- **Revised budget has a risk of 67% of being insufficient**

**Optimism still remained in  
2014 revised schedule and  
budget – 2015 development  
proved 2014 RCF right!**



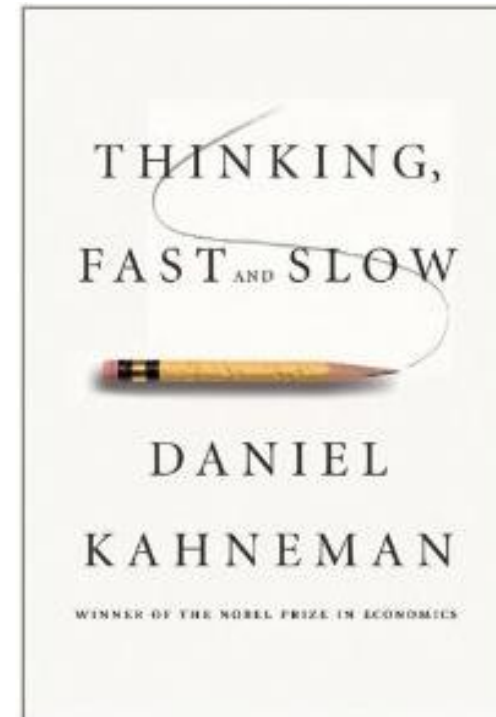
# RCF Provides You With A Probabilistic Risk Estimate



# How to Get Costs, Schedules and Benefits Right

- Our advice: When making a decision, use **all available distributional information** about outcomes
- Kahneman: “This may be considered **the single most important piece of advice** regarding how to increase accuracy in forecasting”

– *Thinking, Fast and Slow*, 2011, p. 251

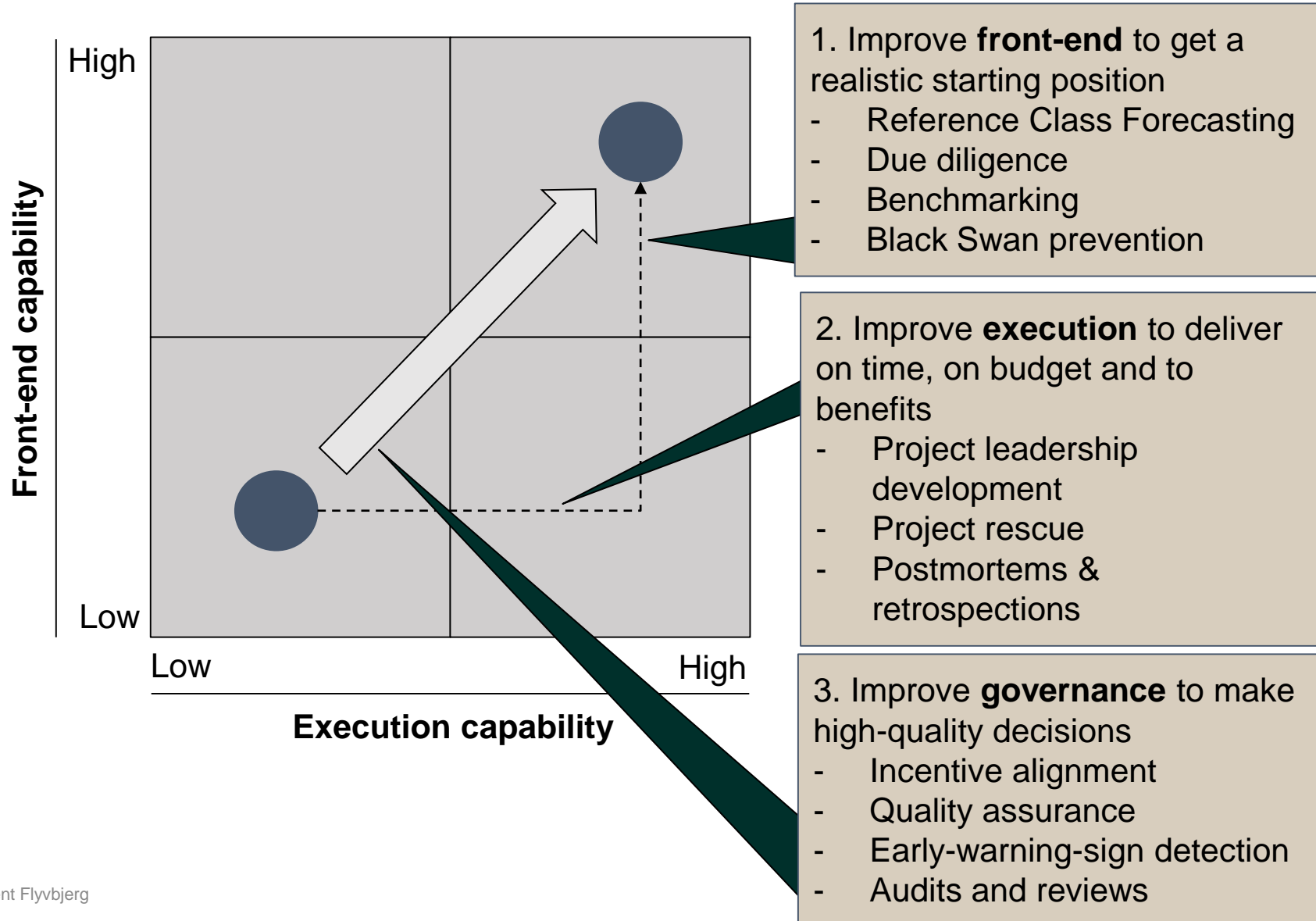


# Our Methods and “Unknown Unknowns”

- Our methods are the only ones we know that take into account “unknown unknowns”
- How? By incorporating in the reference class **ALL** effects on performance, including “unknown unknowns”



# Three Steps to Project Success





# Thank You!

Email: [bent.flyvbjerg@sbs.ox.ac.uk](mailto:bent.flyvbjerg@sbs.ox.ac.uk)





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# Ireland's National Roads Programme.

## Transport Infrastructure Ireland

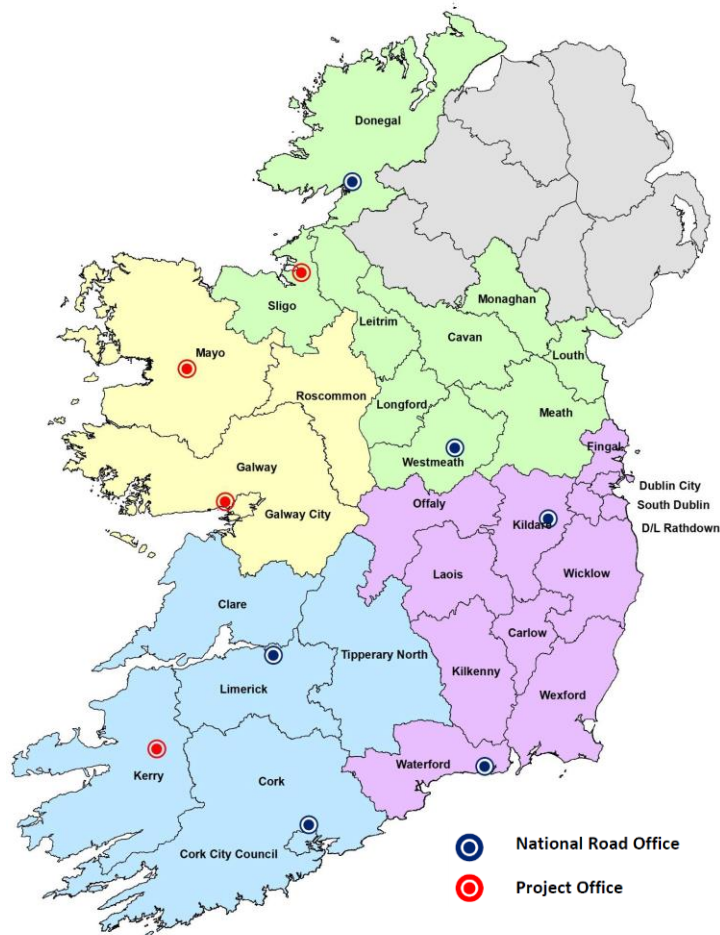
31/01/2020

# Agenda

- Partnership
- Context
- Evolution of TII Cost Estimation Processes
- De- Risking the Roads Programme.
- Measuring Cost Performance
- Realisation of Benefits
- The value of data
- Enhancing Processes
- Why Bother?

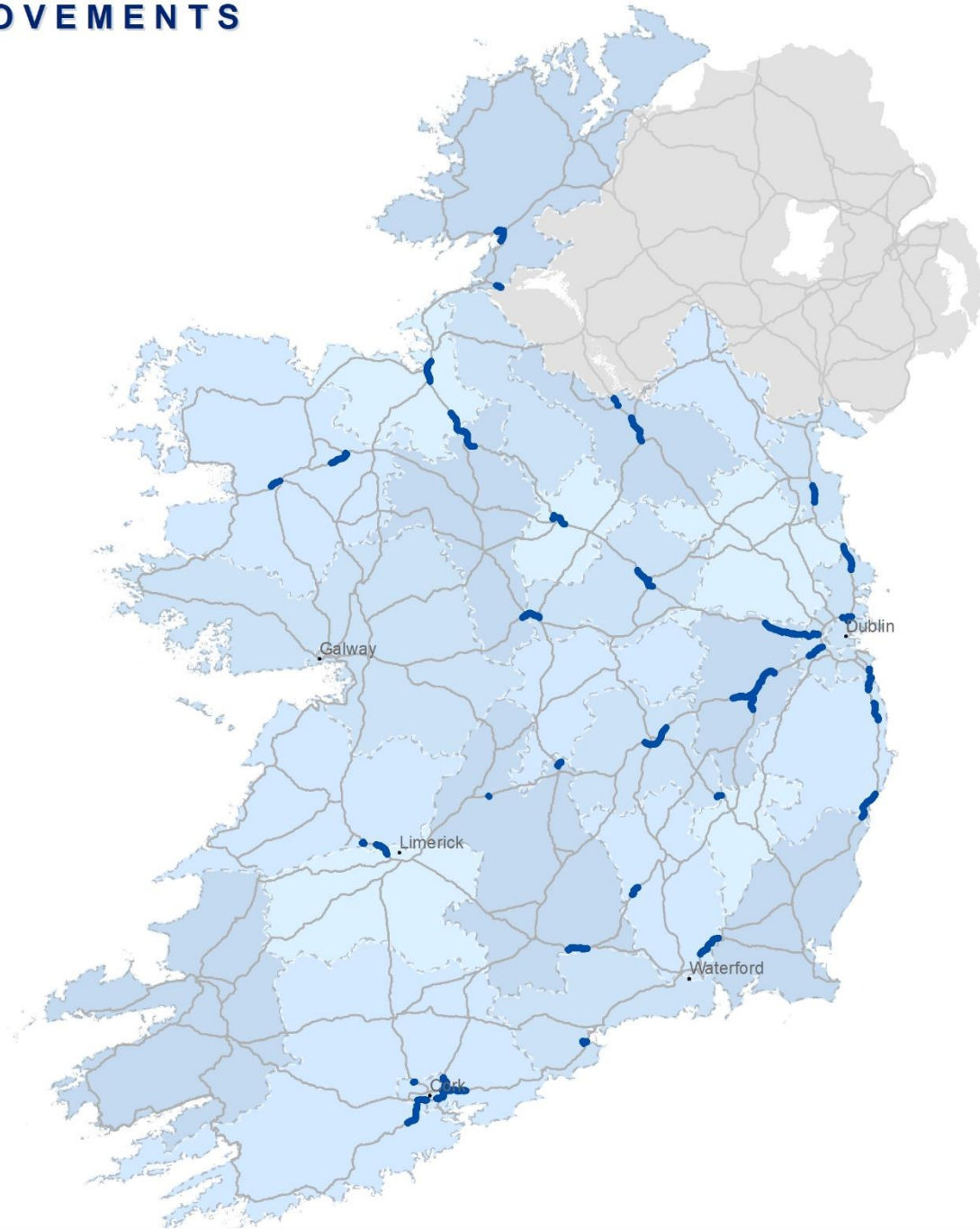


# PARTNERSHIP WITH LOCAL AUTHORITIES



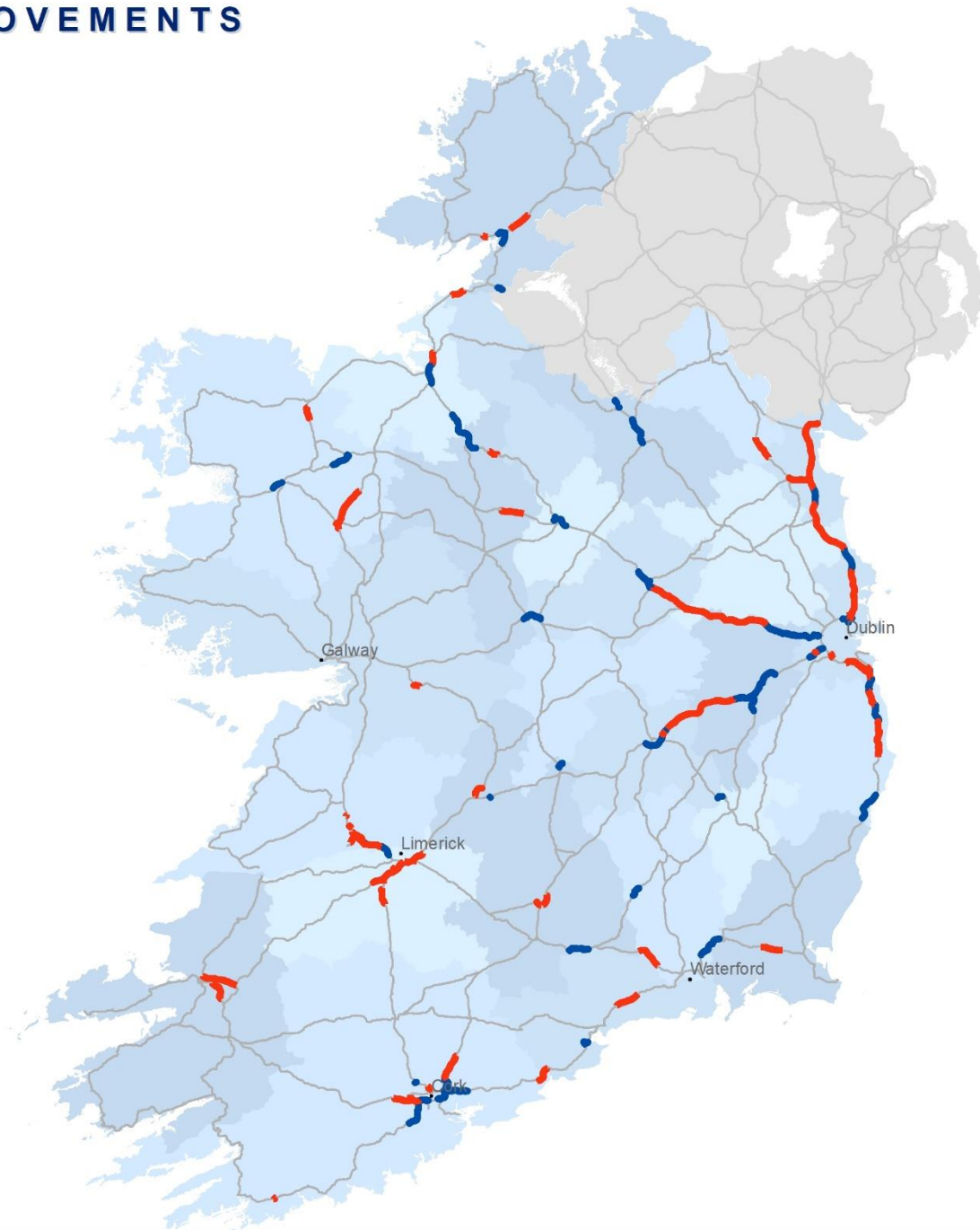
- Local authorities are the road authorities for all roads including national roads.
- Generally, TII's national roads functions discharged through local authorities except for PPP roads and motorway service areas
- TII supports and works closely with a network of eleven local authority National Roads Offices .
- The delivery of the Roads Programme depends on this partnership.

# NETWORK IMPROVEMENTS UP TO 2000

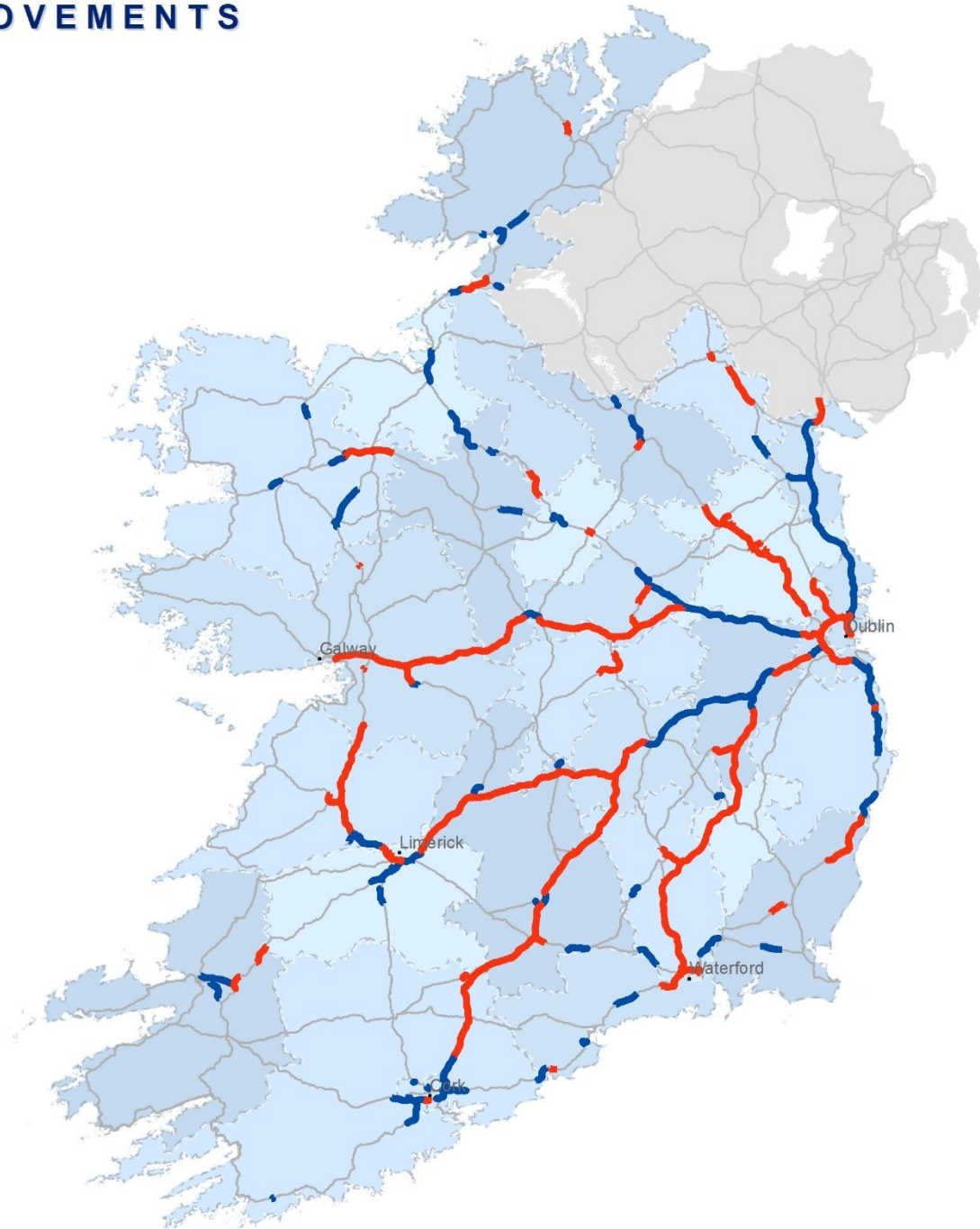




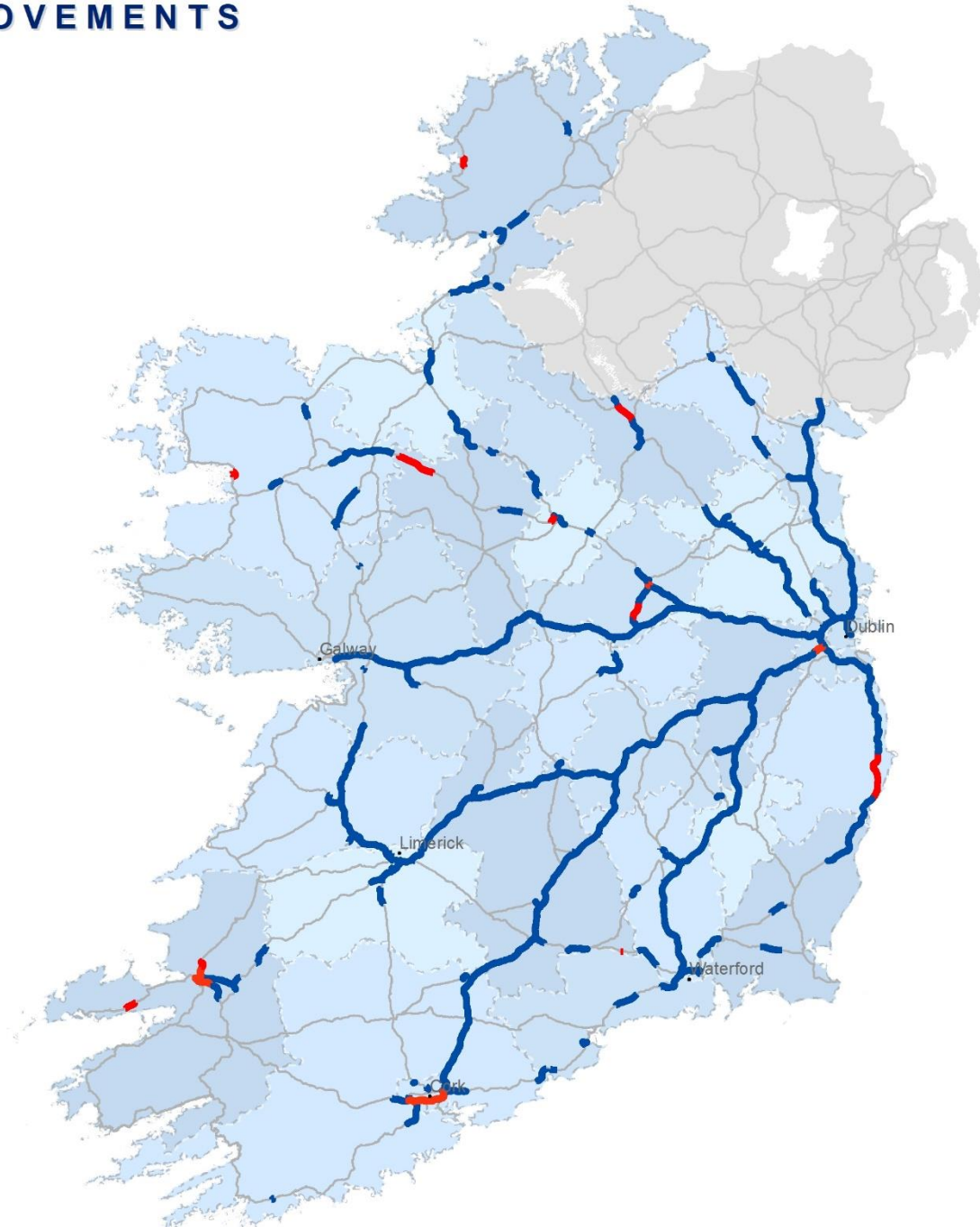
# NETWORK IMPROVEMENTS 2001 TO 2005



# NETWORK IMPROVEMENTS 2006 TO 2010

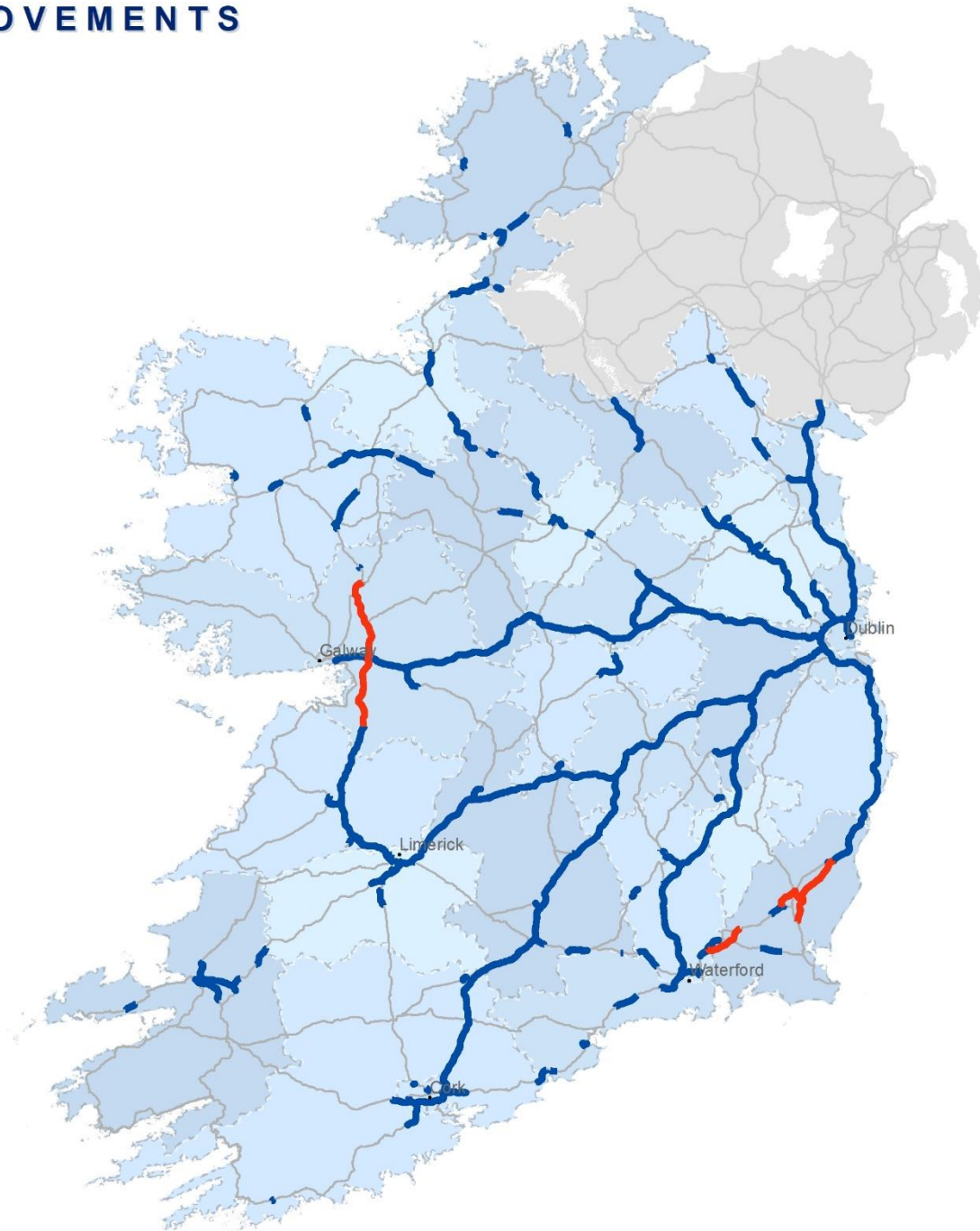


# NETWORK IMPROVEMENTS 2011 TO 2015





# NETWORK IMPROVEMENTS 2016 TO 2020



# Evolution of TII Cost Estimation Processes

- Experienced Cost Management expertise
- Outturn Cost Data Captured and Analysed Centrally
- Use of “Benchmarking”
- Centralised Cost Rates Database
- Clear, uncomplicated cost forecasting approach (7 headings, single budget sheet)

SCHEME NAME		NRA Ref.		NRA	
Road Authority		Project Status		Region	
Mainline Scheme Length	Cross Section	Current Date			
Grade Separated Junctions	No. of Bridges	Start Year	Completion Year		
Total Land Acquired (ha)	Terrain		Ground Conditions		

Base Cost Expenditure Heading	Base Cost (Inclusive of Total Risk)	Current Risk Allocation to TC	Un-Inflated Target Cost	Un-inflated Target Cost Profile						
				Pre2011	2011	2012	2013	2014	2015	Post2015
Main Contract Construction (incl VAT)										
Employer Risks on Construction										
Main Contract Supervision										
Employer Risks on Supervision										
Archaeology										
Pre-construction Archaeological Risks										
Advance Works & Other Contracts										
Employer Risks										
Residual network										
Land & Property										
Land Issues Risks										
Planning & Design (incl GI & Topo)										
Employer Risks on Planning & Design										
Subtotal (Excl Inflation & Programme Risk)										

Target Cost With Inflation	Un-inflated Target Cost	Inflation Allocated to Target Cost	Target Cost Adjusted for Inflation	Target Cost With Inflation Profile						
				Pre2011	2011	2012	2013	2014	2015	Post2015
Main Contract Construction										
Main Contract Supervision										
Archaeology All Phases										
Advance Works										
Residual network										
Land & Property										
Planning & Design (incl GI & Topo)										
Target Cost Totals										

TARGET COST	Cost / km
-------------	-----------

Base Cost	
Total Inflation	
Programme Risk	
<b>TOTAL SCHEME BUDGET</b>	
Regional Manager	Head of Major Projects
	Chief Executive Officer



# De Risking the Roads Programme

- Advance  
Archaeology  
Resolution





# De Risking the Roads Programme

- Advance works



# De Risking the Roads Programme

- IFA Agreement – early access to site





# De Risking the Roads Programme

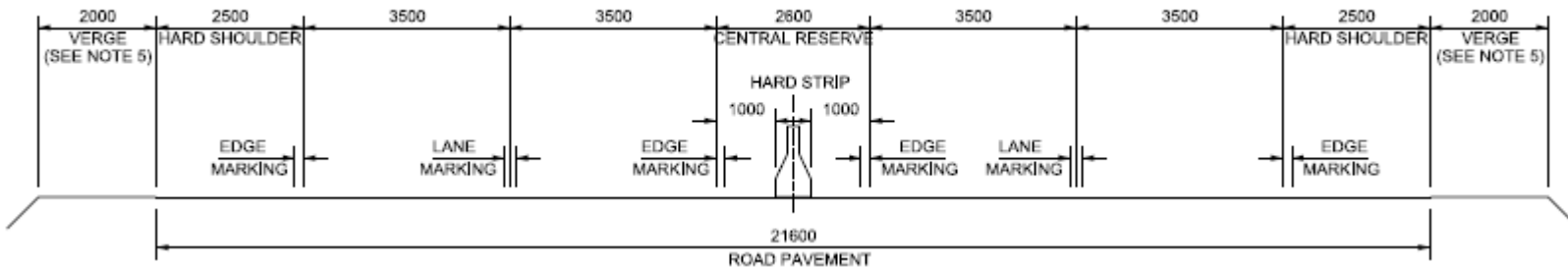
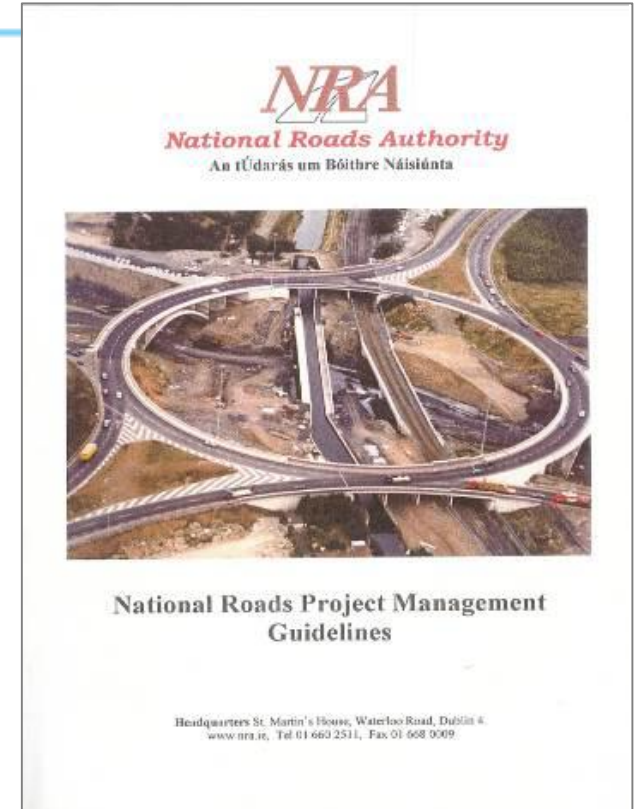
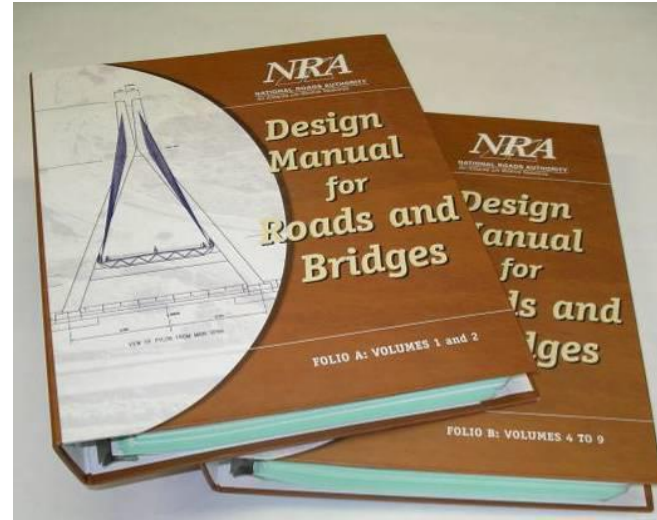
- Design & Build Contract Forms



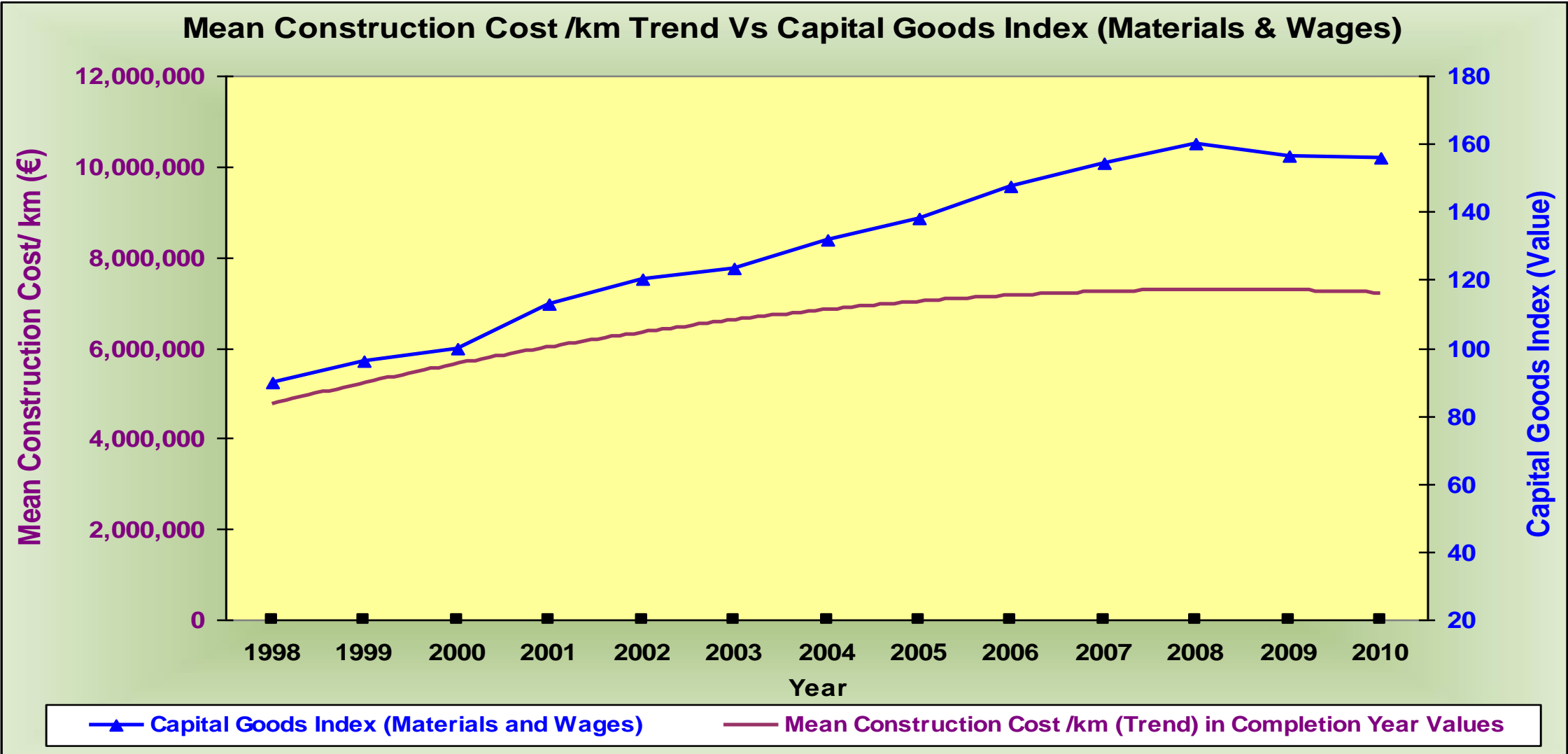


# De Risking the Roads Programme

- Standardisation & Efficiencies



# Measuring Cost performance





# Measuring Cost performance

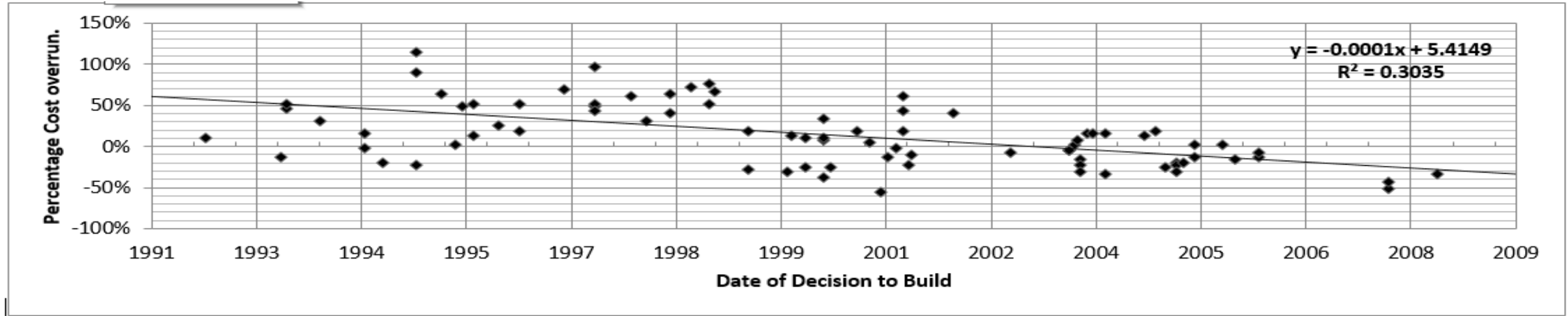


Figure 4.6 Cost performance of projects through time according to the Decision to Build Year (N=85)

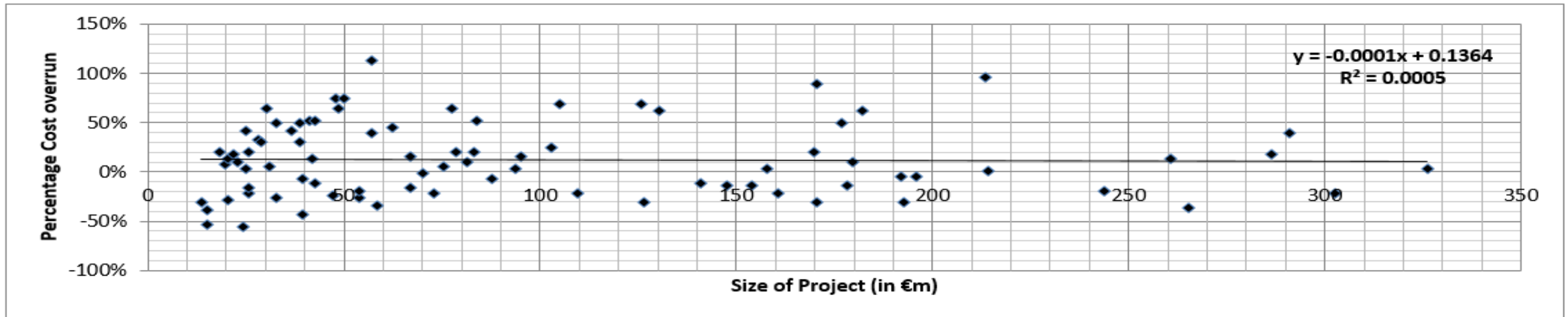


Figure 4.7 Plot of percentage overrun against Project size (N=85) measured in €m (2003 prices)

# Measuring Cost performance

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- Analysis of data and outcomes

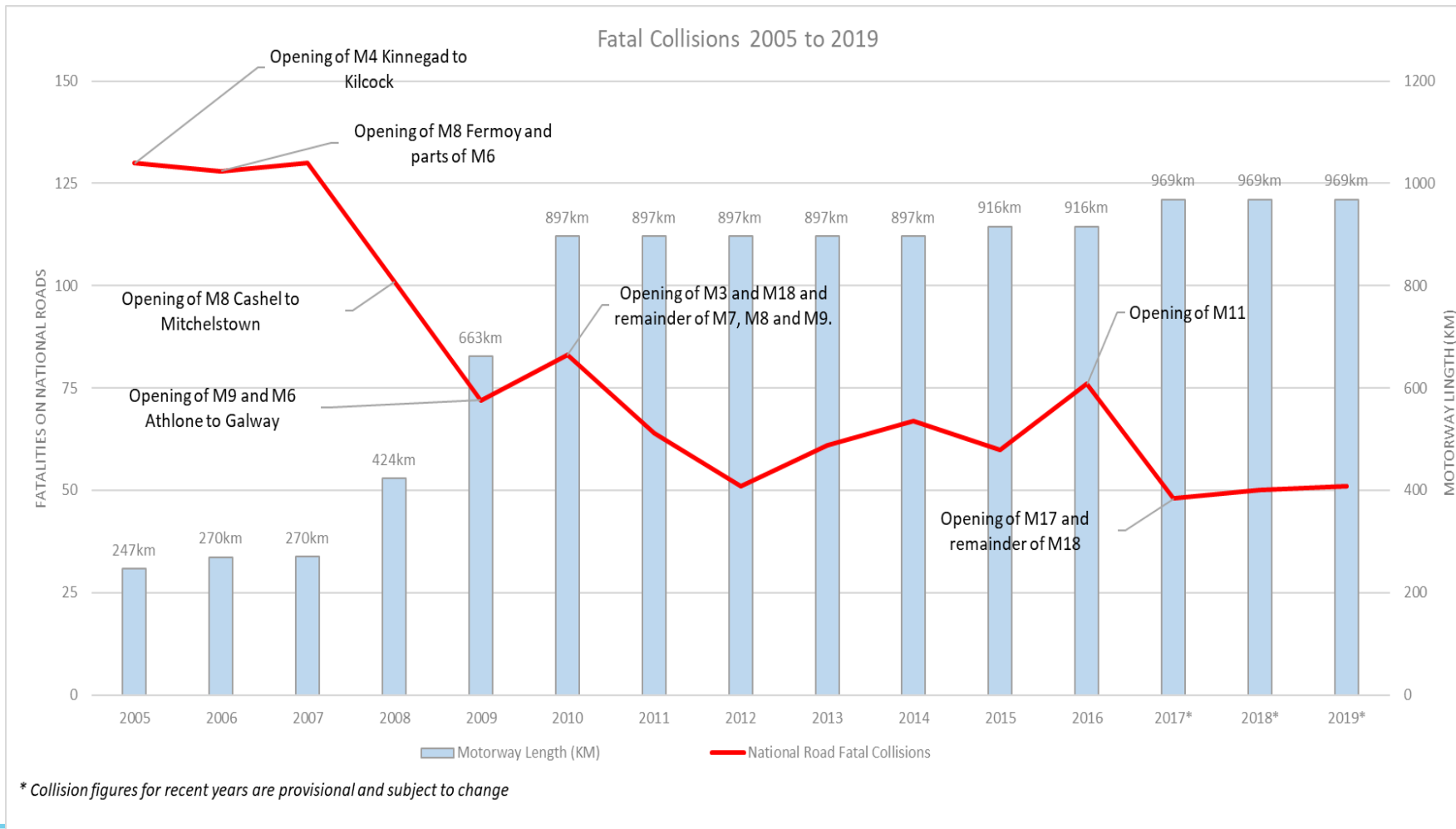
## Analysis of Portfolio Cost Overruns

<b>Baseline</b>	<b>Measure</b>	<b>Cost Overrun</b>
TC1	Mean	-6%
TC1	Median	-8%
TC3	Mean	-3%
TC3	Median	-2%

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# Realisation of Benefits

## Fatal Road Traffic Collisions on National Roads (2005 – 2019)

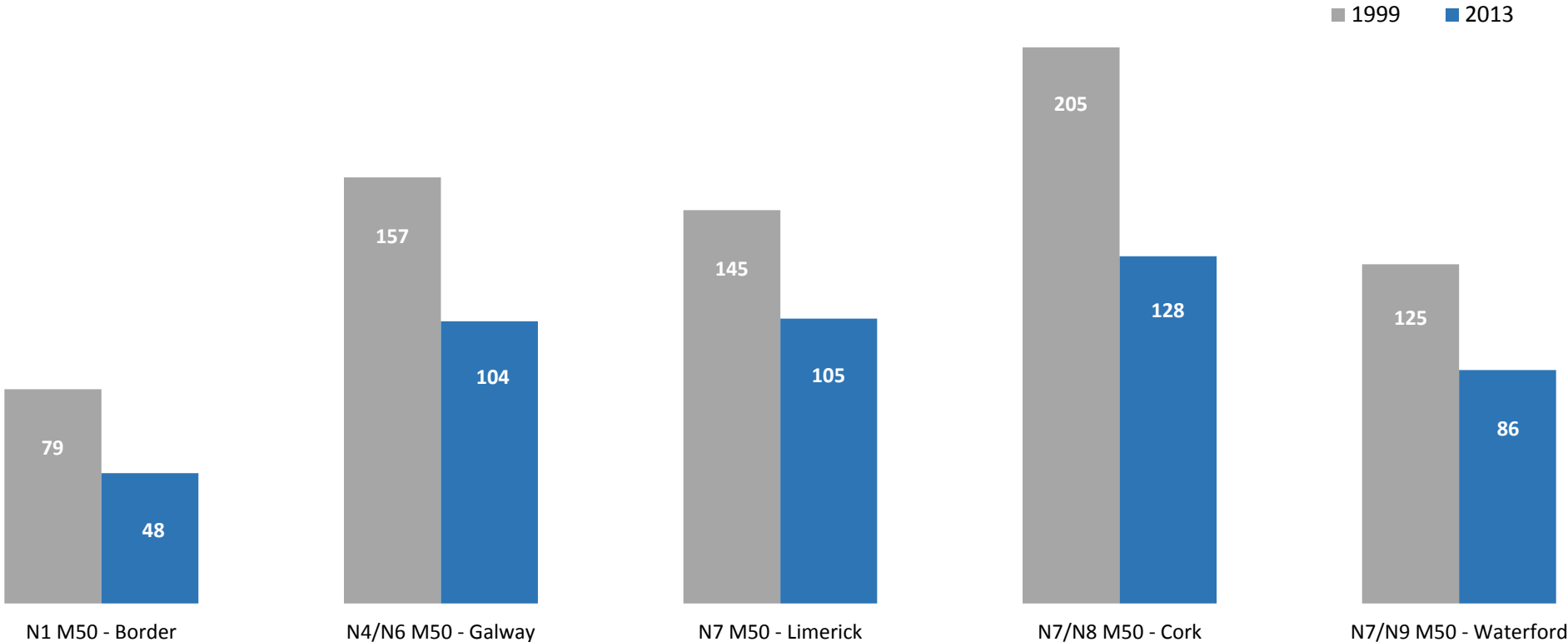


Year	National Road Fatal Collisions
2005	130
2006	128
2007	130
2008	101
2009	72
2010	83
2011	64
2012	51
2013	61
2014	67
2015	60
2016	76
2017	48
2018	50
2019	51

**Note: In 2019 there were 51 fatal road traffic collisions resulting in 53 fatalities on national roads.**

# Realisation of Benefits

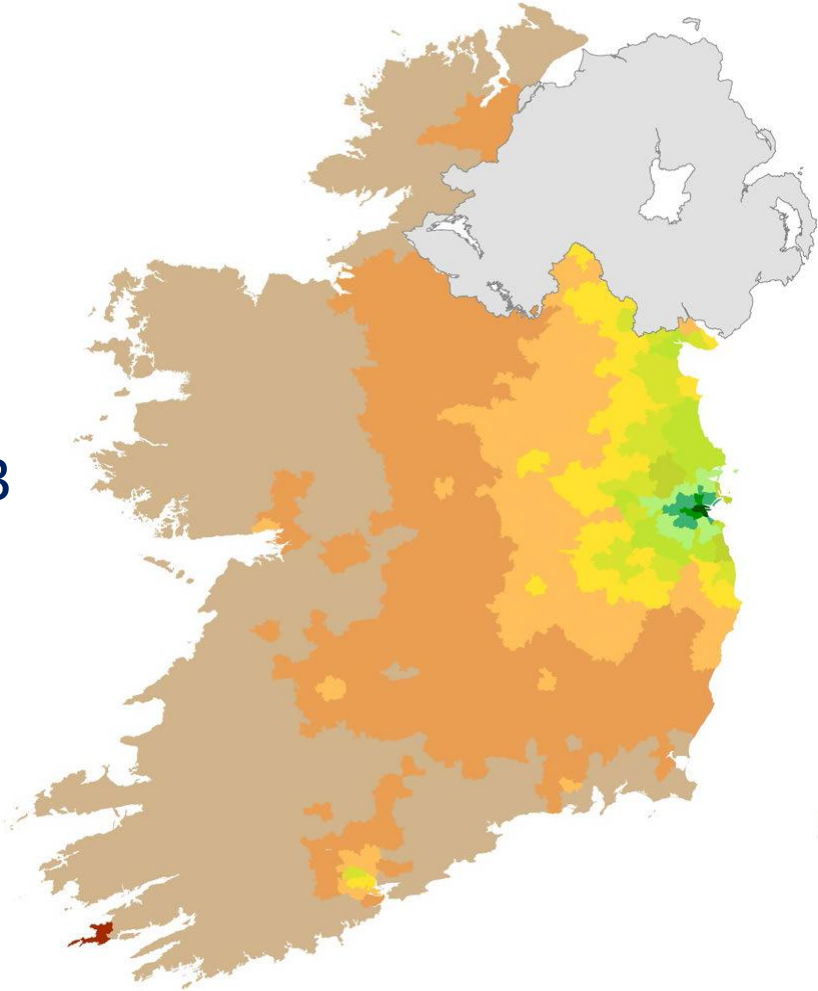
## Journey Time Reduction



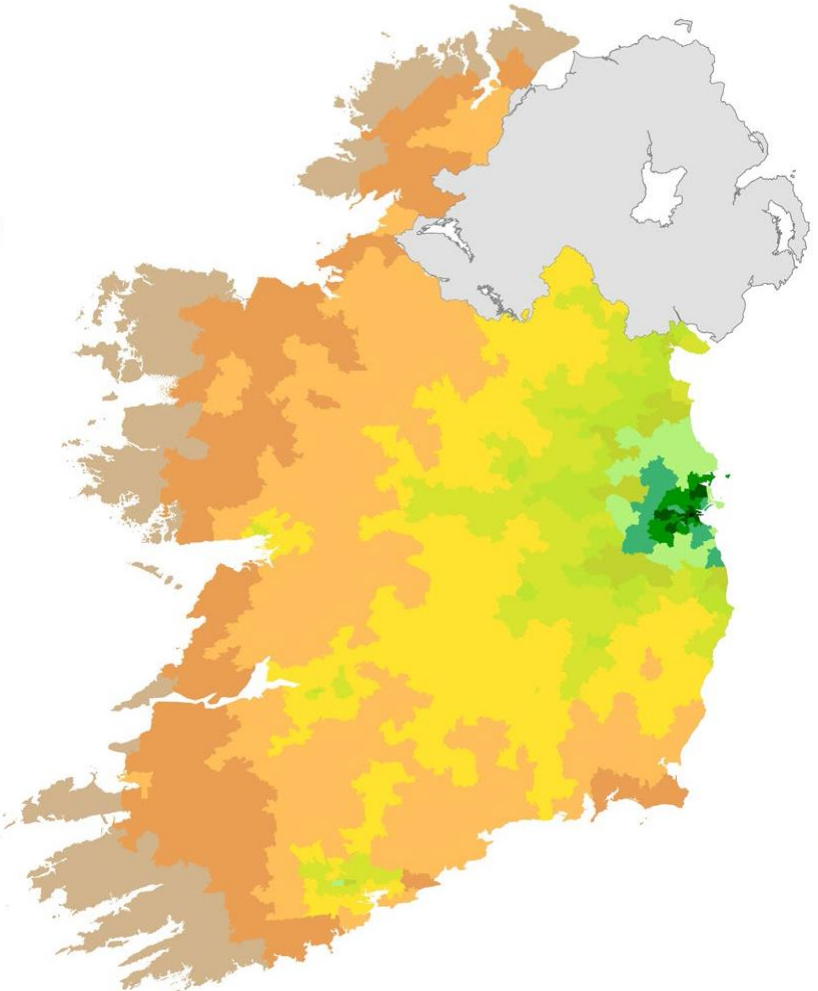
# Realisation of Benefits

## Improved Connections

Impact of road investment on employment accessibility 2006-2013



2006



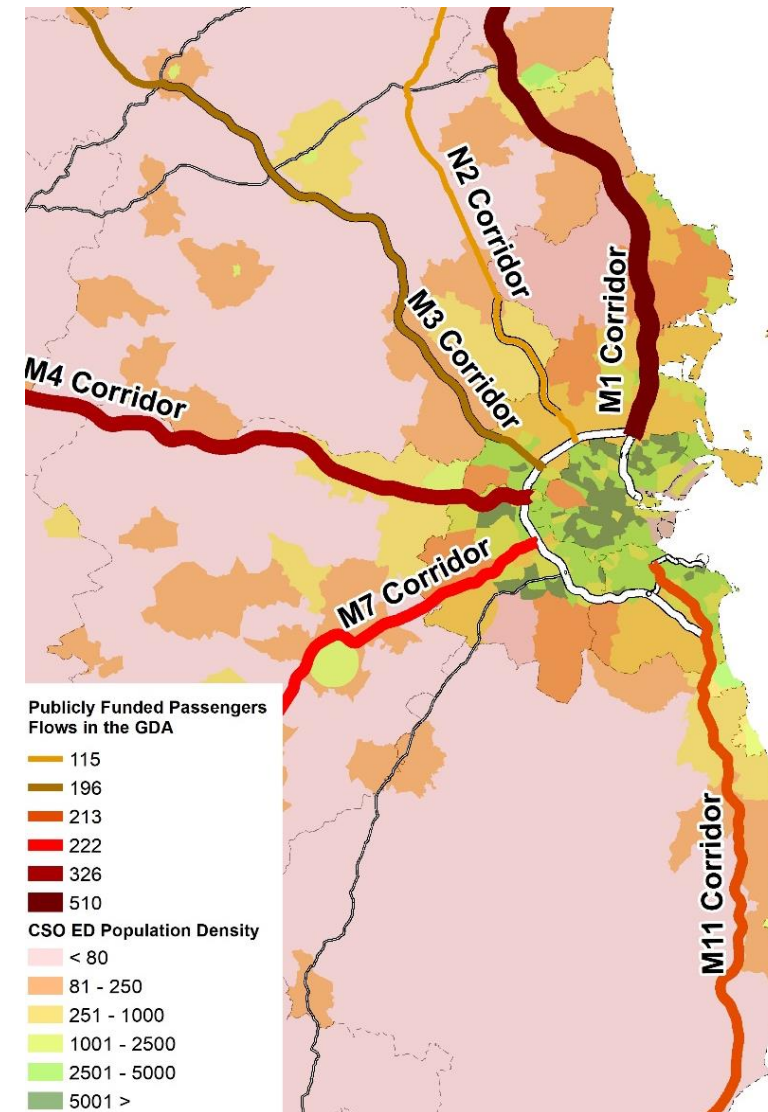
2013

# Impact of the Major Interurban Investment

Development of the motorways facilitated growth in bus and coach operations and improved service levels

- Growth of the motorway network = Growth in Bus Services
- Provided Competitive and reliable journey times
- In 2017 some 195 million passenger trips were made by bus or coach.
- equating to 70% of all public transport trips.
- Most bus services use National Roads in part of their journey.

Corridor	Commercially Operated Routes	Bus Eireann PSO Routes	Dublin Bus PSO Routes	Total
M1	34	2	6	<b>42</b>
M2	2	4		<b>6</b>
M3	3	9	1	<b>13</b>
M4	14	3	7	<b>24</b>
N7	16	4	2	<b>22</b>
M11	10	1	3	<b>14</b>
<b>Total</b>	<b>79</b>	<b>23</b>	<b>19</b>	<b>121</b>





# The value of data

- Use of centrally held data to identify reference class

	Total number of Projects	Of Which		Contains Motorway, Dual & Single Carriageway Schemes	Value Range	
		Major Projects	Minor Projects		High (€m)	Low (€m)
TC1 Reference Class	40	21	19	✓	391	2
TC3 Reference Class	50	36	14	✓	400	2

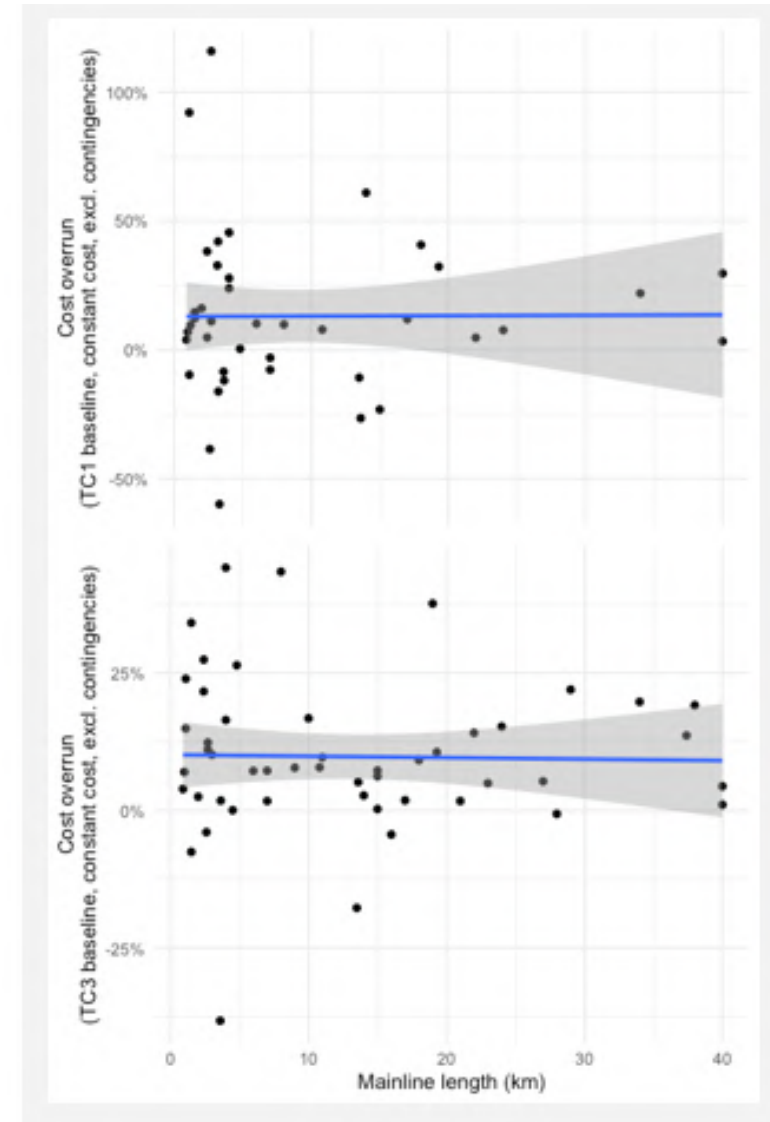
# The value of data

- Analysis of data and outcomes

## Mainline road length.

The association between length of the mainline (in km) and cost overruns (excluding contingencies, real terms) is not statistically significant for overruns measured based on the TC1 baseline ( $p=0.62$ ) or the TC3 baseline ( $p=0.88$ ).

**Thus scheme length is not a factor by which the RCF should be split.**

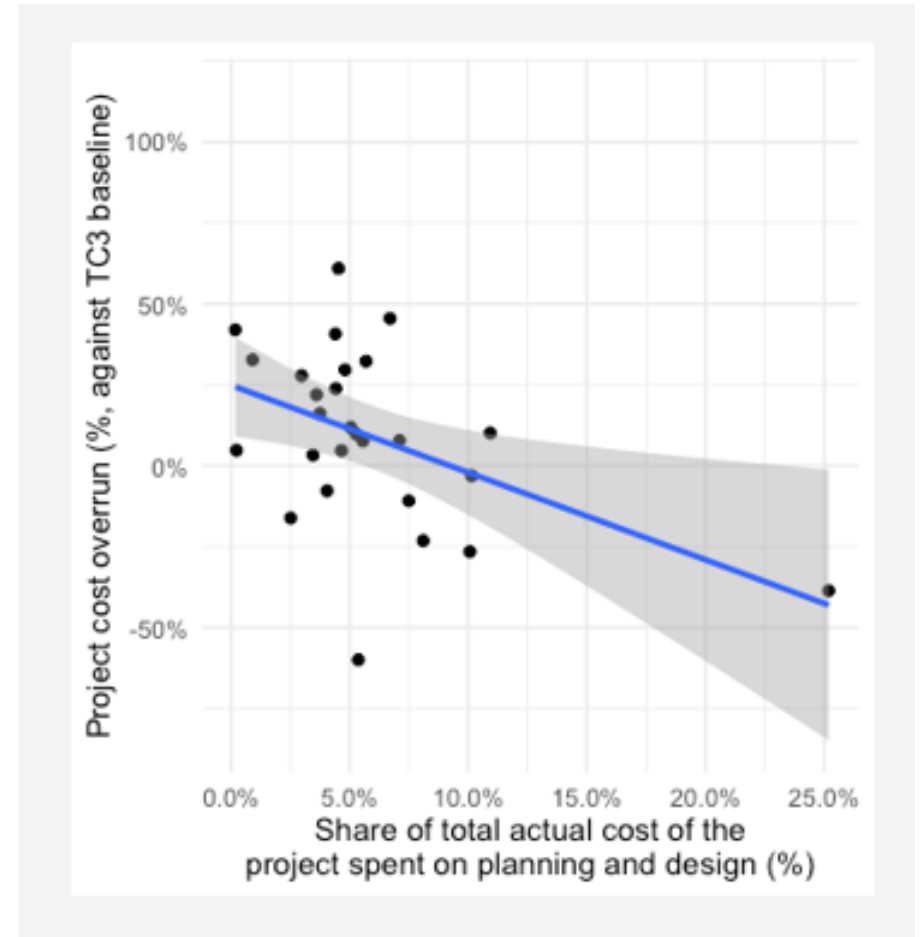


# The value of data

- Analysis of data and outcomes

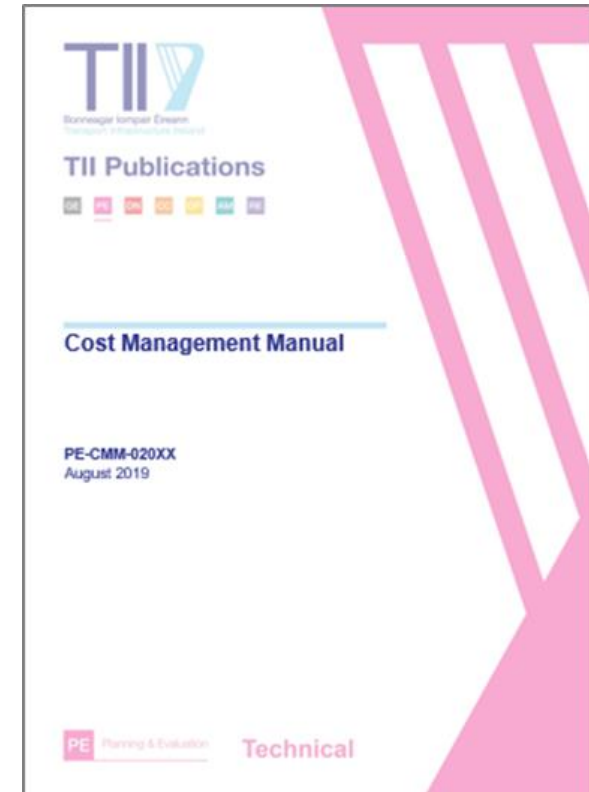
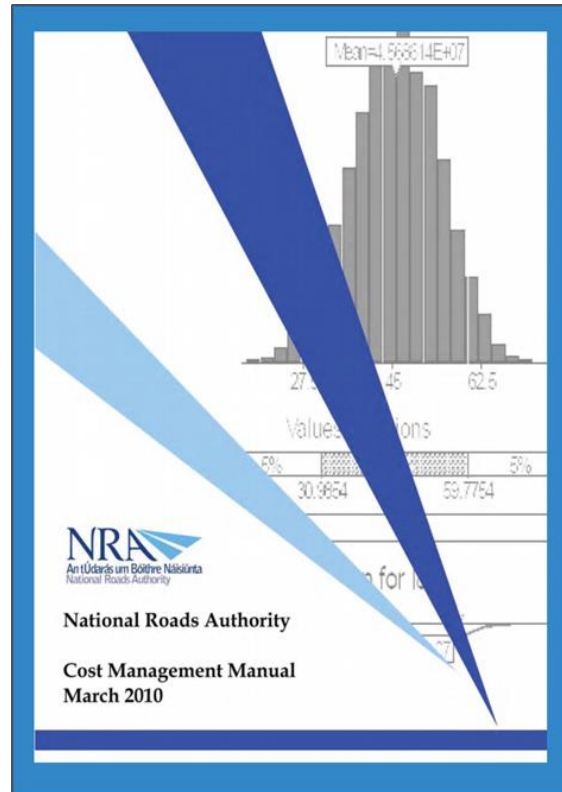
## Does spending more on Planning & Design reduce cost overrun?

The model analyzed whether spending more on advance works, supervision, planning & design led to smaller cost overruns. The only statistically significant association is between planning & design and cost overrun ( $p=0.01$ ). **The more projects spend on planning and design as a share of the total actual cost, the lower the cost overrun.**



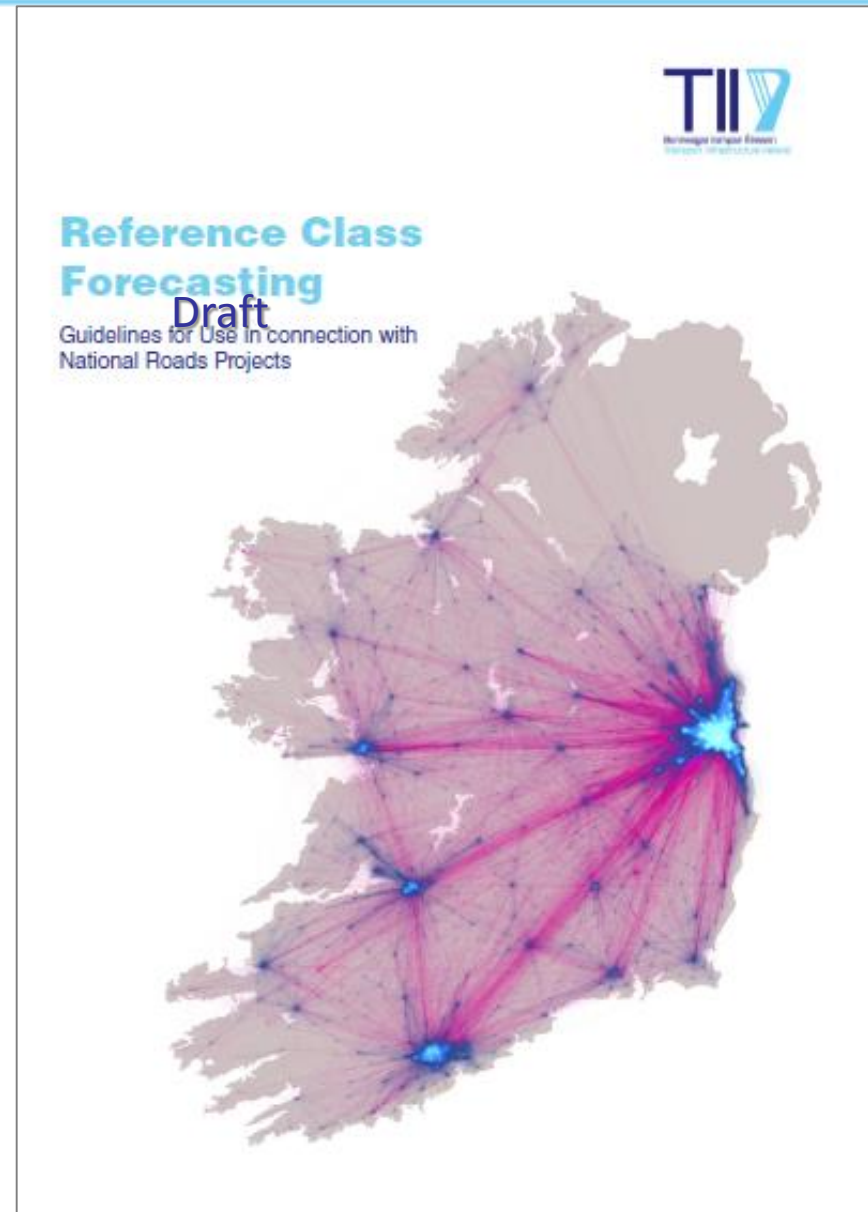
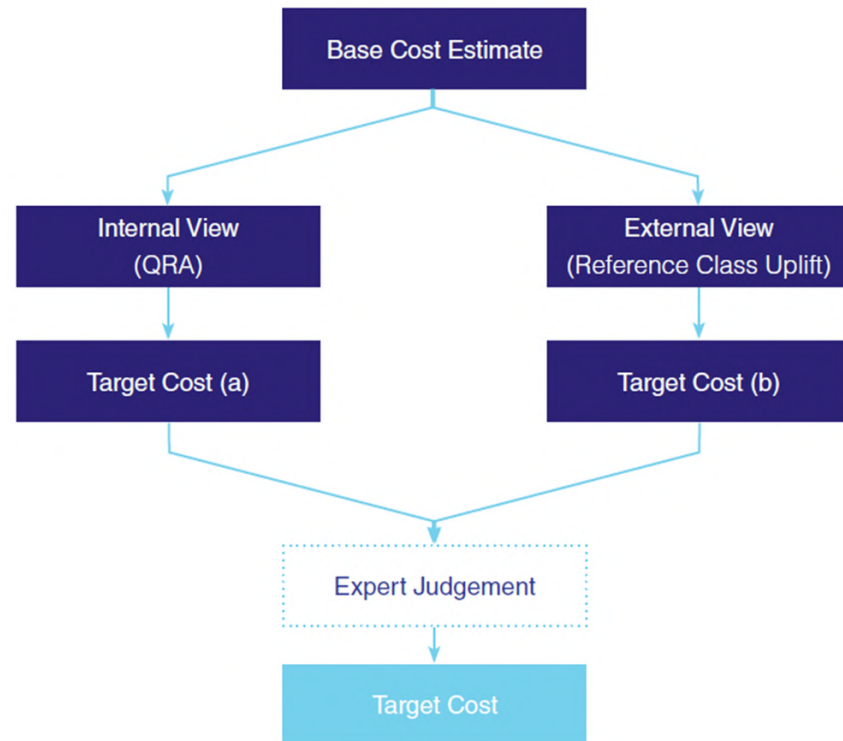
# Enhancing processes

- Update to Cost Management

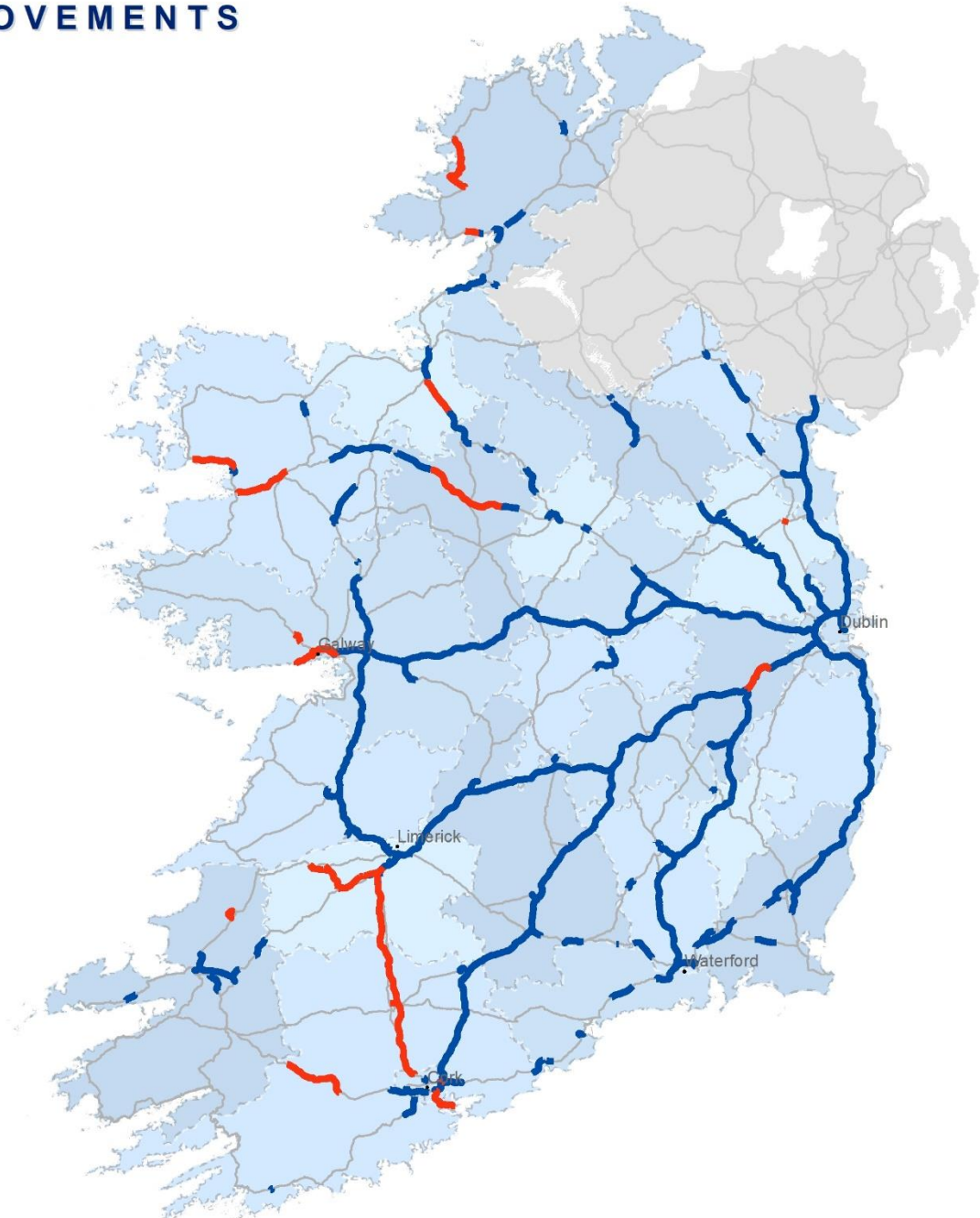


# Enhancing processes

- Implementation of Reference Class Forecasting for National Roads

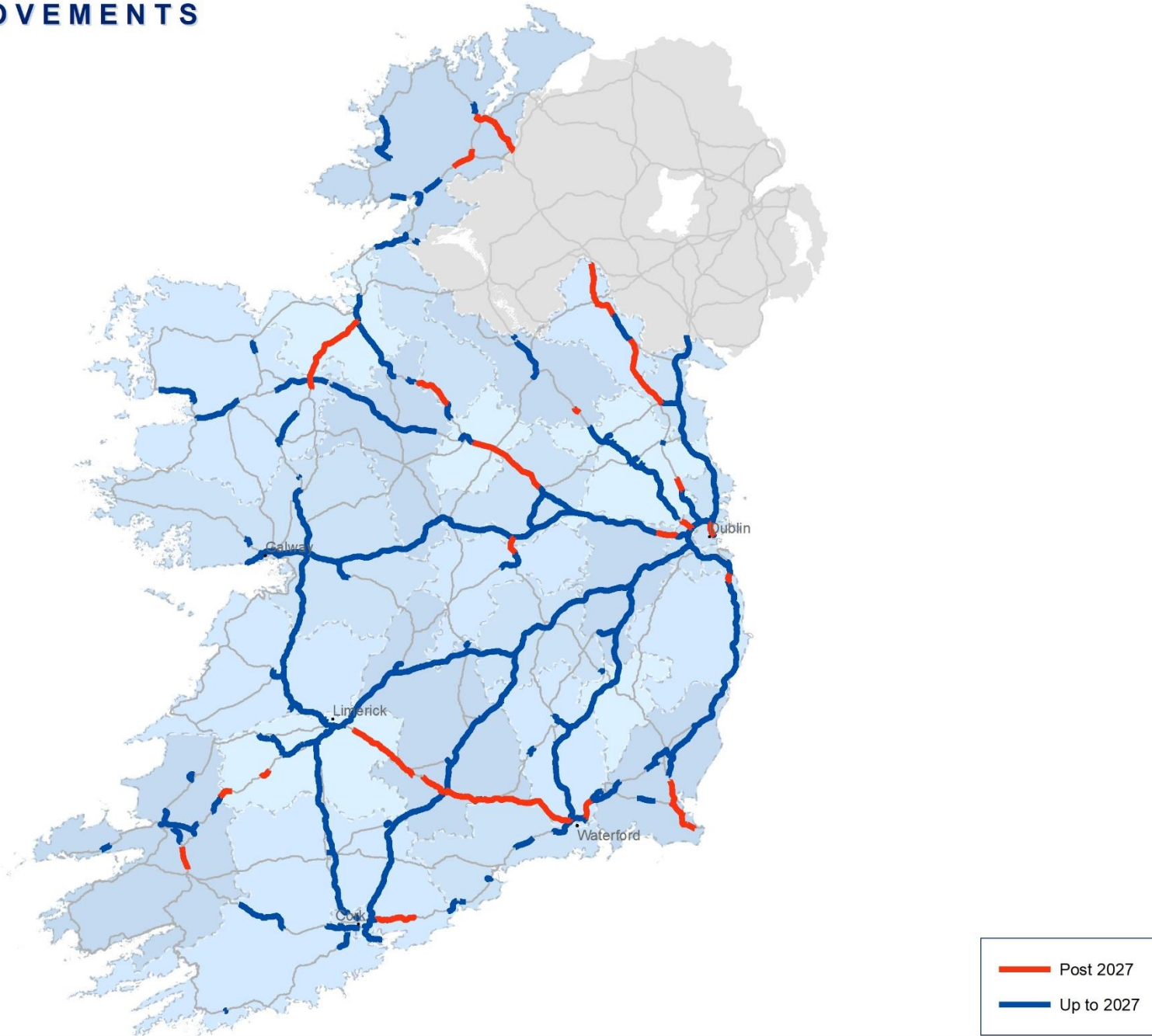


# NETWORK IMPROVEMENTS 2020 TO 2027





# NETWORK IMPROVEMENTS POST 2027



# Supplementary Slides

# Reference Class Forecasting (RCF): What is it?

## WHAT IS REFERENCE CLASS FORECASTING

- RCF is a forecasting technique that can be used in conjunction with, or as a substitution to other traditional forecasting techniques such as regression analysis
- Instead of making predictions about the case at hand, RCF builds classes of similar cases about which we already know the outcomes, RCF then uses those classes to make more accurate predictions of performance, including costs and benefits forecasts as well as completion times

## KEY ISSUES WITH COMMON APPROACHES

- Predictors adopt an inside-view, which tries to extrapolate future performance based on current trends
- Predictions are overly optimistic, overestimating benefits, underestimating costs and completion times

## RCF BENEFITS

- Introduces an unbiased, outside view, ignoring the details of the case at hand
- Reduces human error and judgement
- Provides a prediction of success or failure based on similar real-world cases

## WHO USES RCF

- RCF was developed from the work of Amos Tversky and Nobel Prize Daniel Kahneman in 1979
- It has been endorsed by the American Planning Association
- RCF is used by U.K., Hong Kong and Australian governments for large infrastructure projects
- It is also used by investment banks as well as consulting firms to make predictions in large infrastructure projects, IT Projects, M&A and market entry decisions

# Inaccurate forecasts often come from the use of an "Inside View"

## THE INSIDE VIEW

- When making prediction about a case at hand, e.g. estimating costs, revenues and completion time, we tend to **focus only on the case at hand**, disregarding information about past projects for which the outcomes are known
- We focus on the resources needed to bring the project alive as well as obstacle to its completion
- The inside view is the natural approach in making forecasts
- This leads to a series of **cognitive biases**

## COGNITIVE BIASES ASSOCIATED WITH THE INSIDE VIEW

- **Cognitive biases** are systematic errors in thinking processes
- Some of these cognitive biases are
  - 1. Planning fallacy:** the tendency to underestimate the duration and cost of an endeavour
  - 2. Optimism bias:** the tendency to be overly optimistic when making predictions
  - 3. Over confidence:** the tendency of decision makers to overestimate their abilities
  - 4. Anchoring bias:** the tendency to rely heavily on the first prediction or even random numbers in subsequent predictions

# Reference Class Forecasting overcomes the drawbacks of the Inside View by adopting the so-called "Outside View"

## THE OUTSIDE VIEW

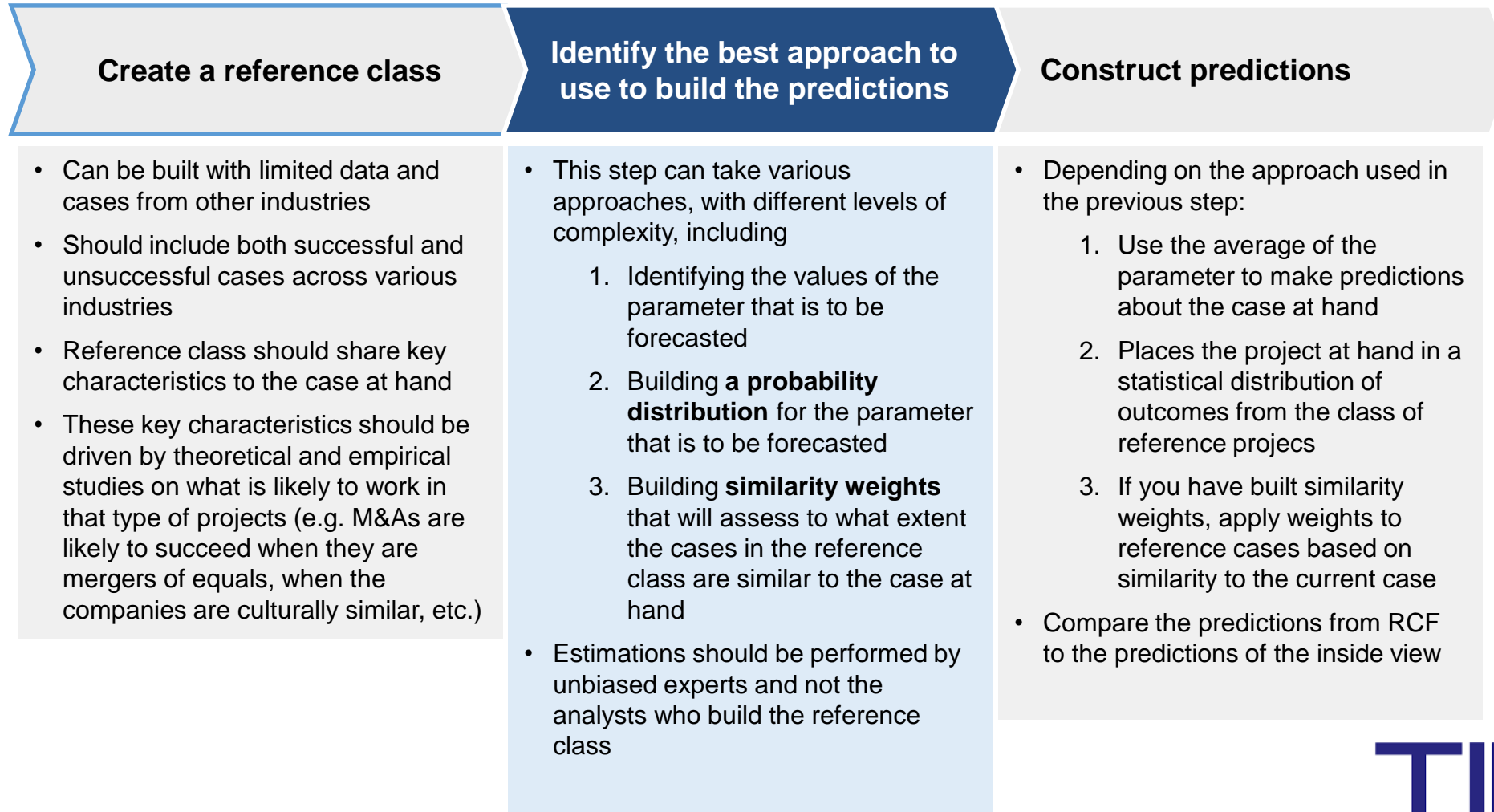
- The Outside View provides solutions to the problems of the Inside View
- Ignores the specific knowledge that you have to the inner workings of your case and looks at the case from an unbiased perspective

## HOW THE OUTSIDE VIEW WORKS

- Ignores the details of the case at hand and makes no attempt to forecast the outcome of the case
- Focuses on the statistics of a class of cases chosen to be similar in relevant respects to the case at hand
- Requires deliberate intentions to compare the case at hand to outcomes of previous cases
- Minimizes the adverse impact of cognitive biases



# Reference Class Forecasting follows a three step process





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Norwegian Ministry  
of Finance

# The Norwegian scheme for quality assurance of major public investments

Jonas Toxvig Sørensen, Budget Department

January 2020, Dublin



# Challenges with major public investment projects

## *Public project failure*

- Huge cost overruns
- Benefits not realized
- Poor planning and management



# Quality assurance scheme introduced in 2000

## Solution

- *Ministry of Finance* takes a strong role
- *External reviews* by independent consultants
- Final *decisions by cabinet*, not line ministries

# The Norwegian quality assurance scheme

## History and coverage

- QA scheme established and managed since 2000 by the Ministry of Finance
- All state investments > 100 million euros

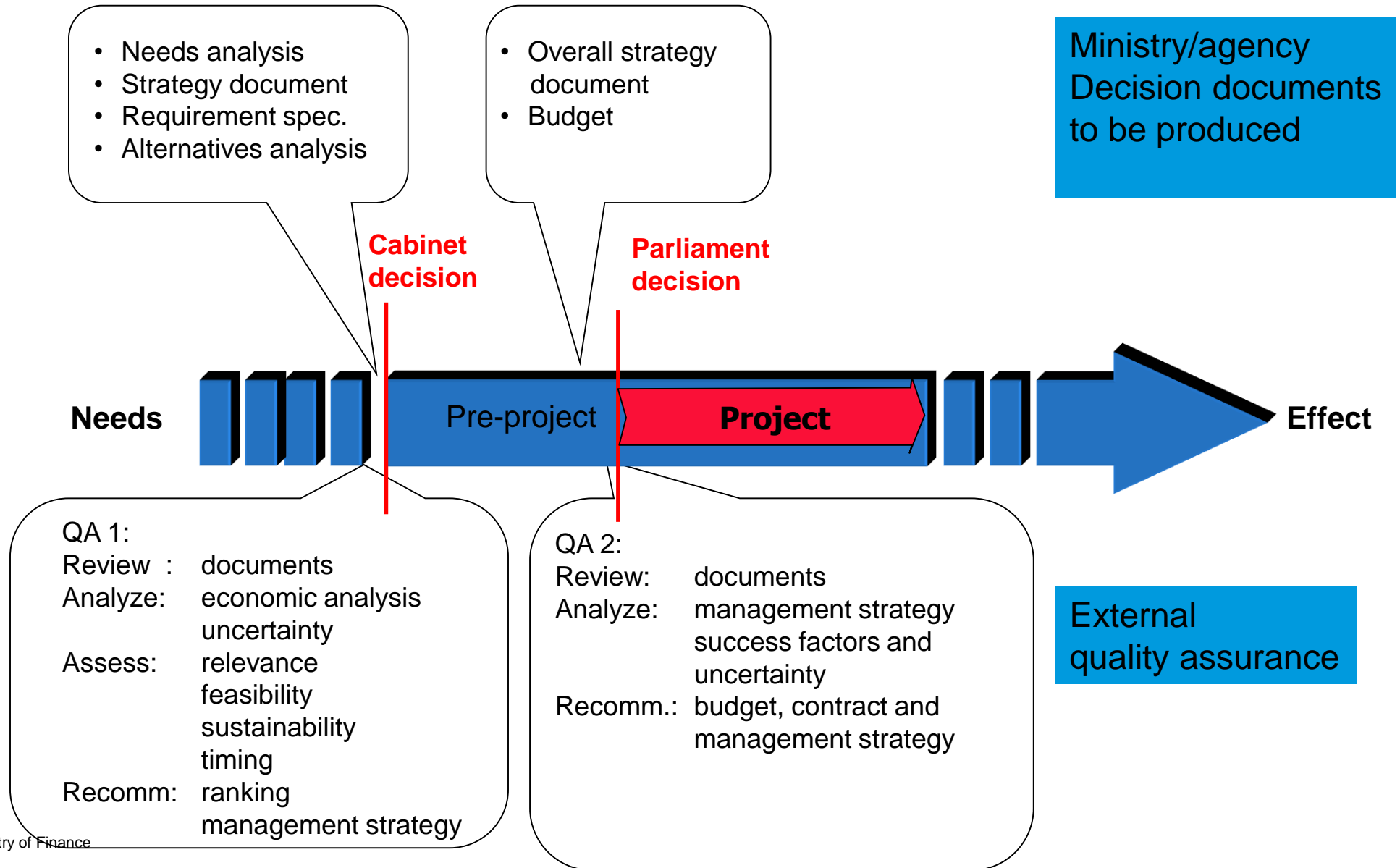
## Agreement with seven independent consultancy groups who conduct the QAs

- Reports submitted to Ministry of Finance and line ministries

## 350 QAs have been carried out since 2000

- Transport-infrastructure projects represent more than half of the projects

# The Norwegian QA scheme: a detailed overview



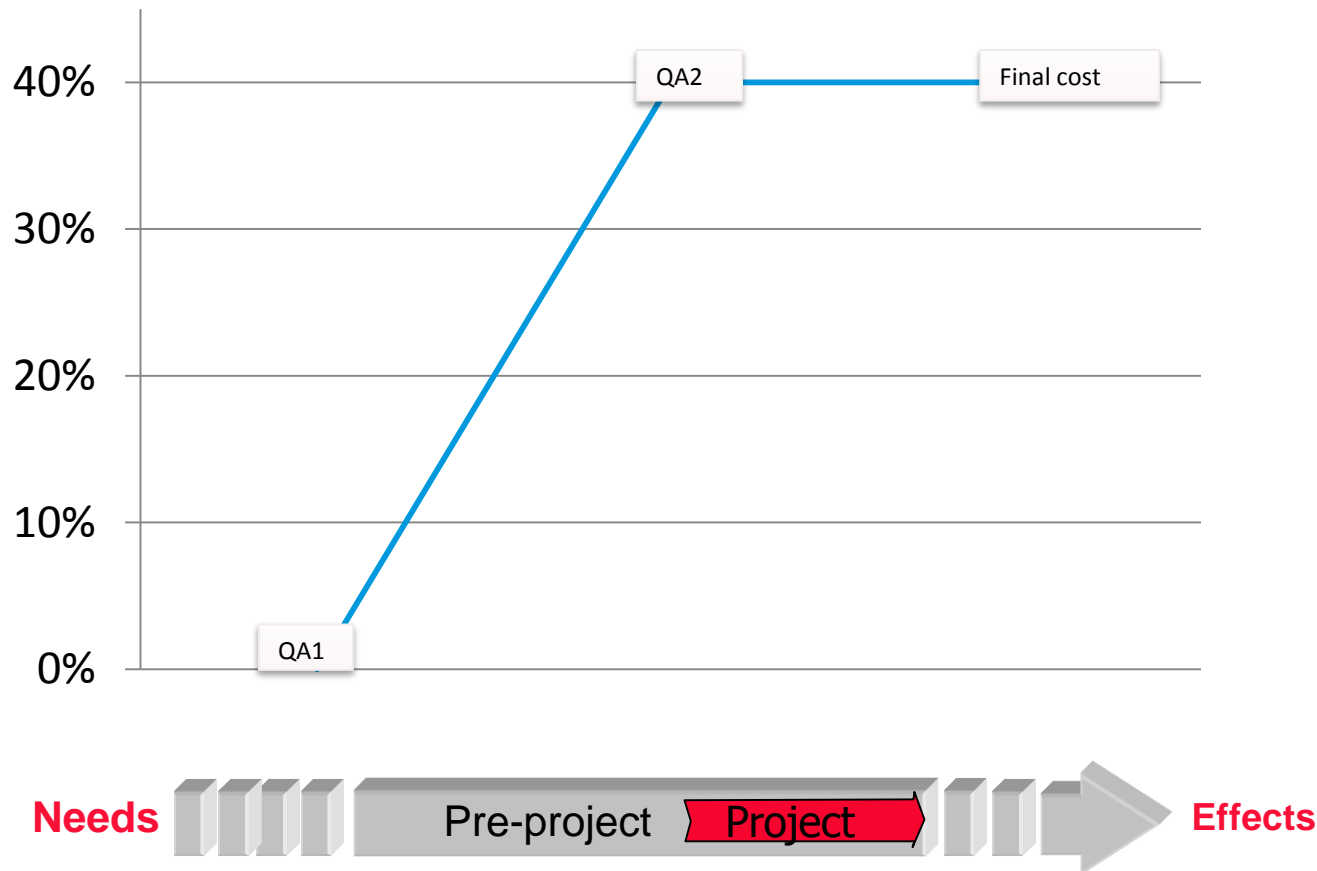
# Realistic and reasonably cost control over time

Study	Number of projects	Deviation from P50	Deviation from P85	Share below P50	Share below P85
Aas (2013)	40	+2,1 %	-7,6 %	45 %	80 %
Welde (2014)	51	+6,0 %	-4,4 %	45 %	75 %
Welde (2015)	66	+2,8 %	-6,9 %	48 %	79 %
Welde (2017)	78	+2,3 %	-6,9 %	48 %	77 %
Welde et al. (2019)	85	+3,4 %	-5,6 %	40 %	73 %



# The main challenge is that costs increase from QA1 to QA2

Change in project cost in different phases



- Concept (2016): Costs have increased with **40 %** in 14 projects from QA1 to QA2
- Menon (2015): Costs increased with **67 %** in 4 construction projects from QA1 to QA2
- National Transport plan: Cost increased with **42 %** for roads and **26 %** for railways

# Measures taken to improve management and cost control in the pre-project phase, from QA1 to QA2:

1. Requirement to log changes in the project
  - Line Ministry have to consider the importance of the changes and if it require a new Government decision.
  - The log of changes need to be presented at QA2 to explain how the projects have developed.
2. A budget target equal to P50 at QA1 measuring cost development between QA1 and QA2
3. From September 2019 the QA2 will include an update of the CBA

# The Concept research program

- Research programme financed by the Ministry of Finance
- Relevant research, guidelines and information
- Evaluation and research on large public investments
- Research results are published
- International symposium every second year
- More information: <http://www.ntnu.no/concept>



# Back-up

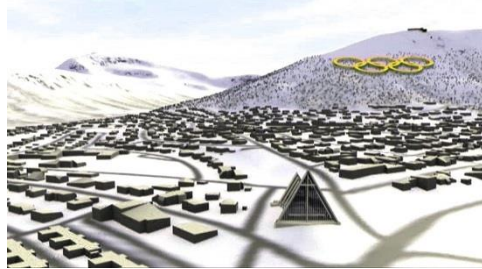




# Cases



- ❖ Norway plans an acquisition of up to 52 F-35 fighters - a key procurement for the Norwegian Armed Forces
- ❖ QA report estimated the cost to 7 bn euros
- ❖ The project is on time and budget



- ❖ Tromsø 2018 – application for Norway hosting Winter Olympics
- ❖ QA report estimated the cost to 2 bn euros
- ❖ The application was not submitted to the IOC



- ❖ The European Railway Traffic Management System (ERTMS) is a major industrial project
- ❖ The largest ongoing ICT-project in Norway
- ❖ The project is on time and budget



- ❖ QA1 road in the mountains - Rv 15 Strynefjell
- ❖ Planned cost 4 bn kroner
- ❖ The project was not prioritized





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# GOVERNANCE OF INFRASTRUCTURE: LESSONS LEARNED FROM OECD COUNTRIES

**Ana María Ruiz Rivadeneira**

Infrastructure and Procurement Division

Conference on public investment governance, reform and innovation  
Dublin, 31 January, 2020



## Governance matters for quality infrastructure and to increase financing from the private sector

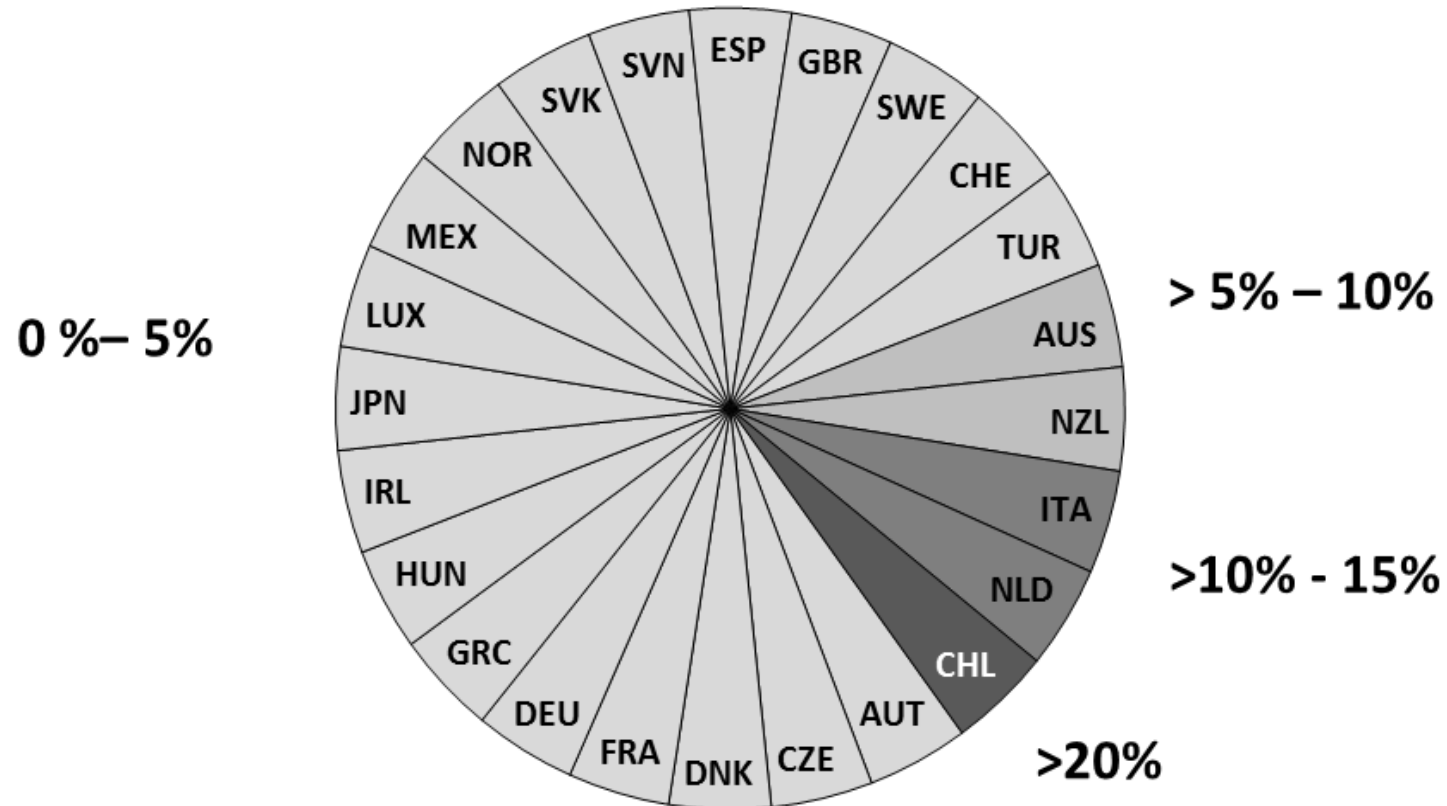
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- **Better governance will improve return on public investment but also draw in more private financing for infrastructure**
- Governance failures inhibit the delivery of high-quality infrastructure
- Citizens are concerned that their perspective is not (or not visibly) taken into account
- Investors (particularly long-term investors) expect government to be a competent and reliable partner and to promote a stable business climate for investment as well as a bankable pipeline of projects



# Most infrastructure investment is delivered through public procurement

Share of PPPs in total public sector infrastructure investment

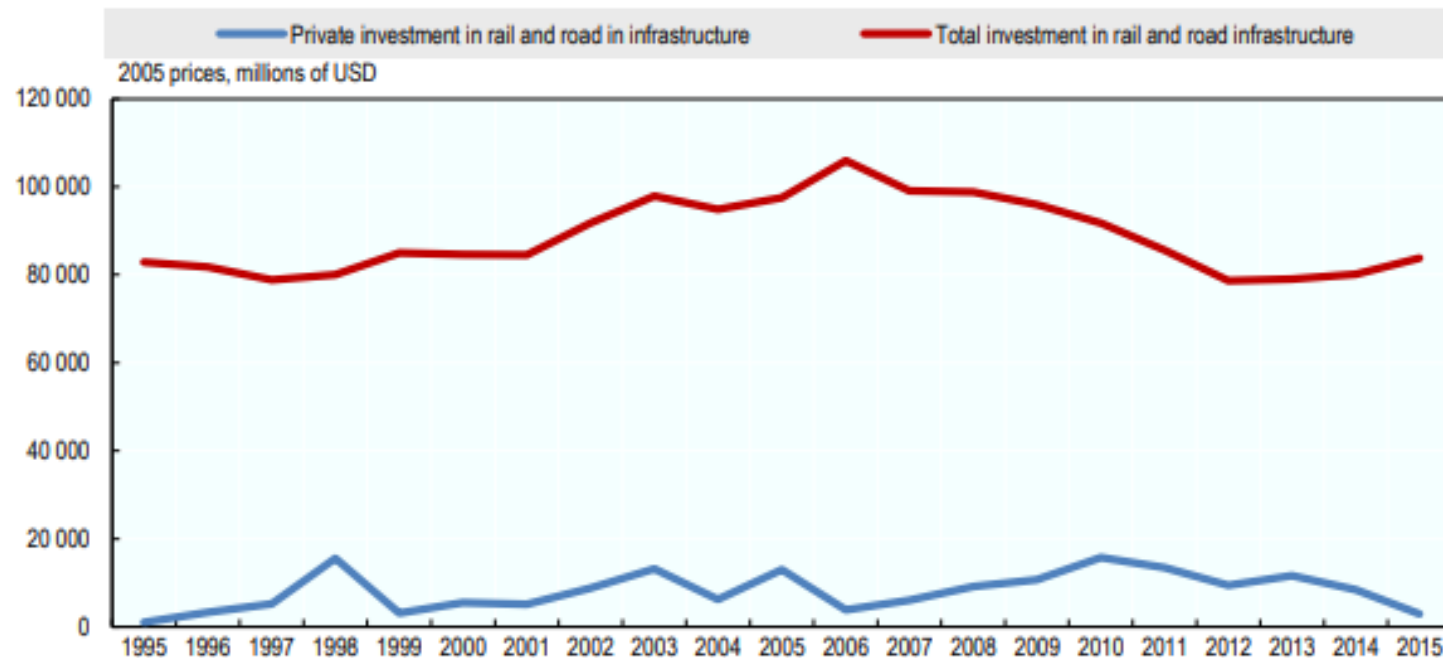






# Most infrastructure investment is financed by public funds

Private and total investment in road and rail infrastructure in OECD\* countries (millions of USD, 2005 price)

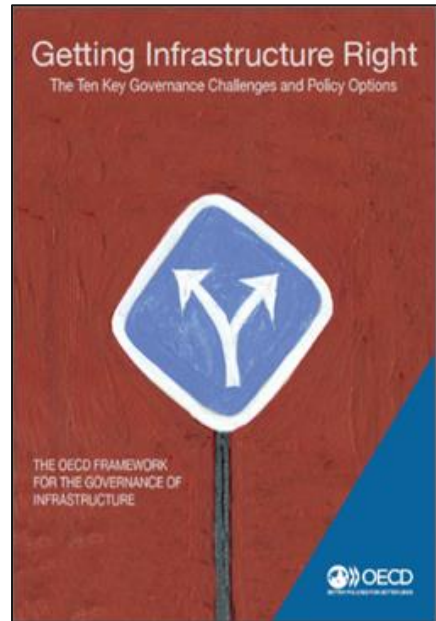


Note: \* Due to incomplete data on total investment, Greece was excluded from this overview.

Source: Dealogic Projectware database, OECD/ITF statistics.



# OECD Framework for the Governance of Infrastructure: Getting Infrastructure Right



- ✓ Ten dimensions or “success factors”
- ✓ Policy options to identify an enabling environment
- ✓ Building on several OECD instruments

**STRATEGIC VISION AND PLANNING**

- Vision
- Delivery
- Coordination

**ENABLING FRAMEWORK**

- Integrity
- Regulation
- Consultation

**AFFORDABILITY, FINANCING AND VALUE FOR MONEY**

- Affordability and value for money
- Data

**LIFE-CYCLE PERSPECTIVE**

- Performance
- Resilience



## Rationale for updating the Framework

---

- ✓ Raises the Framework to a whole-of-government level and increases its impact and relevance
- ✓ Includes elements that were missing or not fully highlighted in the Framework
- ✓ Takes into account work done by different policy communities, new recommendations and lessons learned
- ✓ Ensures synergies with the OECD Horizontal Project on Strategic Policies for Sustainable Infrastructure
- ✓ Ensure a strong support its implementation as well as a periodic review to ensure that it remains relevant, including possibly by:
  - ✓ Developing and using indicators; and
  - ✓ Using the draft Recommendation as a benchmark to support country and regional reform programmes



## Elements that were missing or not fully highlighted in the framework

### Strategic Vision

- National and subnational perspective
- Infrastructure needs assessment
- Impact of technology
- Fiscally sustainable
- Political consensus
- Environment, gender equality, sustainable development and growth considerations
- Robust institutional framework

### Efficient and Effective Procurement

- Competitive, transparent and efficient procurement processes
- Risk-based approach
- Contractors' transparency and accountability
- Integration into public finance management, capital budgeting and service delivery
- Attractive, merit-based career options for officials

### Stakeholder Engagement

- Proactive measures to disseminate information
- Disciplined, upfront stakeholder mapping
- Collaboration during all phases of the project life-cycle
- Debate on the main economic, environmental and social impacts



## Elements that were missing or not fully highlighted in the framework

### Fiscal Sustainability, affordability and VfM

- Fiscal sustainability
- Capital budgeting and MTEF
- Prioritisation and high investment thresholds for project evaluation
- Budget transparency and fiscal risks
- Risk management
- Economic, social, environmental and climate costs and benefits

### Evidence-informed decision-making

- Institutional responsibility for analysis, dissemination, and learning of data
- Production of data at subnational scale
- Harnessing digital technologies and data analytics
- Data collection over the entire lifecycle

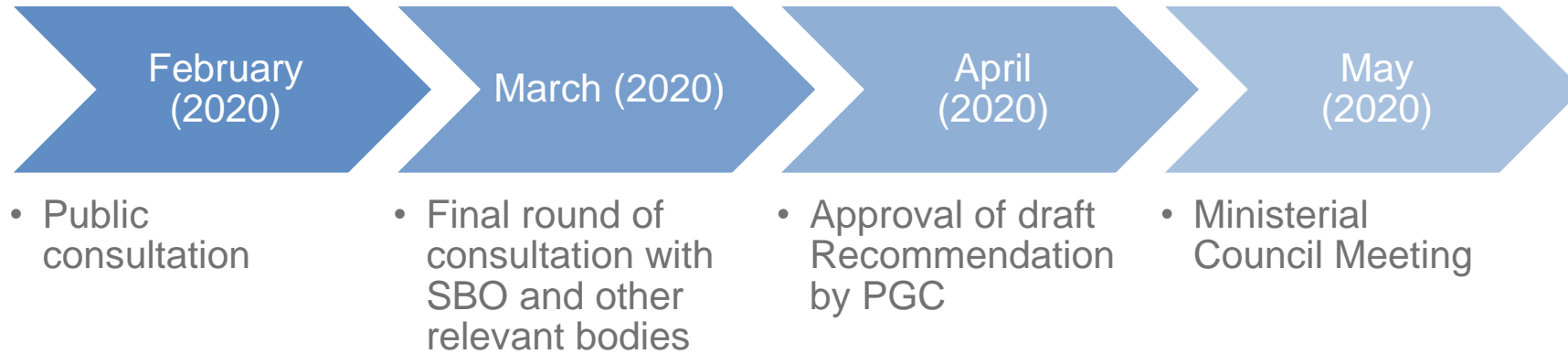
### Asset performance throughout its life

- Life-cycle costs and asset quality
- Contractors' accountability
- Review of asset value and depreciation and impact in accounts
- End of PPP contracts and transition new arrangements





# Timeline



## 5<sup>th</sup> OECD Forum on Governance of Infrastructure

11-12 May 2020, OECD, Paris, France





THANK YOU

Questions:

Ana Maria Ruiz Rivadeneira  
[Anamaria.ruiz@oecd.org](mailto:Anamaria.ruiz@oecd.org)



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Phoiblí agus Athchóirithe**  
Department of Public  
Expenditure and Reform

# Infrastructure investment in an era of uncertainty

Conference on public investment governance, reform and innovation

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Government  
Project Delivery  
Profession

# Building project delivery capability

Fiona Spencer

Director, Profession & Standards  
Infrastructure and Projects Authority



# The beginning

---



**“Transforming project leadership:** The Major Project Leadership Academy (MPLA) will train the senior leaders responsible for major projects.

In future only project leaders who have successfully completed this intensive development programme will be able to lead a major government project.

The MPLA will drive a better understanding of the role of leadership, technical delivery skills and commercial capability in delivery of major projects, building the project and programme management community across Government.” (*Civil Service Reform Plan 2011*)



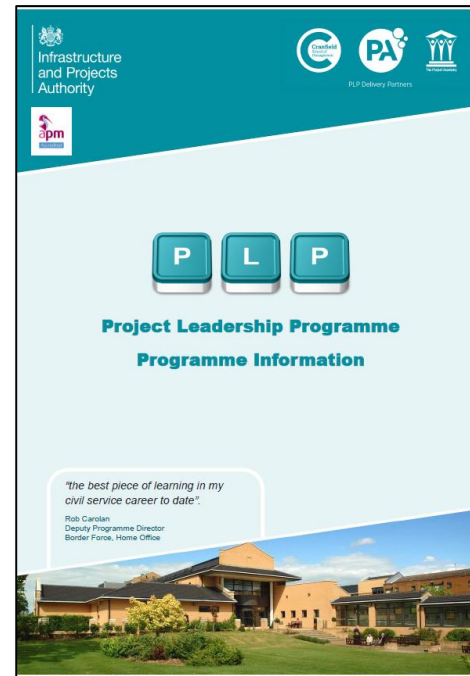
# Extending the offer...



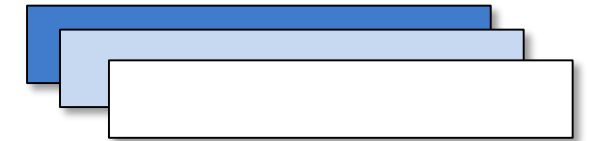
'C-suite'  
(DGs & CEOs)



Major project leaders  
(SROs & PDs)



Project leaders  
SROs, PDs, PfMs)



Federated  
Academies &  
other targeted  
programmes

Range of targeted  
programmes for new &  
aspiring leaders

# Building the profession



Standards



Capability framework



Leadership



Cross-Government recruitment



Graduates & apprentices




Talent management

# Growing early talent

Civil Service Fast Stream

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**Schemes**

## Project Delivery

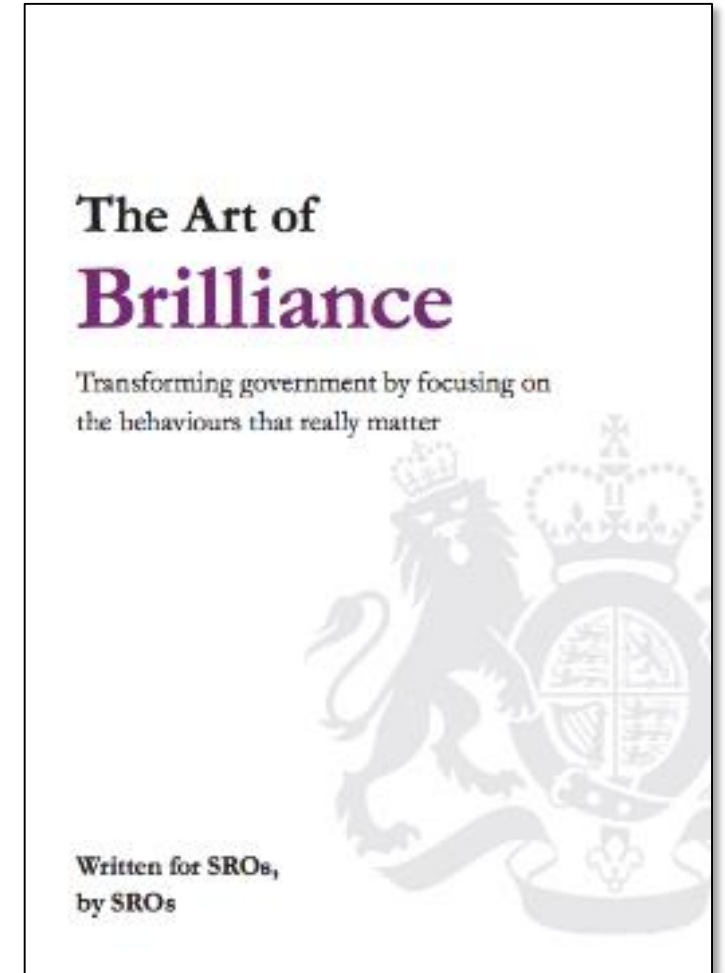
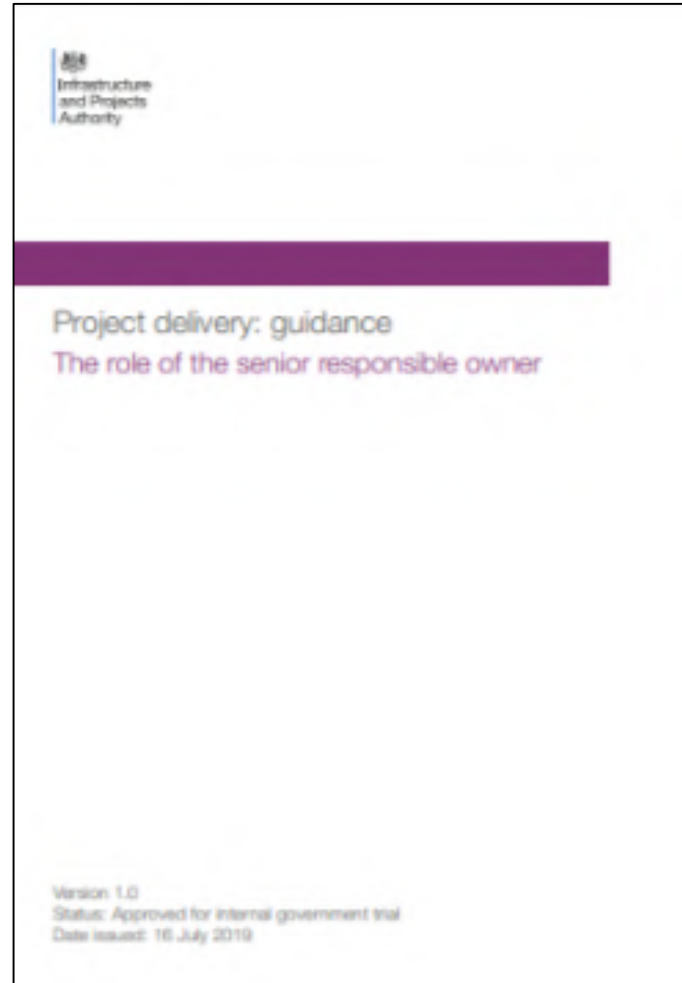
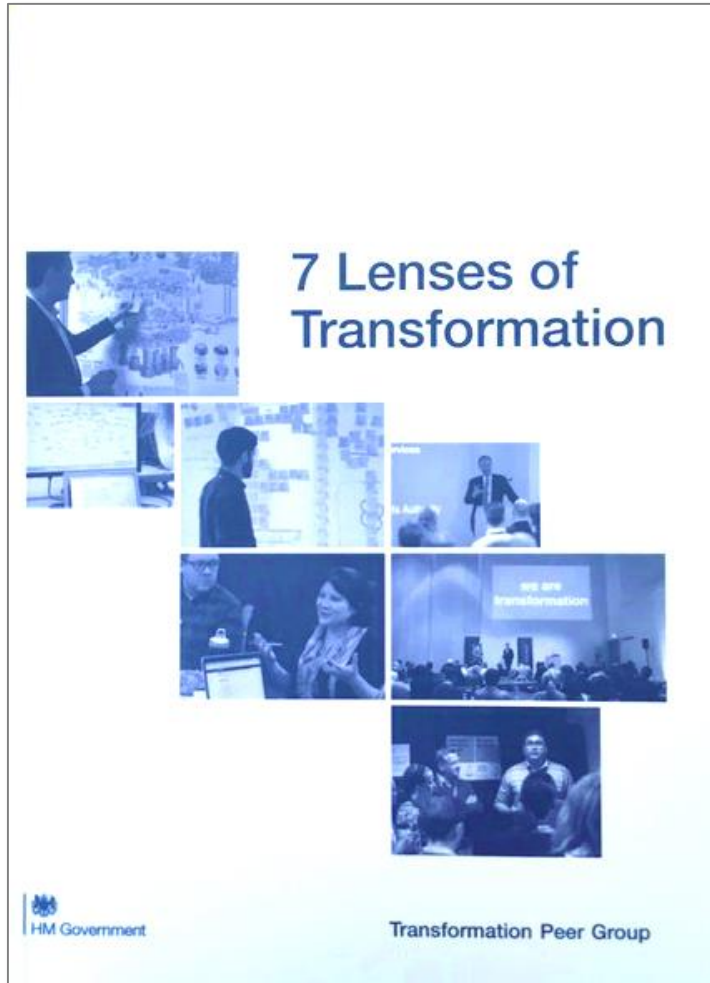
On the Project Delivery Fast Stream, you'll develop professional skills to help deliver the most exciting

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Duration	Salary	Location
<b>Up to 4 years</b>	<b>£28k</b>	<b>UK-wide</b>



# More support for project leaders



# Where are we?

---

- World class development for 2000+ project leaders
- Clear improvements in leadership retention and capability
- 3<sup>rd</sup> most popular graduate scheme in government
- Surge of interest in project delivery as a profession



# More to do...

---

- Accreditation linked to skills, experience and CPD - at all professional levels
- Core skills development and curriculum refresh
- Extending the focus to wider public sector
- Working with the supply chain

# What we've learnt

---

- Building capability takes time
- Make it aspirational
- Look in different places
- Make it matter
- Think about the pipeline



Government  
Project Delivery  
Profession

Government Project Delivery Profession



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Department of Public  
Expenditure and Reform

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INFRASTRUCTURE  
GOVERNANCE  
FACILITY

AN IMF-JAPAN CAPACITY  
DEVELOPMENT PARTNERSHIP

# **Ireland: More bang for the buck by strengthening Public Investment Management**

INFRASTRUCTURE INVESTMENT IN AN ERA OF  
UNCERTAINTY

DUBLIN, IRELAND  
JANUARY 31, 2020

Carolina Renteria  
Fiscal Affairs Department



# Outline of Presentation

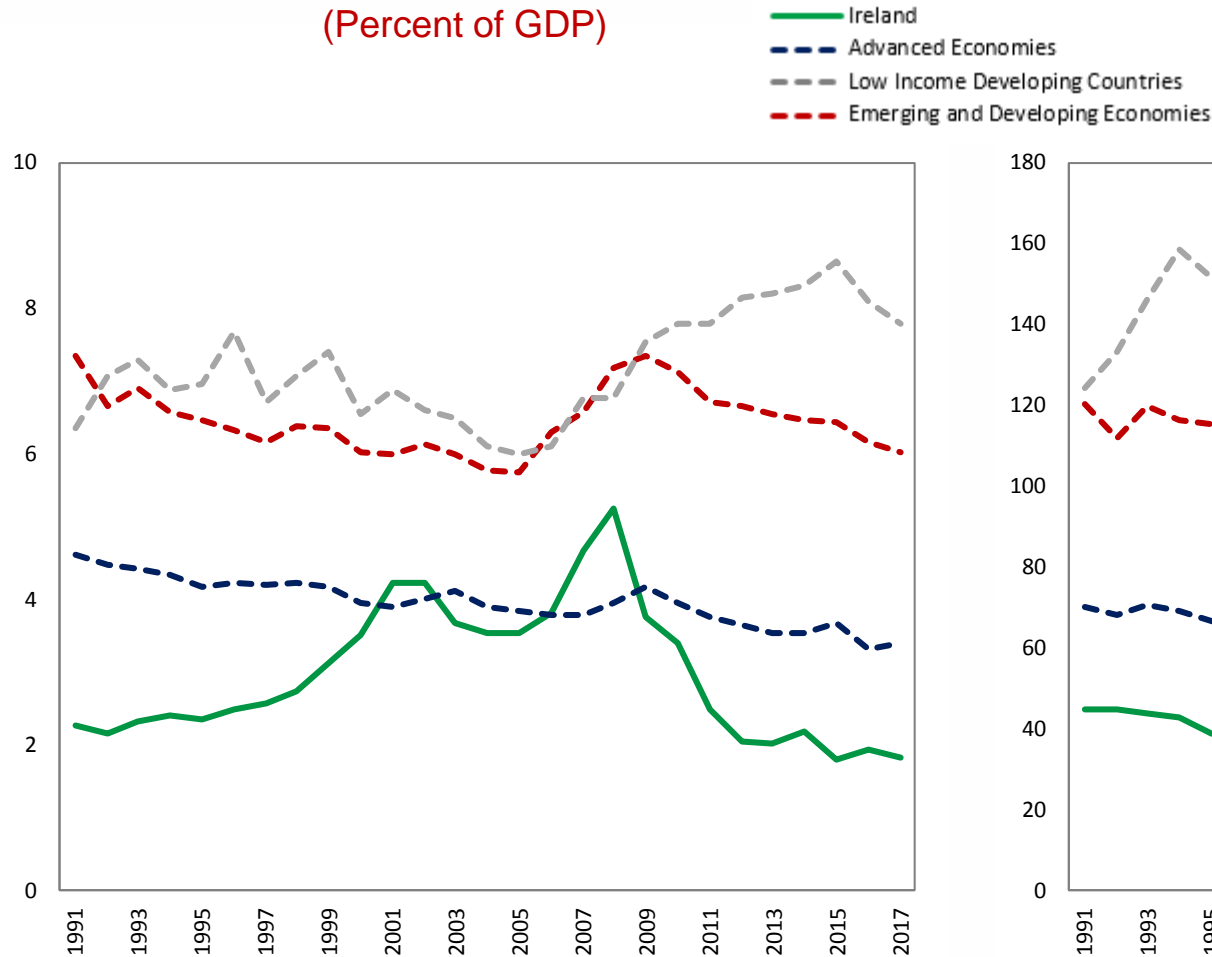
- **Investment Needs & The Public Investment Management Assessment (PIMA)**
- **IMF's Commitment to Infrastructure Governance**
  - ✓ **Regional Networks**
  - ✓ **Infrastructure Governance Facility**
- **Ireland's PIMA guiding the reform agenda**
  - ✓ **Main Findings**
  - ✓ **Recommendations**
- **Some Good Practices for Public Investment**

# Public investment is an important catalyst for economic growth

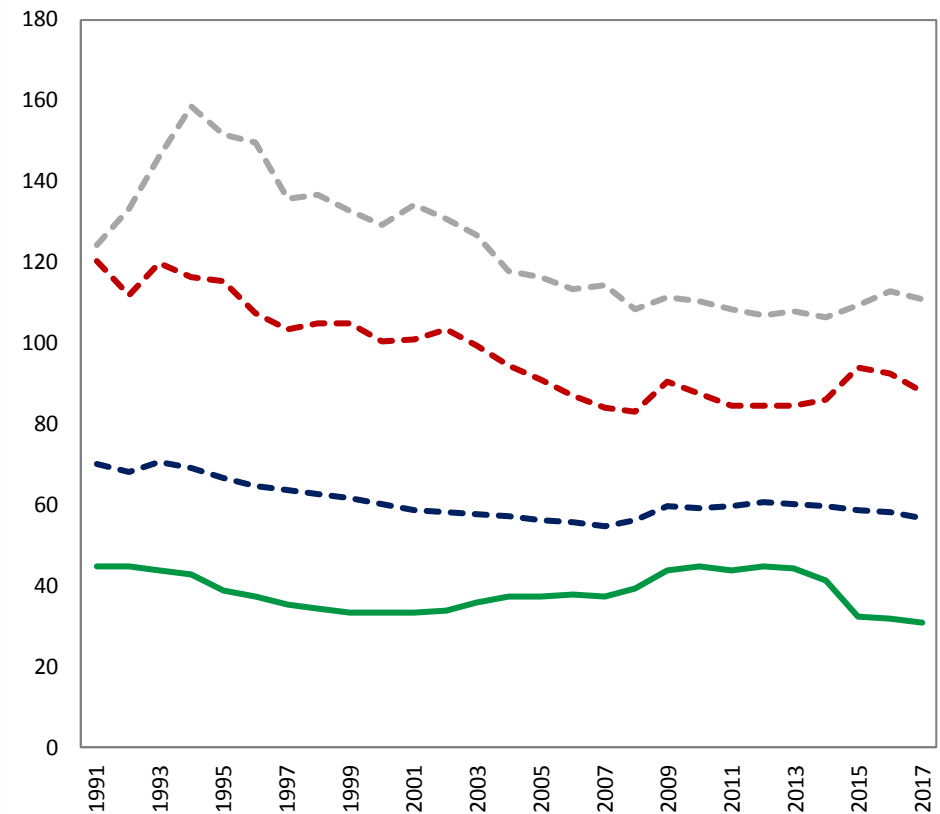
Public investment has been falling over the past 25 years, except in LIDCs

Resulting in a fall in public capital stock

## General Government Investment (Percent of GDP)



## General Government Capital Stock (Percent of GDP)

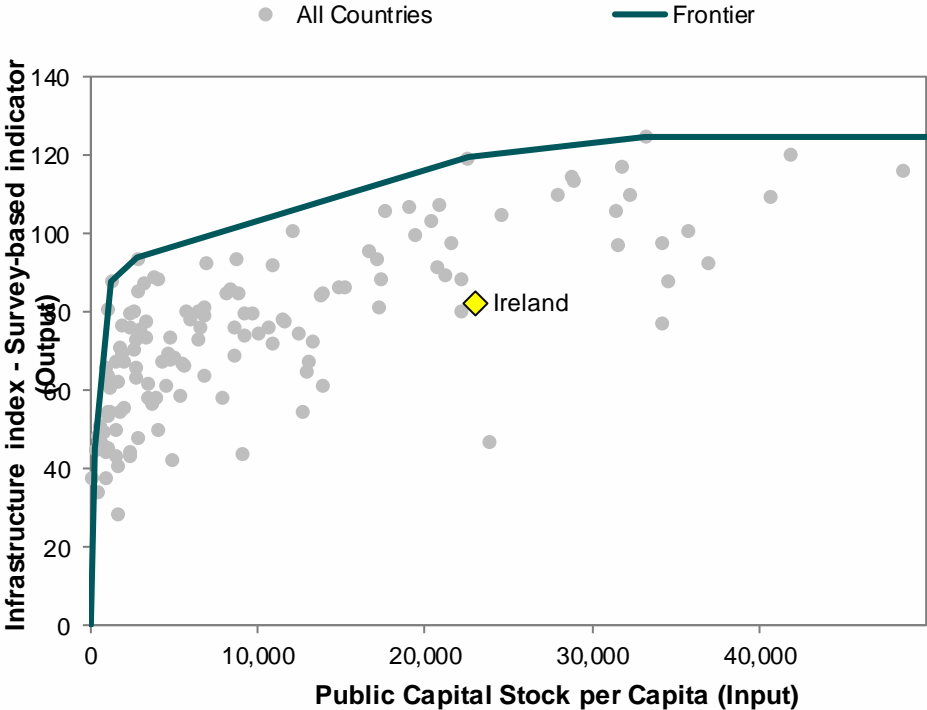


Source: IMF Staff estimates.

# For investment to convert to better outcomes, it needs to be done well

Large public investment efficiency gaps both across and within different income groups

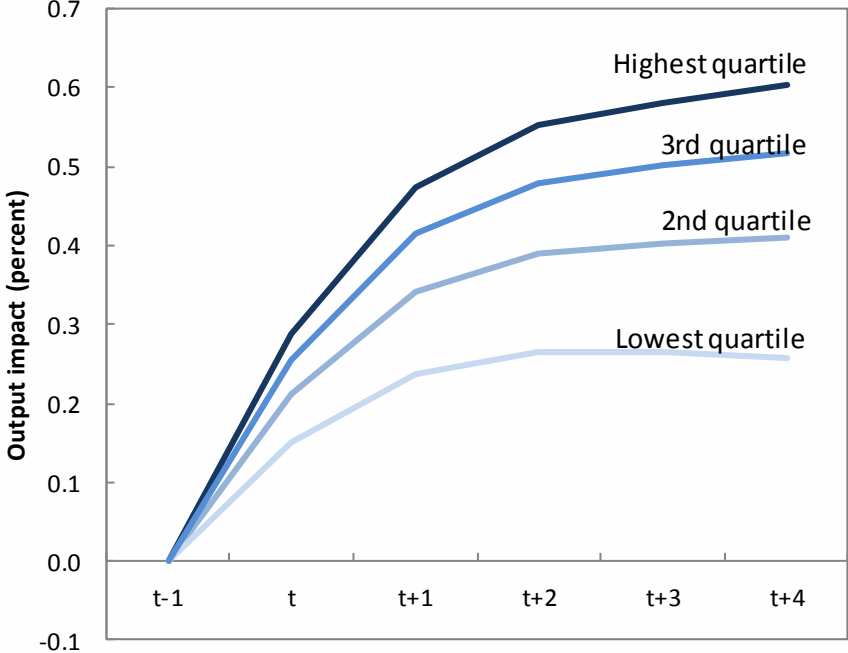
## Public Capital Stock and Infrastructure Quality



Source. IMF Staff estimates.

Efficient investors get twice the economic dividend compared to least efficient investors

## Profile of output impact of a 1% of GDP increase in public investment by efficiency group

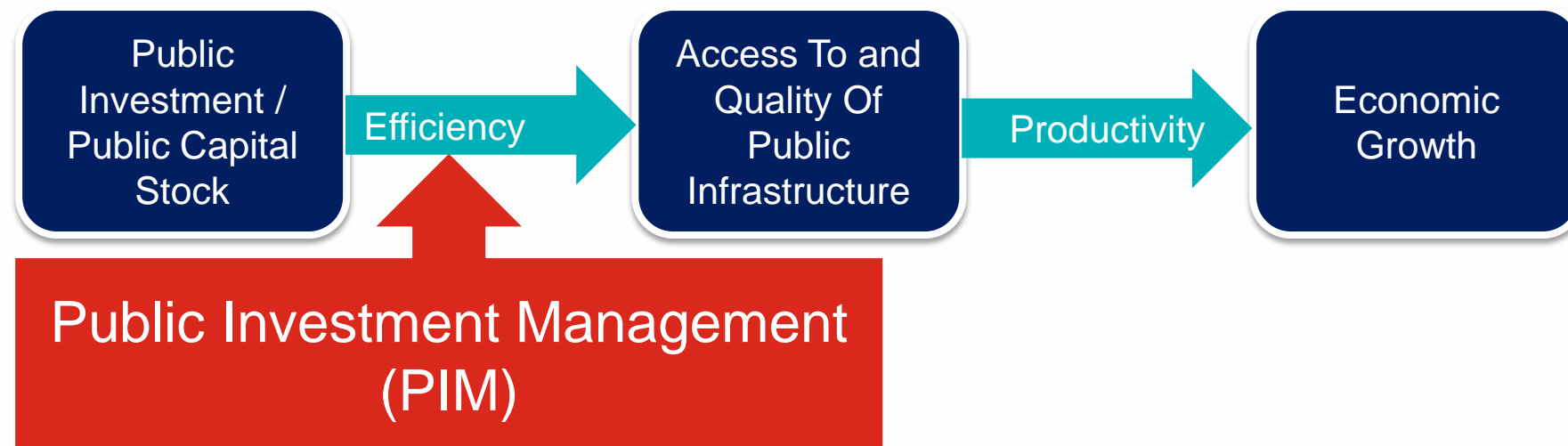


# Improvements in public investment management (PIM) needed to reap full benefits of scale up of investment

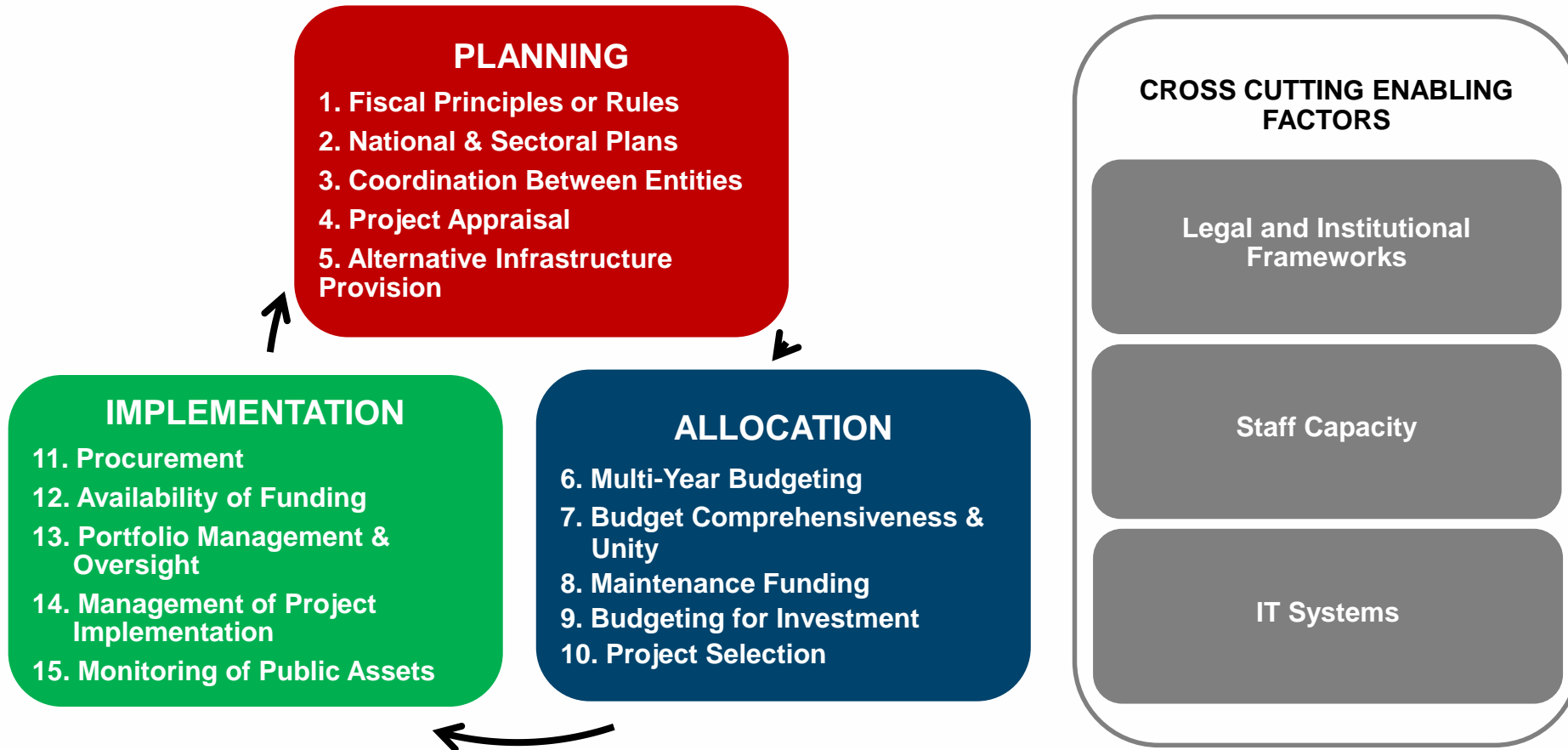
Empirical studies underscore the importance of fiscal institutions for public investment efficiency, hence for growth.

Differences in the efficiency of public investment across countries partly reflect differences in the relative strength of PIM institutions

“Investing in investing”—or strengthening public investment management—will yield an even higher growth “bang” for the investment “buck.



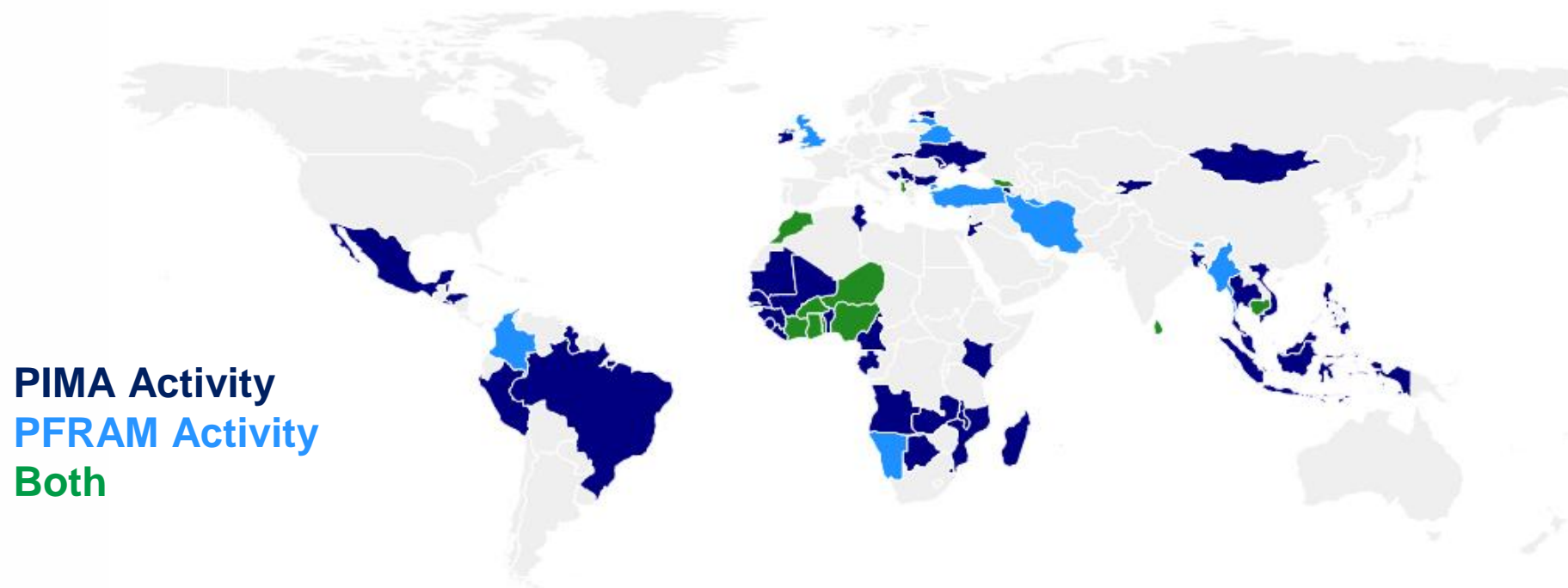
# IMF's Public Investment Management Assessment (PIMA) thoroughly assesses country systems



# The IMF has a strong commitment to Infrastructure Governance

The IMF has intensified its work on Infrastructure Governance in recent years:

- ✓ Two Board Papers (2015 and 2018) to establish and update the PIMA Framework
- ✓ Conducting Capacity Development with over 60 PIMA, 20 PFRAM, more than 10 regional workshops and 55 follow up activities (since 2015)
- ✓ Contributing to international fora based on these experiences (G20, regional seminars, etc.)



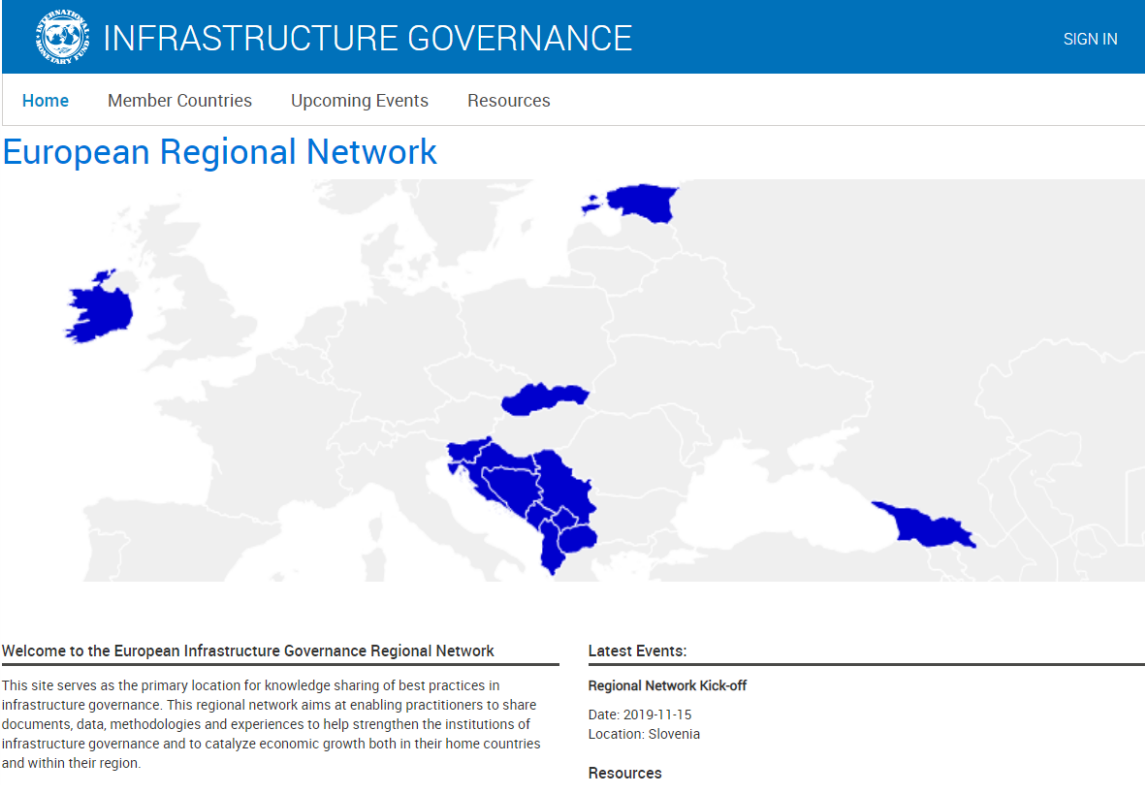


# Enabling peer-to-peer exchange of best practices

The European Infrastructure Governance Regional Network was formally proposed in November 2019, with support from 12 member countries.

The Regional Network will enable seamless exchange of best practices in Infrastructure Governance as well as a medium for future collaboration

Ireland: a leader in the group




The screenshot shows the website for the European Infrastructure Governance Regional Network. The header is blue with the logo on the left, the text "INFRASTRUCTURE GOVERNANCE" in the center, and a "SIGN IN" link on the right. Below the header is a navigation menu with links for "Home", "Member Countries", "Upcoming Events", and "Resources". The main content area is titled "European Regional Network" and features a map of Europe with several countries highlighted in blue, representing the network's members. Below the map, there are two columns of text. The left column is titled "Welcome to the European Infrastructure Governance Regional Network" and contains a paragraph about the network's purpose. The right column is titled "Latest Events:" and lists a "Regional Network Kick-off" event with its date and location. Below this, there is a "Resources" section.

**INFRASTRUCTURE GOVERNANCE** SIGN IN

[Home](#) [Member Countries](#) [Upcoming Events](#) [Resources](#)

## European Regional Network



**Welcome to the European Infrastructure Governance Regional Network**

This site serves as the primary location for knowledge sharing of best practices in infrastructure governance. This regional network aims at enabling practitioners to share documents, data, methodologies and experiences to help strengthen the institutions of infrastructure governance and to catalyze economic growth both in their home countries and within their region.

**Latest Events:**

**Regional Network Kick-off**  
Date: 2019-11-15  
Location: Slovenia

**Resources**

# Infrastructure Governance will continue to be a strategic priority

The IMF, with support from Japan, has established a Infrastructure Governance Facility

The new Facility seeks to:

- ✓ Improve infrastructure governance awareness
- ✓ Improve investment efficiency via improved governance
- ✓ Be a platform for peer to peer learning
- ✓ Promote investment spending in line with debt sustainability
- ✓ Mobilize donor support for infrastructure projects

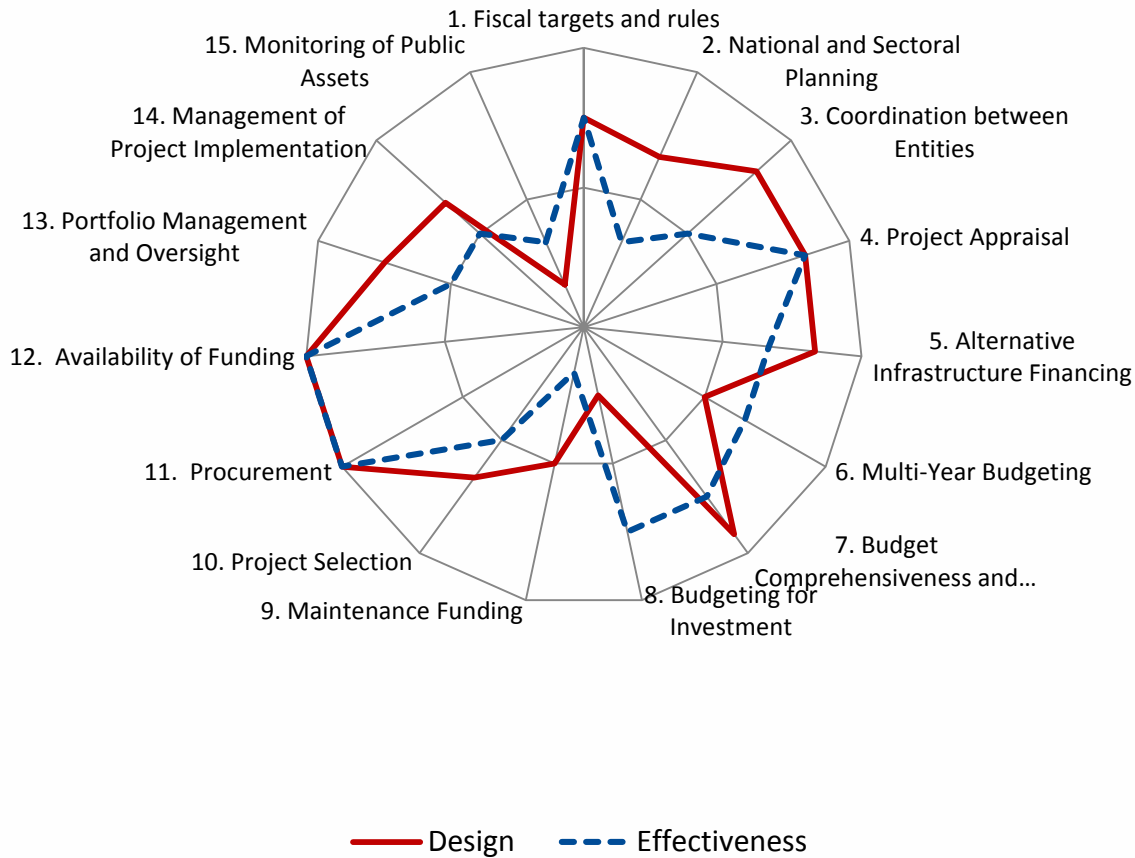


**INFRASTRUCTURE  
GOVERNANCE  
FACILITY**

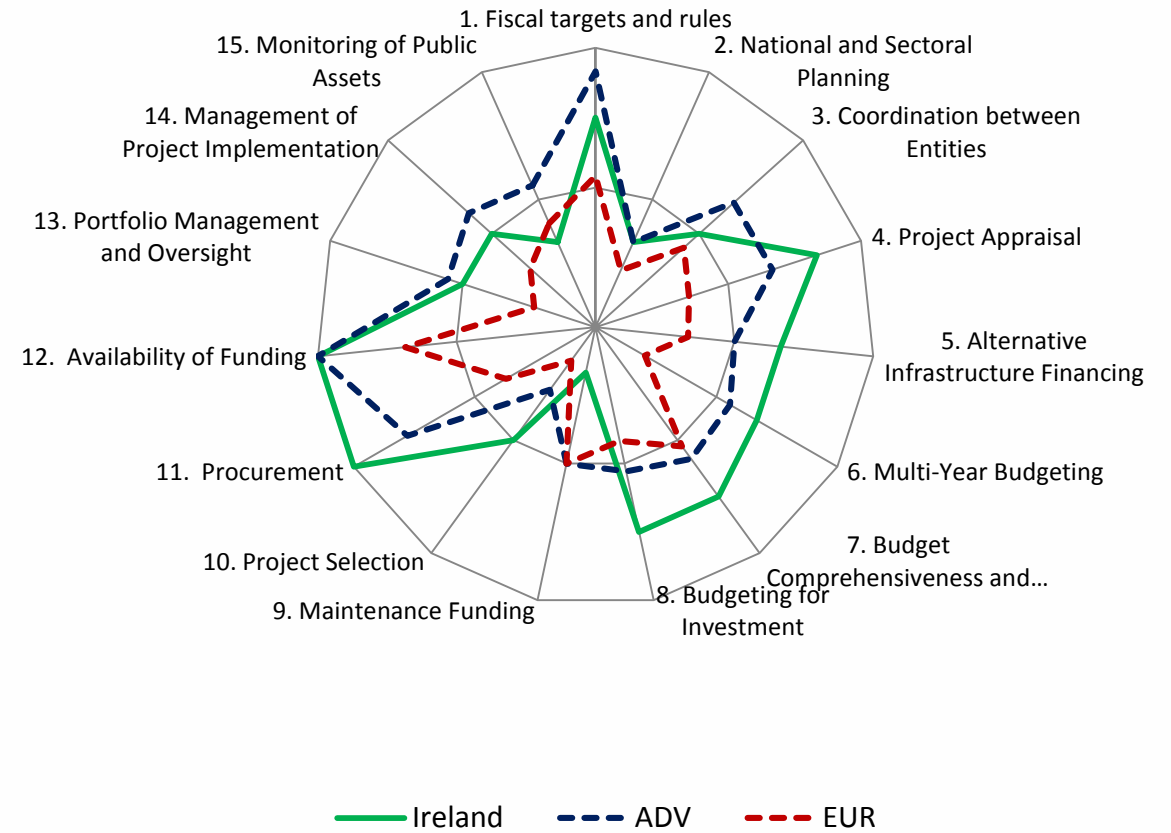
AN IMF-JAPAN CAPACITY  
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# Ireland's PIMA Main Findings (Summer 2017)

## Design vs. Effectiveness



## Effectiveness Scoring



Opportunities to close the gap between de jure (design) and de facto (effectiveness)

# Ireland's PIMA: Main Findings

## Planning Phase

- Fiscal rules support public capital formation and PCs are well-regulated with relatively strong PIM practices
- Weaknesses revolve around various sector strategies with low coordination, weak results frameworks and limited cost estimates
- Spending on PPPs should be brought more firmly within the fiscal envelope

## Allocation Phase

- Multi-year budgeting implementation has improved allocation of project resources
- Planning process is inadequately linked to funding decisions
- Project appraisal and selection would benefit from improved methodological rigor and learning across sectors

## Implementation Phase

- Funding for ongoing projects remains stable under fiscal consolidation; good project management practices
- Need for stronger management of assets (including prioritizing maintenance spending)

# Ireland's PIMA: Timely and Practical Recommendations

## Planning Sustainable Levels of Investment

- Improve linkages between planning and budgetary decision-making and across planning exercises
- Management of PPPs

## Allocating Investment

- Appraisal of investment projects
- Selection of investment projects
- Monitoring investment projects
- Budgeting maintenance of public assets

## Implementing Investment

- Ex-post review of investment projects
- Monitoring of public assets

**2.5 years later: Major reforms implemented and underway!**

**Many rowing together in the same direction!**

# Effectiveness – Data and Practices

Institution	Effectiveness Indicators (Examples)
2. National and Sectoral Planning	Quality and realism of plans, use of plans for decision-making, are plans outdated, coordination-complementary, linkage to budget process.
4. Project Appraisal	Pipeline of well designed and appraised projects, Quality of appraisals, methodologies, actual use for decision-making, number of exemptions.
5. Alternative Infrastructure Provision	Market shares private companies, number and volume of realized PPPs, SOE role in public infrastructure.
13. Portfolio Management and Oversight	Applied? Average cost overrun, average project delays, use of data for analysis, use of ex-post reviews
14. Management of Project Implementation	Consistency of project management, quality implementation plans, number project audits
15. Monitoring of Public Assets	Frequency of revaluation, use of asset registers for decision making, realism depreciation



# Planning for sustainable levels of public investment

## Institution 2: National and sectoral planning

Question

- Are investment allocation decisions based on sectoral and inter-sectoral strategies?

**Objective:**

To assess whether national and sectoral plans help to ensure that public investment decisions are based on priorities, cost estimates, and clear/realistic goals for each sector

# Country Examples – National and Sectoral Plans

**Botswana** - Botswana has several strong planning institutions—as reflected in the National Development Plan (NDP). The plan is in its 11th iteration and is valid for six years. NDP 11 is based on the government's 2036 strategic vision, includes six-year estimates per ministry and per project, and provides the basis for the total development budget.

**Netherlands** – Bureau of Economic Analysis provides independent assessment of all political programs prior to elections and assessment of government coalition program after elections.

**Norway** – National transport plan updated every four years. Provides estimates for next 20 years, within pre-determined fiscal framework. Detailed specification of planned projects, with initial costing, outputs and outcomes.

# Planning for sustainable levels of public investment

## Institution 4: Project Appraisal

Question

- Are project proposals subject to systematic project appraisal?

**Objective:**

To ensure that all major projects are subject to rigorous technical, economic and financial analysis, and can demonstrate value-for-money

# Country Examples – Project Appraisal

**Canada:** Detailed framework for project appraisals. Threshold is the same for all projects (Can\$50 million), except maintenance or improvement of transport infrastructure (Can\$100 million).

**Chile** - All investment initiatives financed by the government, regardless of the amount, are subject to technical and economic appraisal.

**Korea:** Projects are subject to scrutiny by independent agency. Different thresholds for central government and subnational projects (₩50 billion vs. ₩30 billion).

# Allocating Investment

## Institution 10: Project Selection

Question

- Are there institutions and procedures in place to guide project selection?

**Objective:**

**To ensure that there is a project selection system in place, which ensures that investment projects:**

- ▶ are systematically selected on the basis of transparent criteria
- ▶ are prioritized and included on a unique pipeline of approved projects

# Country Examples – Project Selection

**Colombia** – All projects appraised are included in a dynamic portfolio of projects (IT system), following budget calendar prioritization by sector, strategic and technical validation by National Planning Department, fiscal sustainability checked by MoF, approval of annual investment plan by Cabinet

**Norway** – External quality assurance of choice of concept (EQ1) and detailed design (EQ2) before projects are select for implementation

**UK** – Gateway process establishes several milestones were projects are reviewed and assessed before moving to the next stage, and eventually to selection for funding



# Delivering productive and durable public assets

## Institution 13: Portfolio management and oversight

Question

- Is adequate oversight exercised over the implementation of the entire public investment portfolio?

**Objective:**

To ensure that the financing and physical progress of major capital projects are monitored during their implementation, and are subject to ex post review

# Country Examples – Portfolio Oversight

**Malaysia** - Central project monitoring unit with 23,000 staff under the Prime Minister's Department has an advanced IT system, SPP II, for monitoring the implementation of capital projects which are financed by budget. Line ministries and agencies update both project costs and physical progresses weekly, feeding into consolidated reports.

**UK** – Major projects portfolio. Regular delivery confidence assessment (DCA) for major projects, transparently reported on major projects website.

# Delivering productive and durable public assets

## Institution 14: Management of project implementation

Question

- Are capital projects well managed and controlled during the execution stage?

**Objective:**

To ensure that an effective project management system is in place to monitor the execution of capital projects, as well as standardized procedures and guidelines to adjust projects if warranted

# Country Examples – Project Management

**Estonia** - Responsibilities for project implementation are clearly assigned, and rules are in place for contract adjustments. Project implementation plans are prepared prior to approval, projects are actively managed, and audits focus on high risk projects.

**Slovakia** – All major projects (mainly EU financed) are centrally monitored, funds can be re-allocated between projects, and systematic ex-post review exist for EU financed projects.

# Delivering productive and durable public assets

## Institution 15: Monitoring of public assets

### Question

- Is the value of public assets properly accounted for and reported in financial statements?

### Objective:

To ensure that assets are properly recorded and reported, and their depreciation is recognized in the government's financial statements

# Country Examples – Monitoring of Assets

**Estonia** - Monitoring, valuation and control of assets is robustly implemented, driven by the accrual accounting framework. System for asset management exists, and assets are included in financial statements.

**Indonesia** – Registration of fixed assets is comprehensive and timely, and data are used in financial statements. Asset management data are reliable and adequate


**Mongolia** – Government has established institutions for monitoring public assets, with most nonfinancial assets reported in the balance sheet. Comprehensive asset surveys are regularly conducted every 4 years.




[www.imf.org/publicinvestment](http://www.imf.org/publicinvestment)

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www.imf.org/external/np/fad/publicinvestment/


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## THE IMF AND INFRASTRUCTURE GOVERNANCE



**Thank You**



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# The Implementation of PIMA Recommendations in Ireland

Fionn Jenkinson  
Investment Projects and Programmes Office  
January 2020



Context: Ireland's public investment has been historically volatile but the state has consistently delivered major infrastructure

## Public Investment in Ireland



# PIMA part of the evidence base developed for Project Ireland 2040



## FINDINGS:

- ❑ Ireland has relatively strong infrastructure, with some sectoral weaknesses.
- ❑ Management of public investment is generally good, but with scope for improvement.
- ❑ Relatively low headline efficiency of public investment.



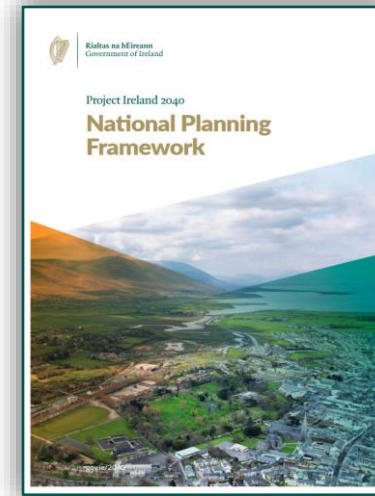


# Coordination and Oversight



**PIMA: Integrate the spatial, sectoral and 10-year capital funding plans and integrate planning strategies vertically and horizontally**

- ❑ Project Ireland 2040 sets out a clear long-term spatial strategy backed by investment of €116 billion over the 10 years to 2027.
- ❑ Cascades into RSEs, development plans, and also forthcoming sectoral strategies such as PLUTO, IDA strategy etc.



**PIMA: Establish an Infrastructure Projects Unit within DPER**

- ❑ Investment Projects and Programmes Office
  - *Project Ireland 2040 Delivery Board*
  - *Monitoring investment and capacity*
  - *Supporting value-for-money*
  - *Proactive communications*



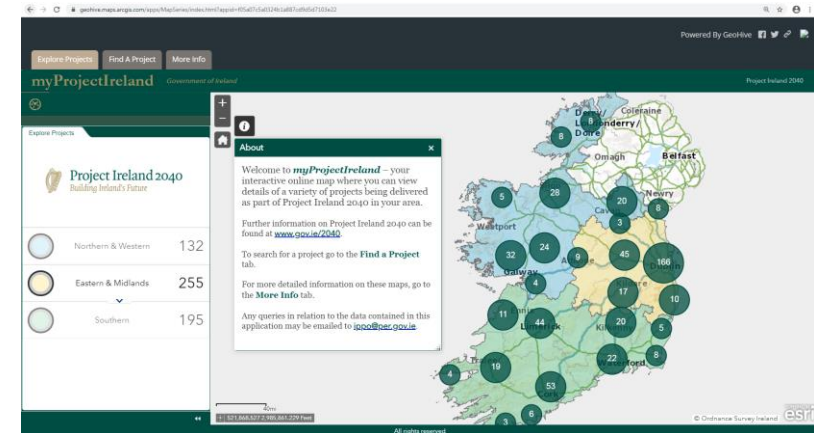


# Monitoring Implementation



## PIMA: Further develop the Capital Tracker database

- ❑ Investment Projects Tracker published for the first time in 2017 and updated in 2018.
- ❑ **MyProjectIreland** mapping tool went live in May 2019. Available on [gov.ie/2040](http://gov.ie/2040) – information on over 600 projects and programmes.
- ❑ The latest iteration of the Investment Tracker was published on 7<sup>th</sup> January 2020.
  - *Cost range*
  - *Stage of project lifecycle*
  - *Estimated commencement and completion dates*
- ❑ Monitoring of the construction sector also taking place.

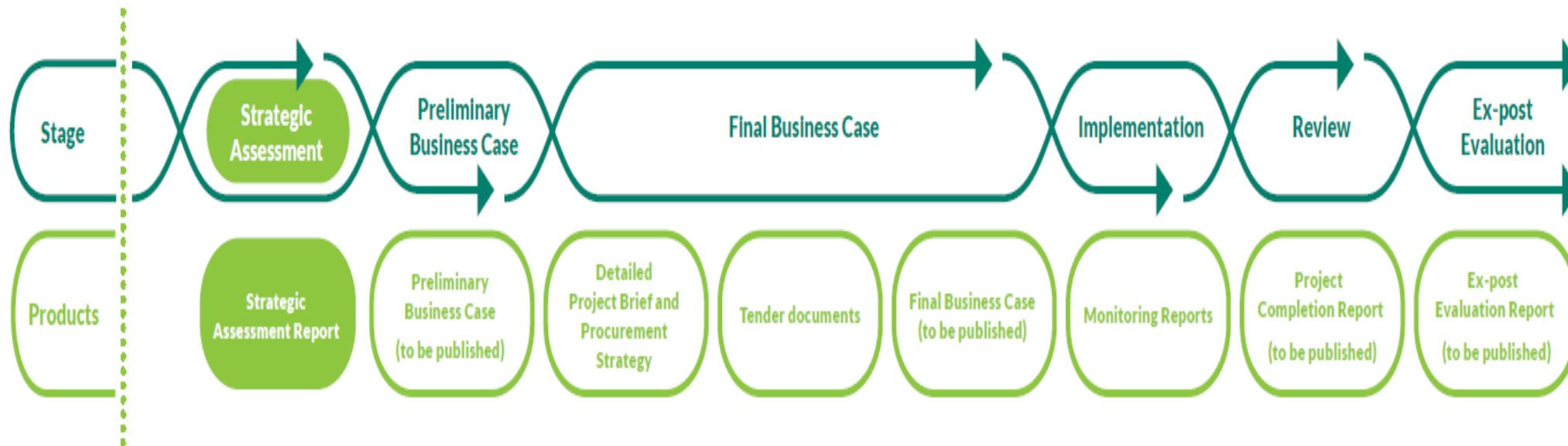


# Project Selection



**PIMA: Introduce a more structured quality-at-entry process, and align critical decision points with the business case**

- Updated Public Spending Code published Q4 2019
  - *Provides greater clarity on roles and responsibilities;*
  - *Introduction of formal Decision Gates 0-3*
  - *IPPO acts as objective reviewer for projects over €100 million*

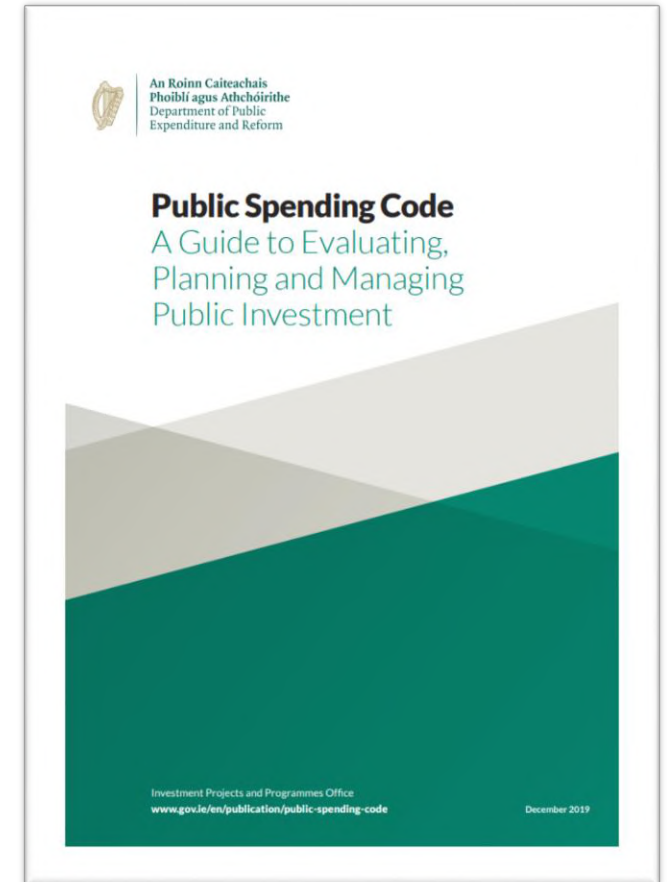


# Project Appraisal



## PIMA: Harmonize, update and extend appraisal methodologies

- ❑ Updated technical parameters published Q3 2019
  - *Social Discount Rate, Shadow Price of Public Funds, Shadow Price of Labour, Shadow Price of Carbon*
- ❑ Updated Public Spending Code published Q4 2019
  - *Strengthen the existing guidance to better align with the realities of project delivery*
  - *Focus on gaining a more developed view of costs, risks and timeframes before committing to proceed with a project*
  - *Increase transparency through publication of business cases and evaluation reports.*
- ❑ Additional work required to develop asset register and sharpen the focus in the budget process on the level of spending required to maintain infrastructure.





**Rialtas na hÉireann**  
**Government of Ireland**



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# Reforming Investment Management in Ireland – What's Next?

Ciara Morgan

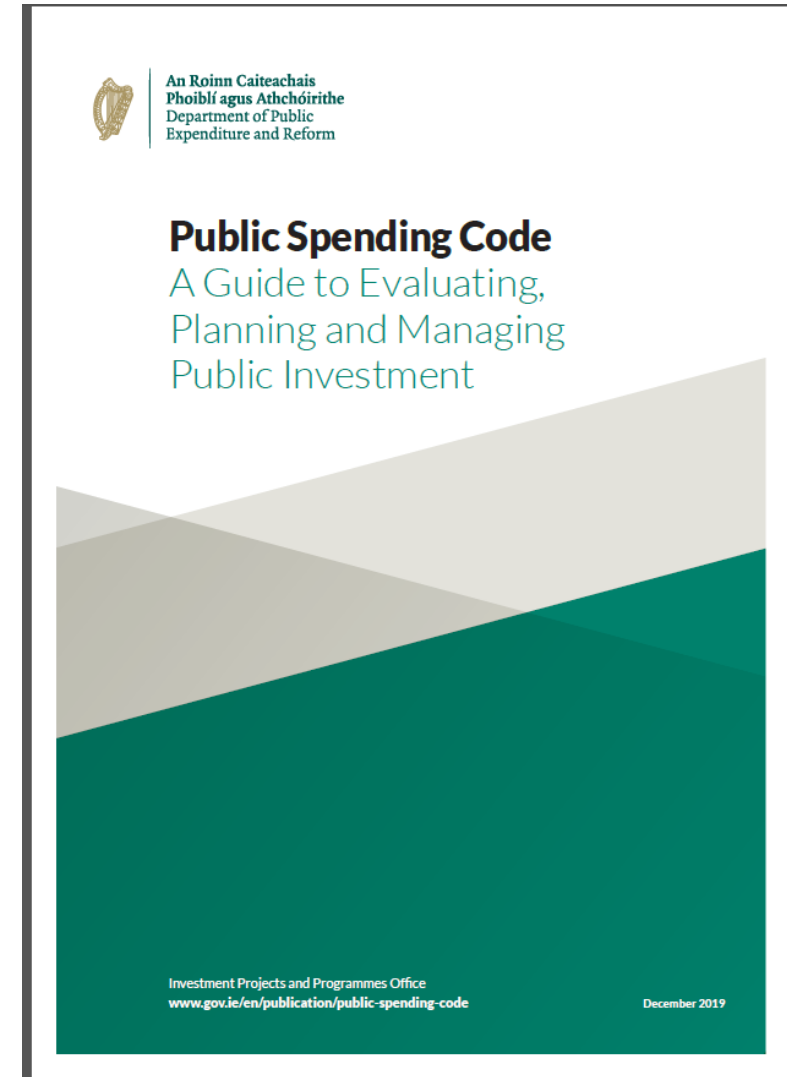
Investment Projects and Programmes Office

31<sup>st</sup> January 2020



# Public Spending Code

- ❑ Alignment of Sector Specific Guidance.
- ❑ Support implementation of strengthened guidance
  - ❑ *awareness raising*
  - ❑ *spot checks*
  - ❑ *lessons learned (library of business cases and ex post evaluations)*



# Public Spending Code

- ❑ Evolving programme of further reform including:
  - ❑ *Economic Appraisal guidance*
  - ❑ *Financial Appraisal guidance*
  - ❑ *Programme Appraisal Guidance*
  - ❑ *Development of Templates*



# Governance of Major Projects



- ❑ Arrangements for assurance of major projects are in development.
- ❑ Informed by international best practice.
- ❑ Project and programme assurance including
  - ❑ *robustness of planned delivery,*
  - ❑ *accuracy of cost forecasts,*
  - ❑ *consideration of risk,*
  - ❑ *appropriateness of procurement strategies.*
- ❑ Independent external review of projects over €100m at key stages.
- ❑ Operational in 2020.



# Monitoring the Investment Pipeline



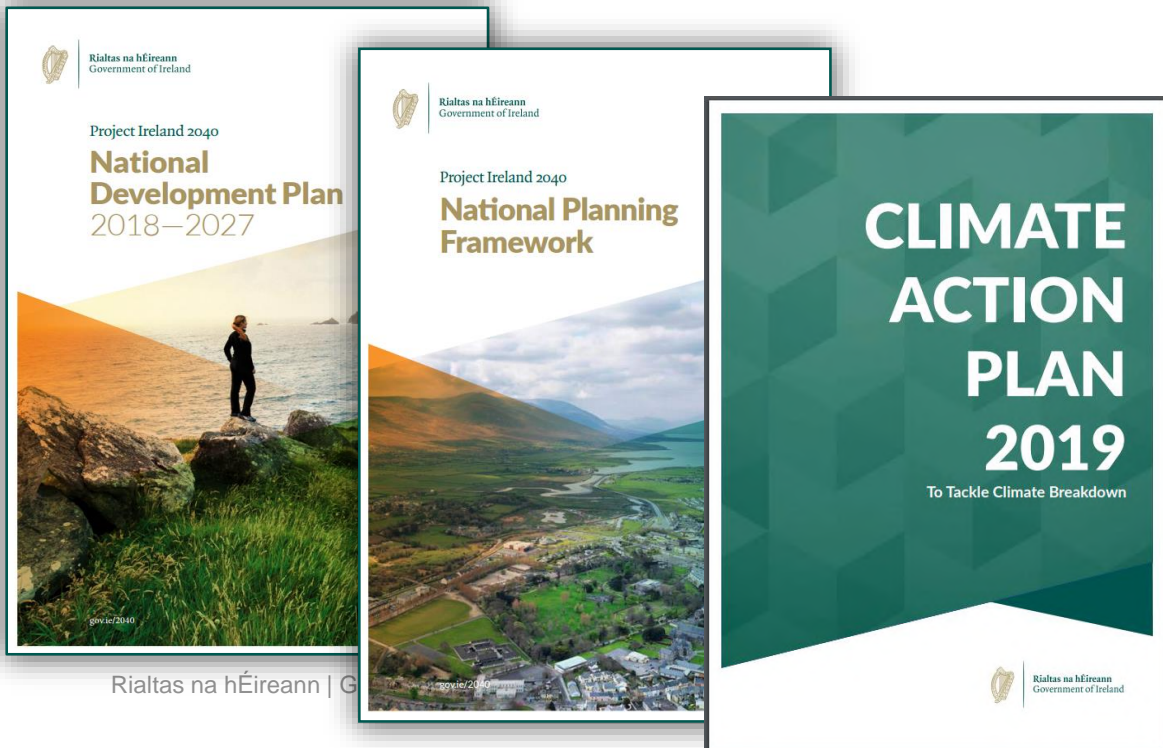
- ❑ Investment Projects and Programmes Tracker
  - ❑ Plan to move to more regular updates of pipeline
  - ❑ Aim for more granular information on project timelines and status
  - ❑ Develop a new system for gathering and analysing data, e.g. online portal



# What's Next



- ❑ Common analytical framework on estimating demand pressures and infrastructure gaps.
- ❑ Investment alignment.
- ❑ Alignment with core national policies, in particular the Climate Action Plan.





**Rialtas na hÉireann**  
**Government of Ireland**



# Ireland: Summary of Recommendations

Legend
Complete
In progress
Planned
No progress

PIM Phase	Recommendation	Progress
<b>Planning Sustainable Levels of Investment</b>	Integrate spatial, sectoral and capital funding plans	Complete
	Integrate planning strategies	In progress
	Common analytical framework for demand pressures and infrastructure gaps	Planned
	Standard presentation of detail of investment projects	Planned
	Establish IPPO	Complete
	Total capital cost of PPP scored against Capital Envelopes	Complete
	Raising the bar for PPPs through public sector benchmark	No progress
	PPP Annex to Budget documentation	Complete
	Publish PPP CBAs	In progress
	Publish Ex Post Reviews of PPP	In progress
<b>Allocating Investment</b>	Develop Capital Tracker	Complete
	Further develop the Capital Tracker	In progress
	Increased allocation for maintenance	Planned
	Greater consideration of maintenance in Budget allocations	Planned
	Reinforce appraisal of investment projects	Complete
	Publish project assessments	In progress
	Update PSC – strengthen appraisal methodologies, align it, make it more accessible	In progress
	Strengthen rules and guidance on appraisal methodologies	In progress
	Develop sector specific methodologies	In progress
	More structured quality at entry process involving three business case assessments	Complete
	Align critical decision points with the business case assessments	Complete
	Closely correlate surety of funding with the maturity of the business case	Complete
	IPPO to design the business case model and act as an objective reviewer	Complete
<b>Implementing Investment</b>	Strengthen and publish ex post assessments of projects	In progress
	Encourage the C&AG to carry out performance audits of major projects	No progress
	Biennial summary of lessons learned from largest projects	Planned
	Central Register of Infrastructure Assets	Planned



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Department of Public  
Expenditure and Reform

# Infrastructure investment in an era of uncertainty

Conference on public investment governance, reform and innovation

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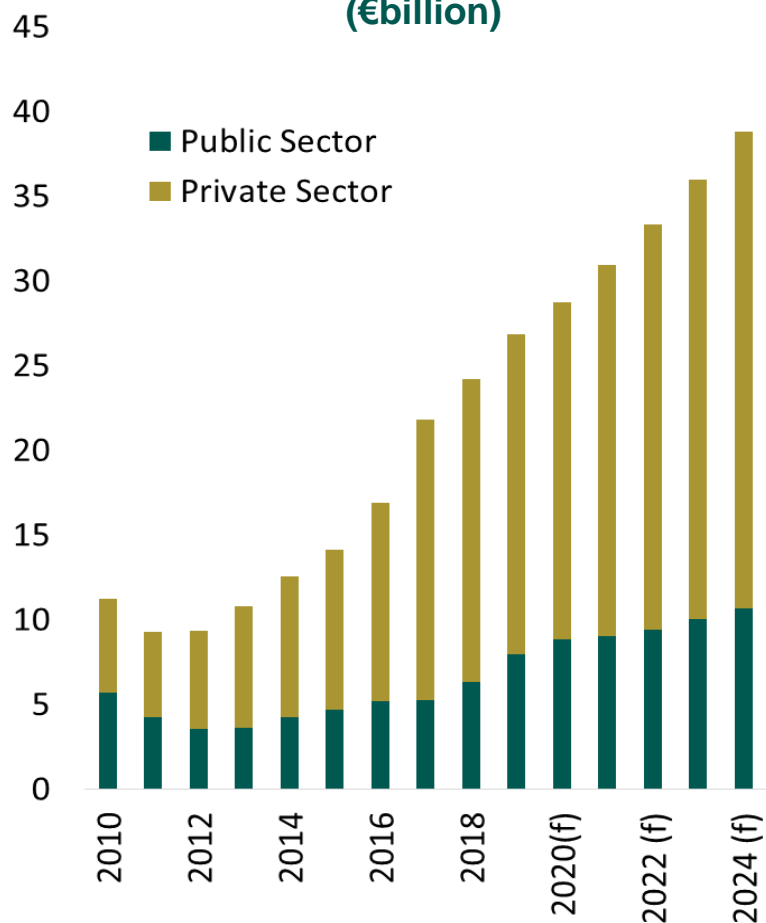
# Modernising Construction

Investment Projects and Programmes Office  
January 2020

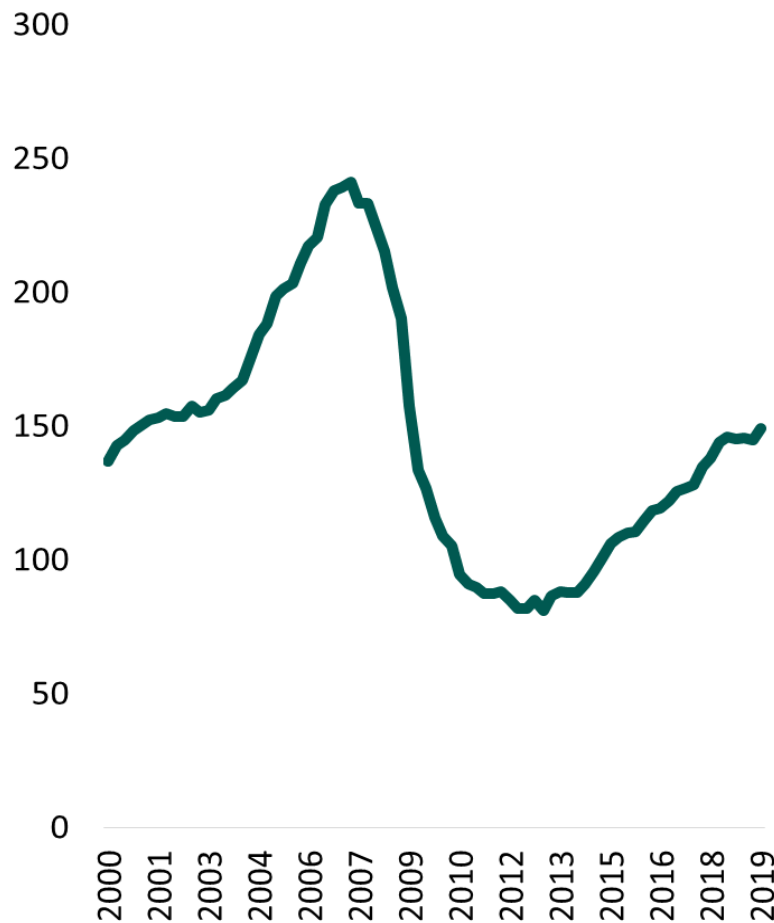
# Context: Growing demand, falling employment, stagnant productivity



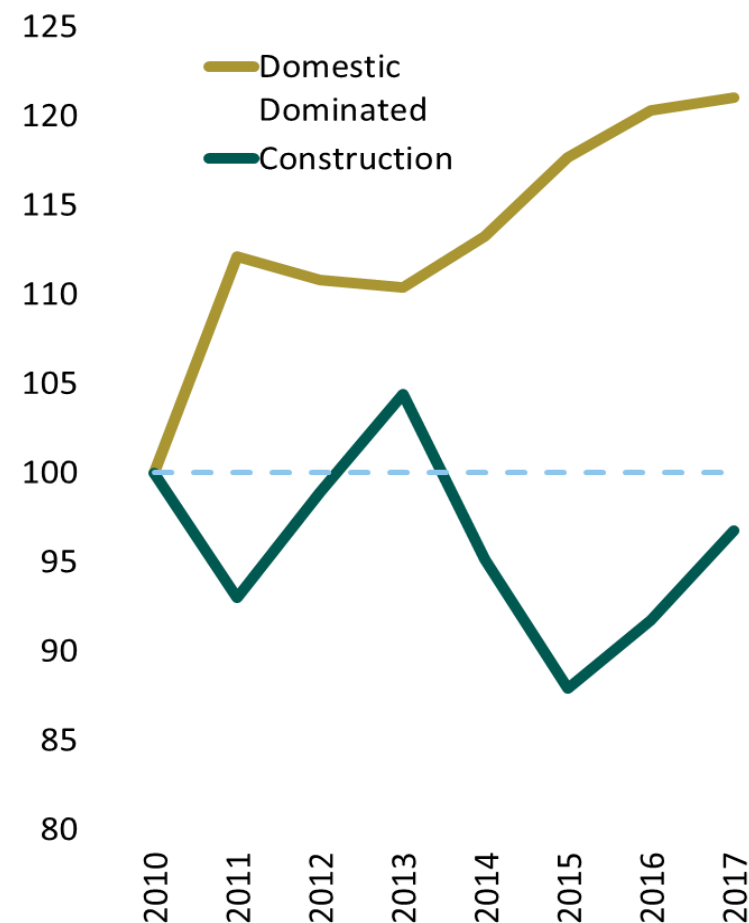
### Investment in Building and Construction (€billion)



### Construction Employment ('000s)



### Labour Productivity Index (2010 = 100)



\*All Data from CSO. Investment measured as total GFCF.



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# Cast

REAL ESTATE & CONSTRUCTION CONSULTANCY

## Modernising Construction

Using Modern Methods of Construction As A Change Agent for A New Industrial Strategy: A UK Case Study

**Mark Farmer**

CEO, Cast Consultancy & UK Government MMC Champion

Project Ireland 2040 Conference

Dublin, 31<sup>st</sup> January 2020



# ***“INFRASTRUCTURE INVESTMENT IN AN AGE OF UNCERTAINTY”***

**THE CONSTRUCTION INDUSTRY AS A MEANS OF  
PRODUCTION IS A MAJOR PART OF THAT  
UNCERTAINTY**

**WE URGENTLY NEED TO RETHINK HOW WE BUILD**

# THE FARMER REVIEW OF THE UK CONSTRUCTION LABOUR MODEL

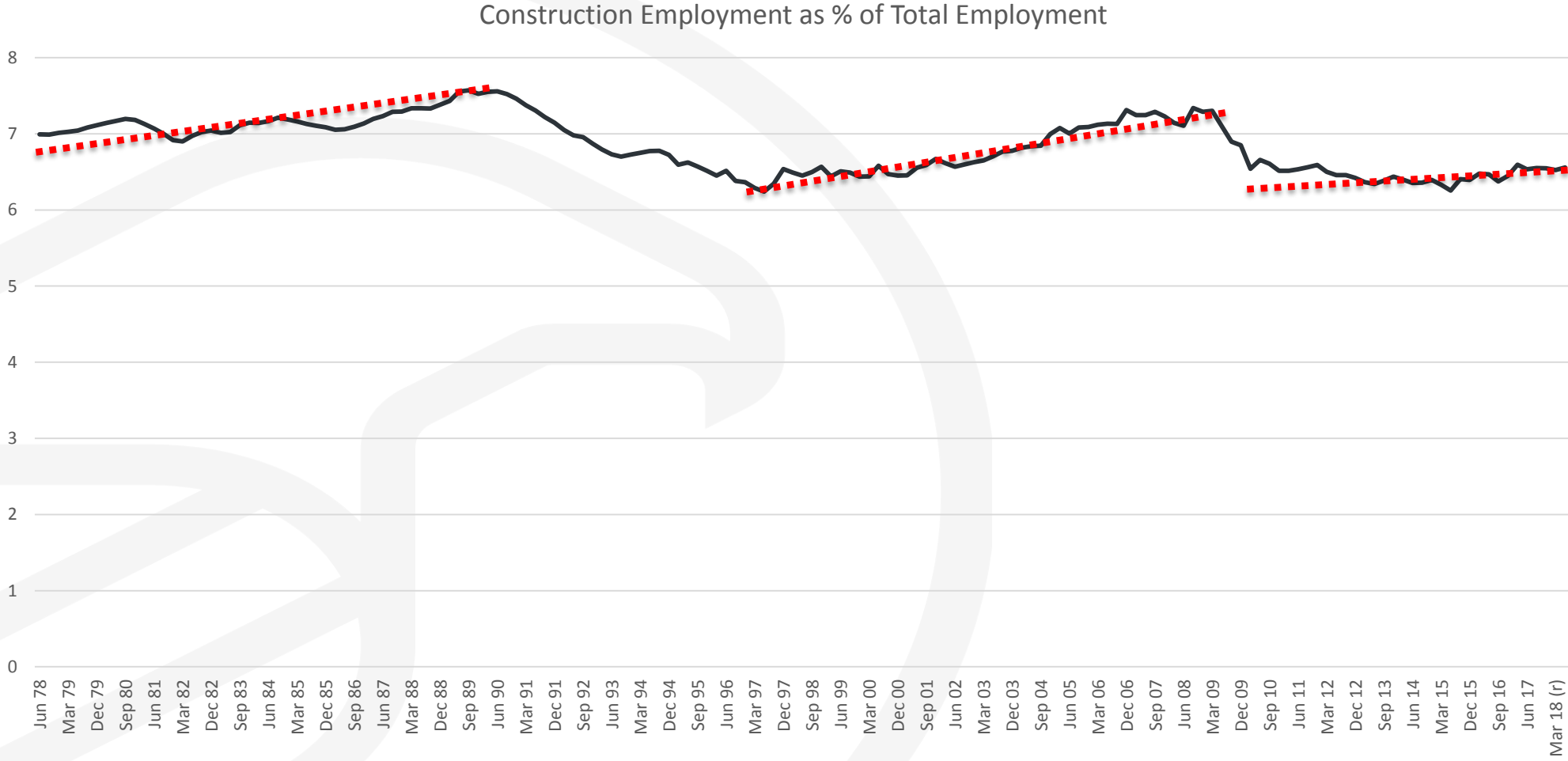
**MODERNISE OR DIE**

Time to decide the industry's future

A REMINDER:

WHY THE  
'MODERNISE OR  
DIE' CHALLENGE?

# We Have Declining Structural Resiliency in UK Construction



# And It's Clearly Mirrored in Ireland

**Chart 1: Employment relative to 2007 Average: Construction and Non-Construction**

**Chart 3: Construction Employment by Age**



Source: CSO.

**Irishbuilding** | Ireland's construction news portal

IN THE NEWS ▾ TOP STORIES TECHNOLOGY ▾ IRISH BUILDING MAGAZINE ▾ SUBSCRIBE ▾ RESOUR



Skills shortage forces construction companies to look abroad

January 27, 2020 789 Views

Construction firms are increasingly meeting recruitment demands from outside Ireland and beyond the EU, to address skills shortages as the industry continues to grow strongly.

**Irishbuilding** | Ireland's construction news portal

IN THE NEWS ▾ TOP STORIES TECHNOLOGY ▾ IRISH BUILDING MAGAZINE ▾ SUBSCRIBE ▾ RESOUR

- Companies
- Projects
- Legal File
- Expert Opinion
- Products Showcase



Construction industry targeting transition year students to avert future skills shortages

February 13, 2018 1519 Views

The construction industry has launched a transition year initiative to facilitate students interested in working in Ireland's most innovative construction companies. The initiative will see students completing work

THE BASIC PRODUCTIVITY  
CONUNDRUM IS NOW  
COMPOUNDED BY  
INCREASINGLY POOR  
PERFORMANCE



# Media & Public Discontent with Construction Performance is Now Increasingly Visible

## THE IRISH TIMES

Tue, Jan 28, 2020

NEWS

SPORT

BUSINESS

OPINION

LIFE & STYLE

CULTURE

Ireland > Irish News

### Pattern of overspending in major Irish infrastructure projects

Conflict of interest that can lead to underestimating costs lies at core of public projects

© Mon, Feb 11, 2019, 06:00

Harry McGee



In 2016, then minister for health Leo Varadkar said the children's hospital would be completed by 2020, "short of an asteroid hitting the planet". The estimated cost was €670 million at that time.

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RTE Investigates

## Cost of new children's hospital a 'catastrophic failure'

Updated / Wednesday, 16 Jan 2019 19:35



# Cast



# Leading To Growing Industry Fragility & Concern From Those That Fund It....

**GCR**  
GLOBAL CONSTRUCTION REVIEW

futurebuild  
03-08 March 2019 / ExCel, London

RESPONDING TO EMERGEN

THE IRISH TIMES

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COINS BLUEBEAM CIOB PROCORE

**THE IRISH TIMES**  
Tue, Jan 28, 2019

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Environment > Climate Change | Heritage & Habitat

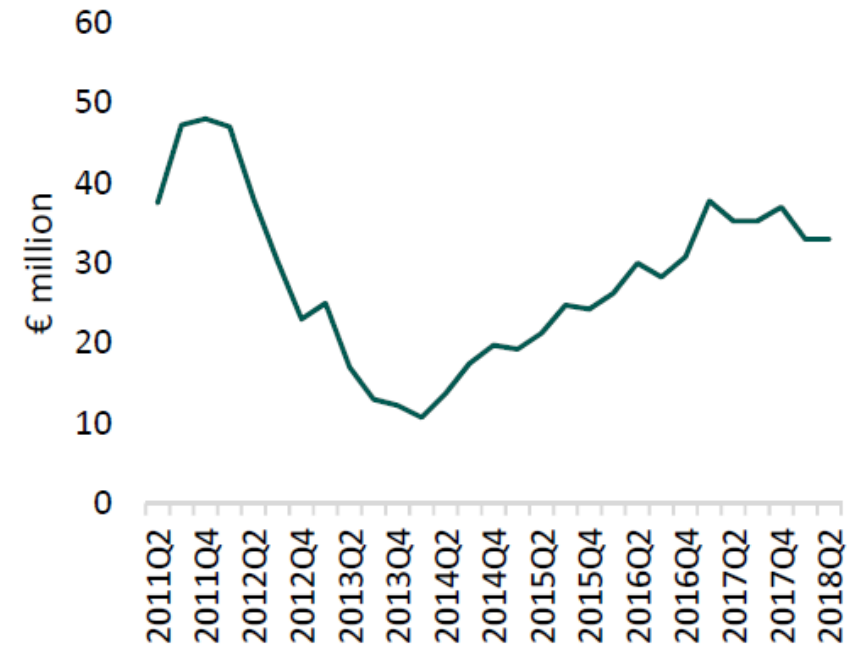
**State to provide €750m in loans to small builders**  
More than 7,500 homes expected under Home Building Finance Ireland scheme

© Mon, Jan 28, 2019, 18:00

**News**  
**42 companies bust: construction insolvency "epidemic" hits Ireland**  
11 June 2018 | By GCR Staff | 2 Comments

At least 42 Irish construction companies have gone into liquidation or examinership since the start of this year, prompting a trade body to warn parliamentarians of an insolvency crisis that could hit public projects.

**Figure 4.1 I: New Lending to Irish Construction Sector SMEs**



Source: Central Bank of Ireland, SME Credit Series, Table A.14.1.

administration after its rebellion against...  
What? ... financial rescue plans drawn up by the company's lenders.

# Discontent from the Public at Large - Mainstream & Social Media Attention is Creating Unprecedented Reputational & Brand Risks for Developers & Housing Associations

**THE IRISH TIMES** Wed, Jan 29, 2020

NEWS SPORT BUSINESS OPINION LIFE & STYLE CULTURE


Ireland > Irish News

## Up to 92,000 boom-era apartments may have defects, committee hears

Construction Defects Alliance says 'hear no evil, see no evil approach' cannot continue

Thu, Nov 7, 2019, 14:10 | Updated: Thu, Nov 7, 2019, 14:55

Jack Horgan-Jones



Kath Cottier and Andrew Prior, members of the Construction Defects Alliance lobbying group. Photograph: Dara Mac Dónaill / The Irish Times.

**THE IRISH TIMES** NEWS SPORT BUSINESS OPINION LIFE & STYLE CULTURE MORE

# Ireland's defective buildings: Not just a Celtic Tiger problem

Niamh Towey • Sep 7, 2019 • 13 min read • 1

f t e

DEFECTS IN NEW BUILDINGS - ESPECIALLY COMMON DURING THE LAST BOOM - CAN LEAVE OWNERS IN HUGE DEBT, WITH LITTLE LEGAL RECOURSE. AND THEY DIDN'T STOP WHEN THE CELTIC TIGER DIED, AN IRISH TIMES INVESTIGATION REVEALS



# The UK Homebuilding Sector Is Particularly In The Eye Of A Storm

Opinion **The FT View**

+ Add to myFT

## Persimmon report shows capitalism at its worst

The housebuilding industry needs to rediscover its sense of purpose

THE EDITORIAL BOARD

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## Builder Persimmon lacks minimum house standards, report finds

17 December 2019



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# The Grenfell Tower Tragedy Has Rightly Taken This Debate To A New Level

## THE IRISH TIMES

Wed, Jan 29, 2020

HOME » IRELAND

NEWS SPORT BUSINESS OPINION LIFE & STYLE CULTURE

Ireland » Irish News

### Developer lobbies against 'onerous' apartment fire-safety standards

Hines claims new regulations could add €11,000 to construction cost of each flat

© Mon, Nov 4, 2019, 02:33

Jack Horgan-Jones, Niamh Toweey



Hines is behind the redevelopment of the former Central Bank building on Dame Street. Image: Google Street View

A major property developer has lobbied against the introduction of new fire-safety standards, arguing they are "over(ly) onerous" and will "have a negative



Ireland has not learned from Grenfell and Berkeley tragedies, says top architect

By Vivienne Clarke

Facebook Twitter Messenger LinkedIn WhatsApp + More

Wednesday, July 03, 2019 - 11:06 AM

Lessons learned following the Grenfell Tower fire in London have not filtered into Ireland according to Professor Orla Hegarty of the school of architecture in University College Dublin.



# Quantity and Quality Have Rarely Coincided in Homebuilding - Societally Led Change Is Now Forcing UK Politicians To Force UK To Do Things Differently

## Why foundations of our building regulations are weak as ever



By Michael Clifford

Follow @Mickcliff

Facebook Twitter Messenger LinkedIn WhatsApp More

Monday, November 04, 2019 - 12:00 AM

The case of Larkfield House exposed current building rules as little better than u  
Michael Clifford



The Larkfield House Apartment complex on Coldcut Rd, Clondalkin, Dublin. Picture Co Dublin

## THE IRISH TIMES

Wed, Jan 29, 2020

NEWS SPORT BUSINESS OPINION LIFE & STYLE CULTURE

Politics Election2020 Oireachtas Poll Elections

### Housing the dominant issue in seven-way general election debate

SF leader McDonald critical of FG, FF and Labour for ruling out coalition with her party

Mon, Jan 27, 2020, 22:48 Updated: Tue, Jan 28, 2020, 00:21

Fiach Kelly



#AskYourCandidate  
#GE2020



Wednesday 29 January 2020

Business Property & Mor

### Tough new energy ratings expected to increase construction cost of residential properties by up to 4pc



Stock photo: PA



John Mulligan January 7 2020 13:30 PM

Facebook Twitter Messenger

ough new energy ratings are expected to raise the construction cost of residential properties by up to 4pc, according to estate agency Lisney.

ne new Near Zero Energy Buildings regulations mean that new homes will be rated A2 as opposed to the A3 rating that had been imposed on new domestic dwellings.

# Structural Changes In Other Sectors Could Further Accelerate External Disruption In Construction As Manufacturing Supply Chain & Tech IP Diversifies Into The Sector

## Car sales fall in UK with industry's worst September since financial crisis

Consumer uncertain  
lead to 20% fall, says



▲ New Land Rovers on a transporter lorry. Photograph: Alamy

## Amazon build prefab smart homes with integrated Alexa to

## Toyota to build prototype city of the future in Japan

Jane Lanhee Lee, David Shepardson

3 MIN READ



LAS VEGAS (Reuters) - Toyota Motor Corp (7203.T) said on Monday it planned to build a prototype “city of the future” at the base of Japan’s Mt. Fuji, powered by hydrogen fuel cells and functioning as a laboratory for autonomous cars, “smart homes,” artificial intelligence and other technologies.

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SO WHAT IS UK  
GOVERNMENT DOING &  
WHY IS CENTRAL &  
REGIONAL GOVERNMENT  
POLICY SO IMPORTANT?



**Cast**

# UK Government Has Finally Recognised The Importance of Construction In Achieving Its Political Ambitions & A Move Towards MMC Is Central To That

## Ireland to unveil bold plan to tackle climate emergency

Varadkar reveals ideas to curb greenhouse gases and move towards net-zero carbon emissions by 2050



▲ Students in Dublin join a global protest in March for action to tackle climate change. Photograph: Niall Carson/PA



Home > Strategy > Priorities > A European Green Deal

## A European Green Deal

Striving to be the first climate-neutral continent

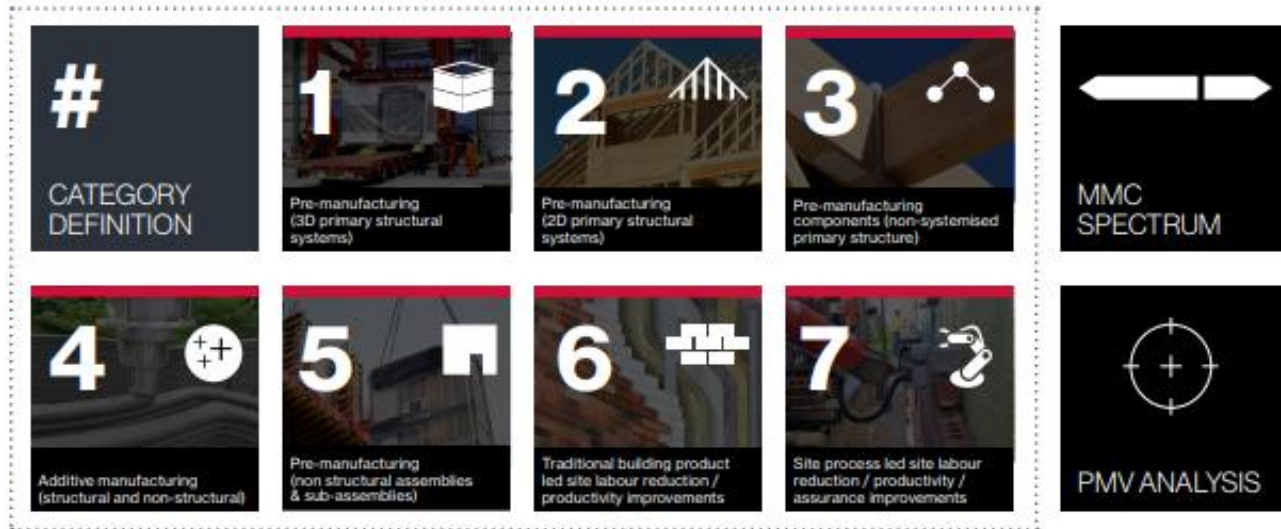
to reduce gas emissions by 2050, Emma  
Environment Agency said:

November 2017

# We Need To Get Our Definitions & Terminology Consistent - UK Government Has Formally Defined 'MMC'

## Category DEFINITIONS

The term 'pre-manufacturing' encompasses processes executed away from final workforce, including in remote factories, near site or on-site 'pop up' factories. The pass test is the application of a manufactured led fabrication or consolidation process in controlled conditions prior to final assembly / install. On-site 'workforce factories' are included in Category 7).




Home > Housing, local and community > Planning and building > House building

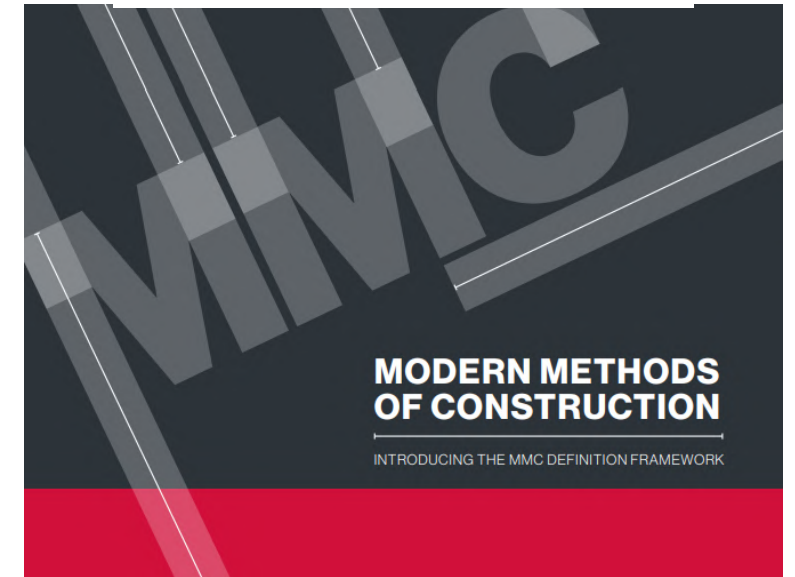
### Independent report Modern Methods of Construction working group: developing a definition framework

The Modern Methods of Construction (MMC) definition framework has been developed by a specialist sub-group of the MHCLG MMC cross industry working group.

Published 29 March 2019  
From: [Ministry of Housing, Communities & Local Government](#)

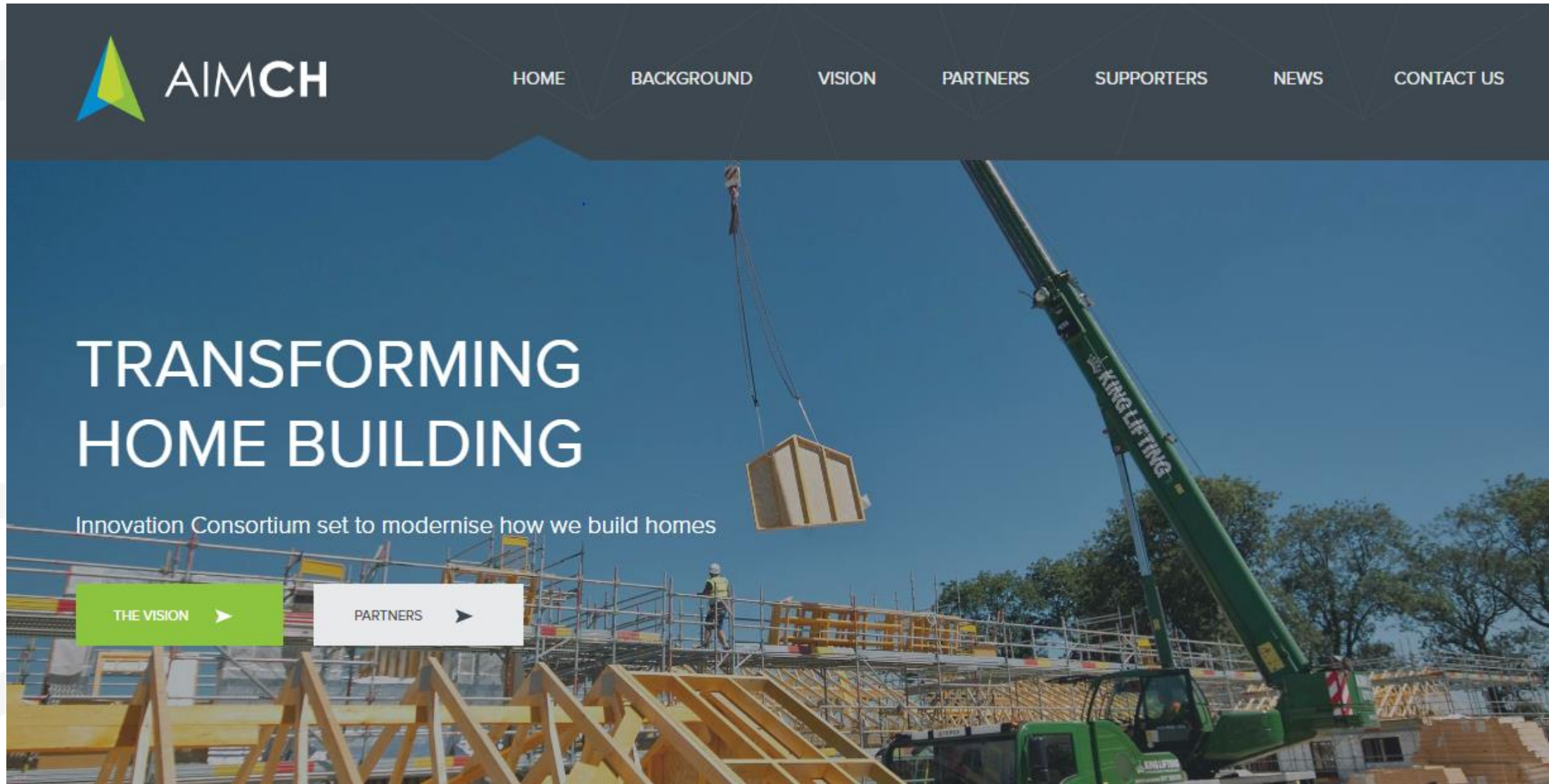
#### Documents

 [Modern Methods of Construction: introducing the MMC definition framework](#)  
[http://www.cast-consultancy.com/wp-content/uploads/2019/03/MMC-Pad-base\\_GOVUK-FINAL\\_SECURE.pdf](http://www.cast-consultancy.com/wp-content/uploads/2019/03/MMC-Pad-base_GOVUK-FINAL_SECURE.pdf)





# Significant Government R&D Funding Is Now Flowing



# Building Evidence & Data - Traditional v MMC





# Government Support To Build Market Confidence Via Homes England

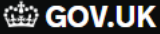


Homes  
England

Research & Development Initiative

DRAFT CONSULTATION  
Modern Methods of Construction Pilot

September 2018



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Press release

## Homes England supports local authority deliver pilot MMC scheme

Homes England recognises the important role that modern methods of construction (MMC) have to play in delivering the homes that England needs.

Published 27 December 2018  
From: [Homes England](#)



Homes England is encouraging partners to develop and use MMC through a range of initiatives and the provision of development finance.

One local authority is exploring the use of MMC to deliver homes for affordable rent through an innovative pilot scheme. Nuneaton and Bedworth Council (NBBC) has just completed its first modular build having securing £120,000 worth of funding from Homes England.

INVITATION TO TENDER

CREATING A SUSTAINABLE HOUSING MARKET IN ENGLAND –  
USE OF MODERN METHODS OF CONSTRUCTION

ITT 1674

CONTRACT FOR

HOMES ENGLAND

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# The UK's Cities & Devolved Authorities Are Now Also Identifying MMC As A Lever Of Local Industrial Strategy



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Tags # COOLOCK # DEPARTMENT OF HOUSING # DUBLIN CITY COUNCIL

## Dublin City Council issues €1bn tender for factory-built homes in effort to reduce social housing list

The council has plans to construct around 1,000 rapid-build homes at different locations throughout the city.

### LONDONASSEMBLY

Designed, sealed, delivered

The contribution of offsite manufactured homes to solving London's housing crisis



Planning Committee  
August 2017

Targeting more local homes - higher quality, lower carbon with new high productivity & technology led skills and associated inward investment

THE LAST 12 MONTHS HAS SEEN AN  
UNPRECEDENTED SHIFT IN UK ACTIVITY  
IN INDUSTRIALISED CONSTRUCTION

# New International Players, New Capital, New Partnerships in MMC



21.01.2020

## Elements Europe Joins Forces with GS E&C, Leading South Korean Construction Firm

London, 21st January 2020 – One of the UK’s top off-site manufacturers and constructors, Elements Europe, has joined forces with a leading global construction company based in South Korea, GS Engineering & Construction (GS E&C), who has acquired a ...

Goldman  
prefabs



Read more

David Byers, Assistant Property Editor

April 11 2019, 12:01am,  
The Times

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Investment

UK COMPANIES TECH MARKETS GRAPHICS OPINION WORK & CAREERS LIFE & ARTS HOW TO SPEND IT

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Choose your FT trial

Japanese developer enters UK housing market

modular

prefab, says Homes England

## Homes England awards councils £38m for 2,000 MMC homes

NEWS 24/10/19 1:00 PM BY MARK SMULIAN

Homes England has awarded £38.2m to six councils to help build 2,072 homes using modern methods of construction (MMC).

### HOUSING TODAY

NEWS COMMENT IN FOCUS HOUSING DELIVERY CPD EVENTS PRODUCT SEARCH JOBS

## Government backs Ilke Homes with £30m loan



True 21<sup>st</sup> Century Disruption Is Already Finally At The Door of The Mainstream UK Housebuilding & Contractor Sector – Strategic Shifts to Integrated Manufacturing

# Countryside to open two more modular homes factories

Weston Logistics' new distribution & build-off-site centre is one of the most advanced in the UK construction industry

Barratt sets new MMC target after beating 2020 aims

Kier predicts contractors will employ 'offsite managers'



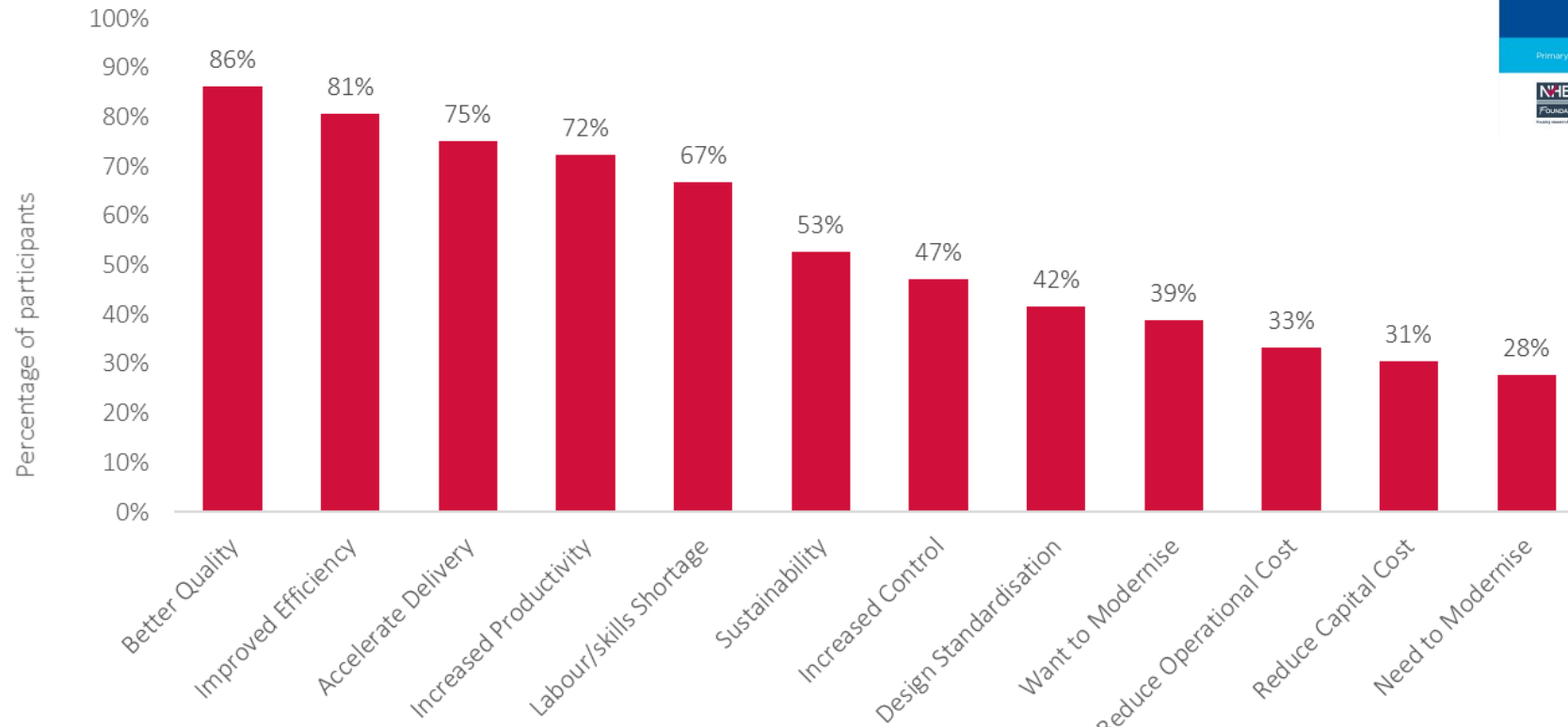
Mace unveils 'next generation' construction method

December 5, 2019



# Why Are UK Developers Engaging With MMC ?

Decision Making Factors in using MMC



## Modern methods of construction

Who's doing what?

Primary research

NIBC FOUNDATION  
Cast

**Citu**

Citu is a sustainability-driven private developer based in Leeds, established in 2004. Citu has created a vertically-integrated construction system, including a digital design platform, factory and multi-skilled assembly team to deliver their product, Citu House - a highly energy-efficient home constructed using a closed-panel timber frame system.

Completed terrace at Little Kalbar, Sheffield

Homes delivered & planned		Organisation fact file	
2017 completed	30 100% MMC	Type	Private sector
2018 planned	75 100% MMC	Model	Developer/Manufacturer
		Employees	100
		Annual Turnover	£5m
		Associated Brands	Citu Works, Citu Studio

**Systems used for MMC output**

- Offsite panelised 69%
- Offsite volumetric 31%
- Offsite hybrid 31%
- Onsite MMC -

**Current activity**

- Citu developed their Citu House with a Focused Innovation grant from the Government through Innovate UK, in collaboration with Leeds Beckett University.
- Their 60,000 sq ft factory, Citu Works, has the capacity to produce 750 low-carbon homes per year.
- Citu Studio, their online platform allows the configuration of house types, finishes and fittings by prospective purchasers.
- Current projects include the 322 home first phase Climate Innovation District (CID) in Leeds, one of the UK's largest sustainable developments and Little Kalbar in Sheffield.

**Future plans**

- Citu aims to develop their factory built design and incorporate more items into their factory assembly process.
- Phase 2 of the Climate Innovation District is due to commence in 2019.

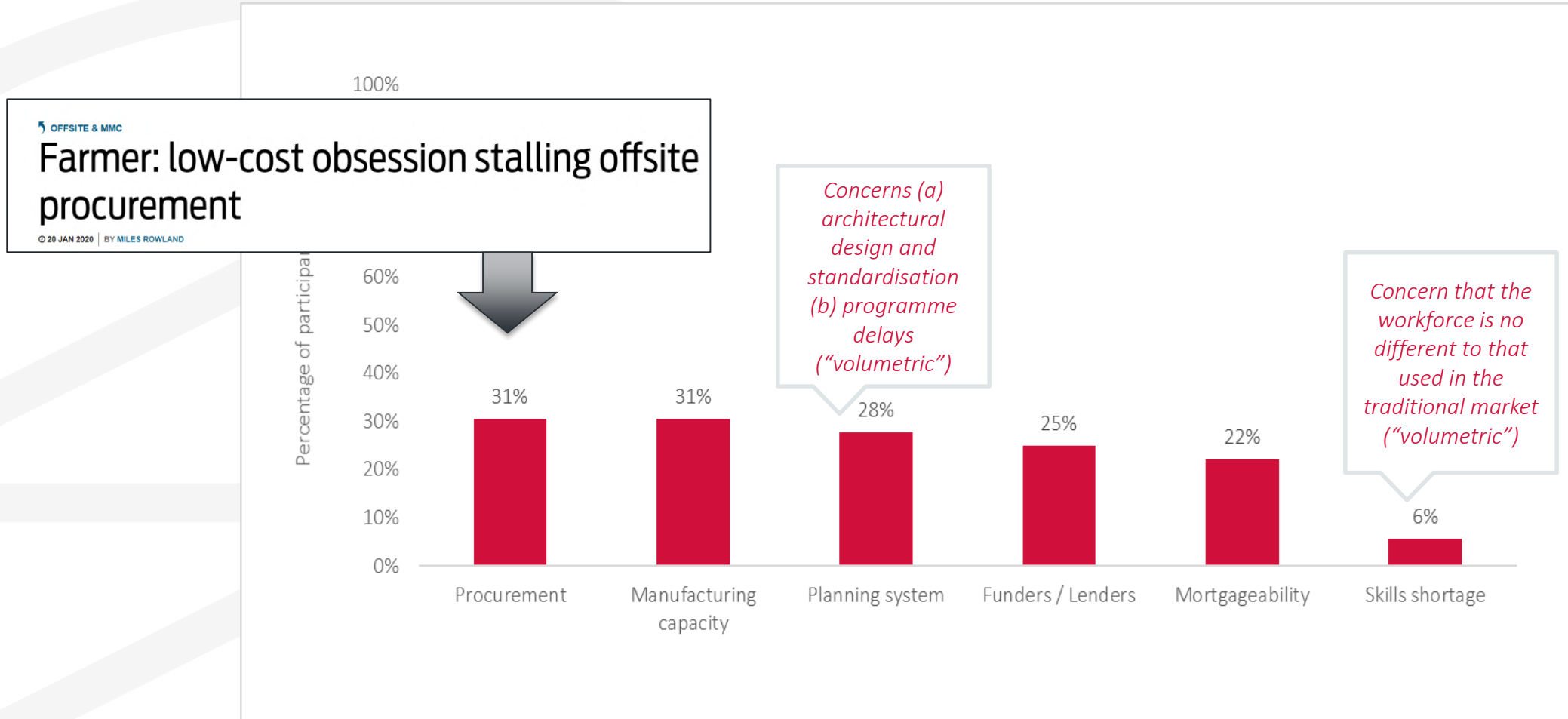
Phase 1 of the Climate Innovation District, Leeds

Closed-panel timber frame being installed

NIBC Foundation Modern methods of construction



# What do developers identify as barriers ?



# And We Need To Better Enable Securitisation of Innovation

In response to market concern the MHCLG set up a:

- Joint working group with lenders, valuers and the industry
- To ensure mortgages & building insurance are more readily available through a platform and accreditation by providers



The 15th International Housing & Home Warranty Conference  
Croke Park, Dublin, Ireland  
20 – 25 September, 2020



# Initiatives Align To UK Post Election Priorities & Industrial Strategy - 'Levelling Up'

**GOV.UK**

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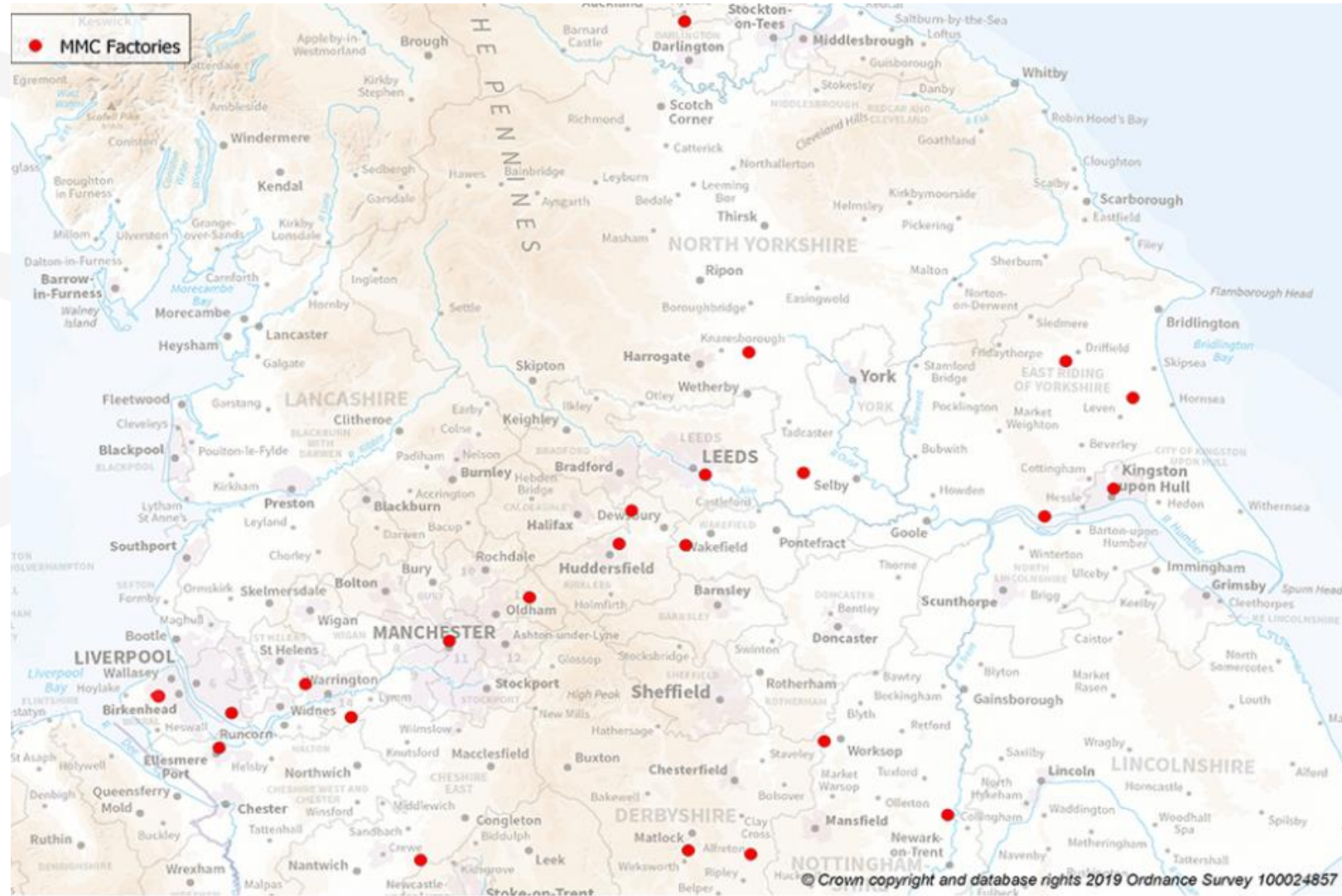

Press release

## Housing Minister unveils £30m boost for 'Construction Corridor'

Government developing a construction industry which will deliver zero carbon homes, an industry worth £40 billion a year and create 80,000 new jobs.

Published 3 November 2019

From: [Ministry of Housing, Communities & Local Government](#) and [The Rt Hon Esther McVey MP](#)





# Post Election Ministerial Interest in MMC is High





**WE CAN DELIVER A NEW AGE OF  
HOMEBUILDING IN UK AND IN IRELAND  
TOO, BUT.....**

**IT NEEDS STRONG & LONG TERM  
LEADERSHIP BY POLICY MAKERS &  
INDUSTRY COMBINED**

**THANK YOU FOR LISTENING**







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# Kathryn Meghan

## CEO, Royal Institute of Architects

<https://youtu.be/hVSt6BOnwyw>



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# Modernising Construction The public sector client's view

Office of Government Procurement  
January 2020





# Perceptions of the sector

## THE IRISH TIMES

Wed, Jan 29, 2020

- NEWS
- SPORT
- BUSINESS
- OPINION
- LIFE & STYLE
- CULTURE

Environment > Climate Change | Heritage & Habitat

### Celtic Tiger building defects ‘widespread’, says housing expert

Many apartment residents ‘living with leaks, damp, structural and fire safety defects’

Mon, Mar 4, 2019, 02:04

Jack Horgan-Jones





## Perceptions of the sector

The Irish construction sector has experienced a few busy years now, with no immediate sign of let up. New projects and developments are visible all around Dublin, and in other areas of Ireland. **The high level of construction activity, however, is now leading to disputes, as projects commenced in 2015 and later are now being completed.** Notably, adjudication, which has applied to construction contracts and appointments entered into after 25 July 2016, is on the rise!

Irish Building, 25 March 2019



# Perceptions of the sector

RTÉ News Sport Entertainment Business Lifestyle Culture Player TV Radio More

News > Education | Election 2020 Ireland World Business Politics Nuacht RTÉ Investigates Pro

## 17 schools found to have structural defects that warrant works

Updated / Thursday, 1 Nov 2018 06:23





# Perceptions of the sector

**RTÉ** News Sport Entertainment Business Lifestyle Culture Player TV Radio More

News | Election 2020 Ireland World Business Politics Nuacht RTÉ Investigates Programmes

## Sammon sub-contractors call for State to intervene in payments row

Updated / Tuesday, 24 Jul 2018 22:52



The collapse of Carillion led to the liquidation of the Sammon construction firm



By **Conor Hunt**  
Reporter



# Perceptions of the sector







# Client's experience of the construction process

## Irish Water disputes €3.6m bill over construction delay

State agency claims 90-day delay to works on drainage project should cost only €180,000

© Tue, Nov 5, 2019, 15:51



# Client's experience of the construction process

## Kevin Street Garda station construction costs spark dispute

Office of Public Works at loggerheads with builder JJ Rhatigan over €3m extra charge

🕒 Thu, Oct 10, 2019, 02:40

**Jack Horgan-Jones**





# Industry's perception of the public sector client

## Public building contracts 'unattractive' to architects

RIAI blames State bureaucracy, time frames, risk shifting and poor procurement skills

🕒 Fri, Apr 12, 2019, 00:00

**Jack Horgan-Jones**



# Industry's perception of the public sector client

The other key issue is the nature of **public works contracts**, which see the **vast majority of risk carried by the party least able to manage it**, namely the **contractor**.

Construction Magazine



# Industry's perception of the public sector client

the “**allocation of uncontrollable risks**”. He said the largest of the construction companies in Europe “cannot and will not take these risks”. It was, he said, “**the main issue facing the Irish Government from a procurement point of view** and it must be addressed”.

Irish Times, 19 July 2019





# Summary

- **Uncertain outcomes**
- **Difficult and complex processes**
- **Uncertain investment environment**
- **Unrealistic expectations**
- **Poor payment**
- **Questionable employment practices**
- **Poor understanding between the many actors of their various requirements**
- **Wasted resources**



# What steps can public sector clients take?

- **Better understanding of the process**
- **Emphasis on risk management rather than simply transfer**
- **Greater engagement in the day to day management of projects**
  - Setting minimum standards for information**
  - Demanding high standards of performance**
  - Greater collaboration**
  - Insisting on BIM**



# What does a 'modern' industry mean to a client

**Why should we care?**

**Potential to ensure State assets are:**

- **Better built**
- **Quicker delivery**
- **Greater certainty**

**and to deliver...**

**better working conditions, more diverse workforce, long term career stability with better opportunities**



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# Project Ireland 2040 Modernising Construction:

## Skills

**Dr. Róisín Murphy**

**Department of Public Expenditure and Reform Conference**

**Central Bank of Ireland**

**31<sup>st</sup> January 2020**

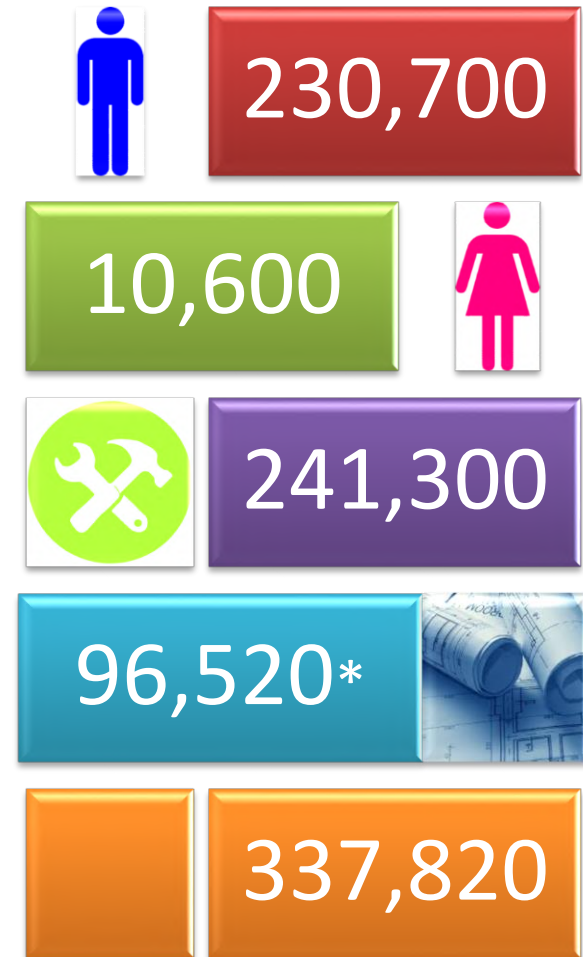
Engineer  
Bricklayer  
Project manager  
Facilities manager  
Quantity surveyor  
Plumber  
Architect  
Carpentry  
Plumbing  
Tiler  
Plasterer  
Architect  
Quantity surveyor  
Painting  
Decorating  
Building surveyor

## Current (Q3 2019)

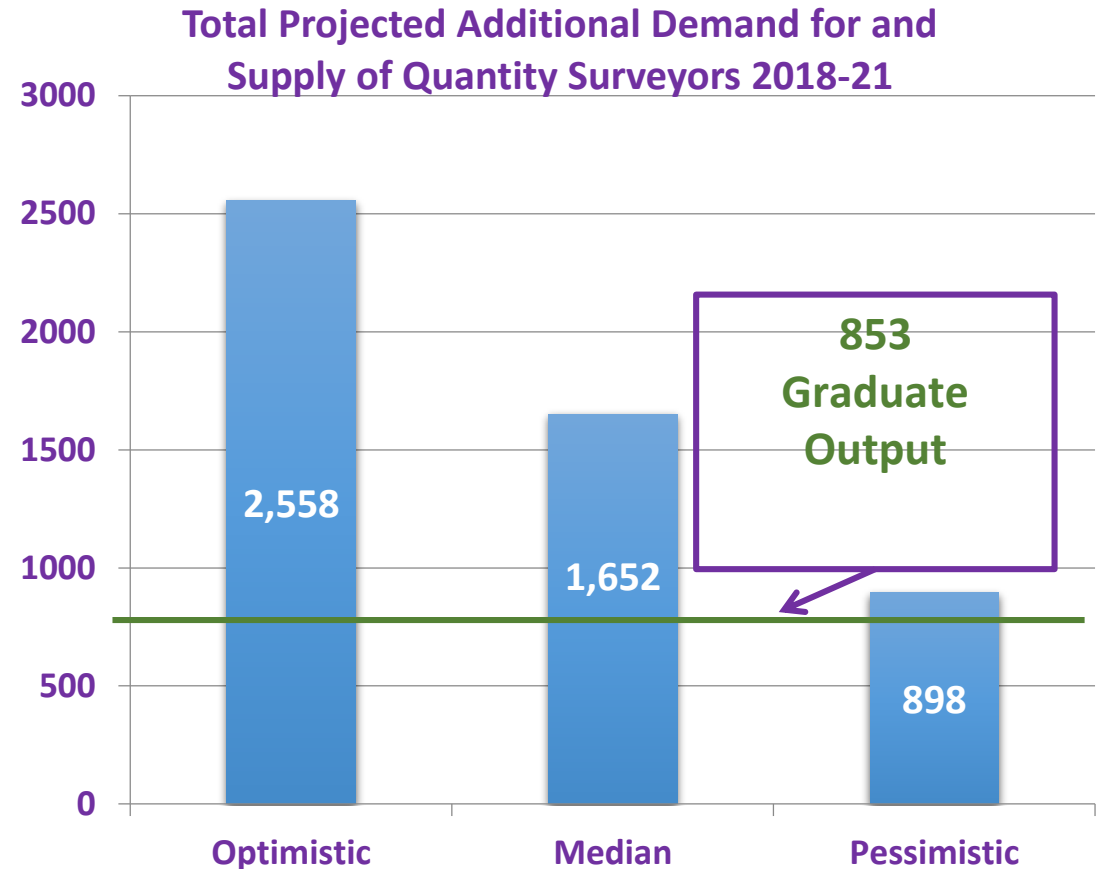
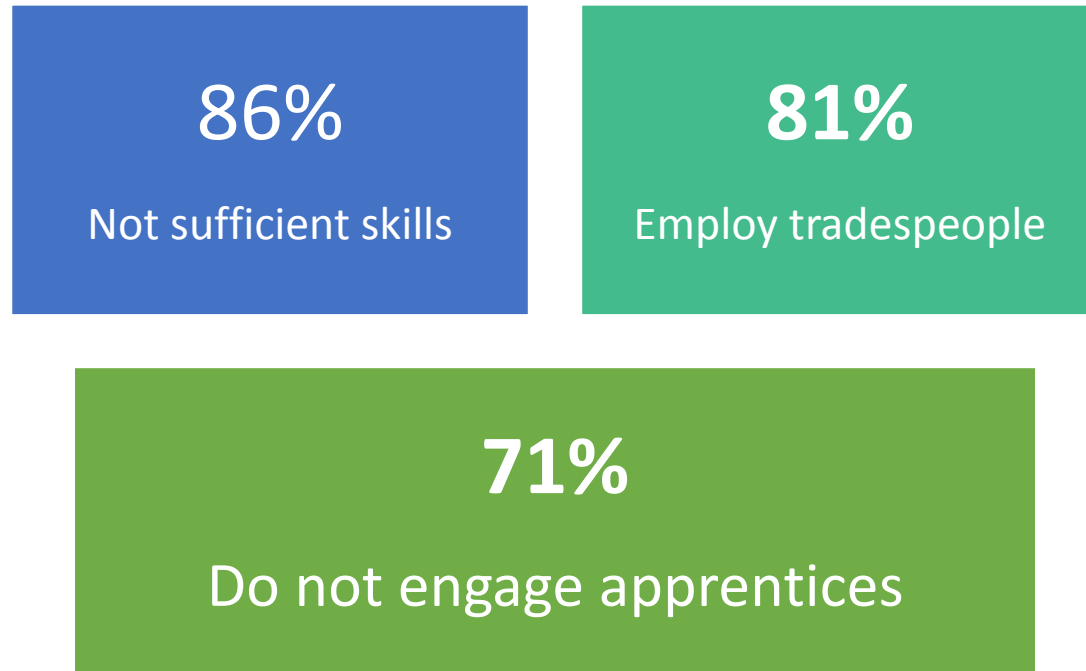


V

## Peak (Q2 2007)

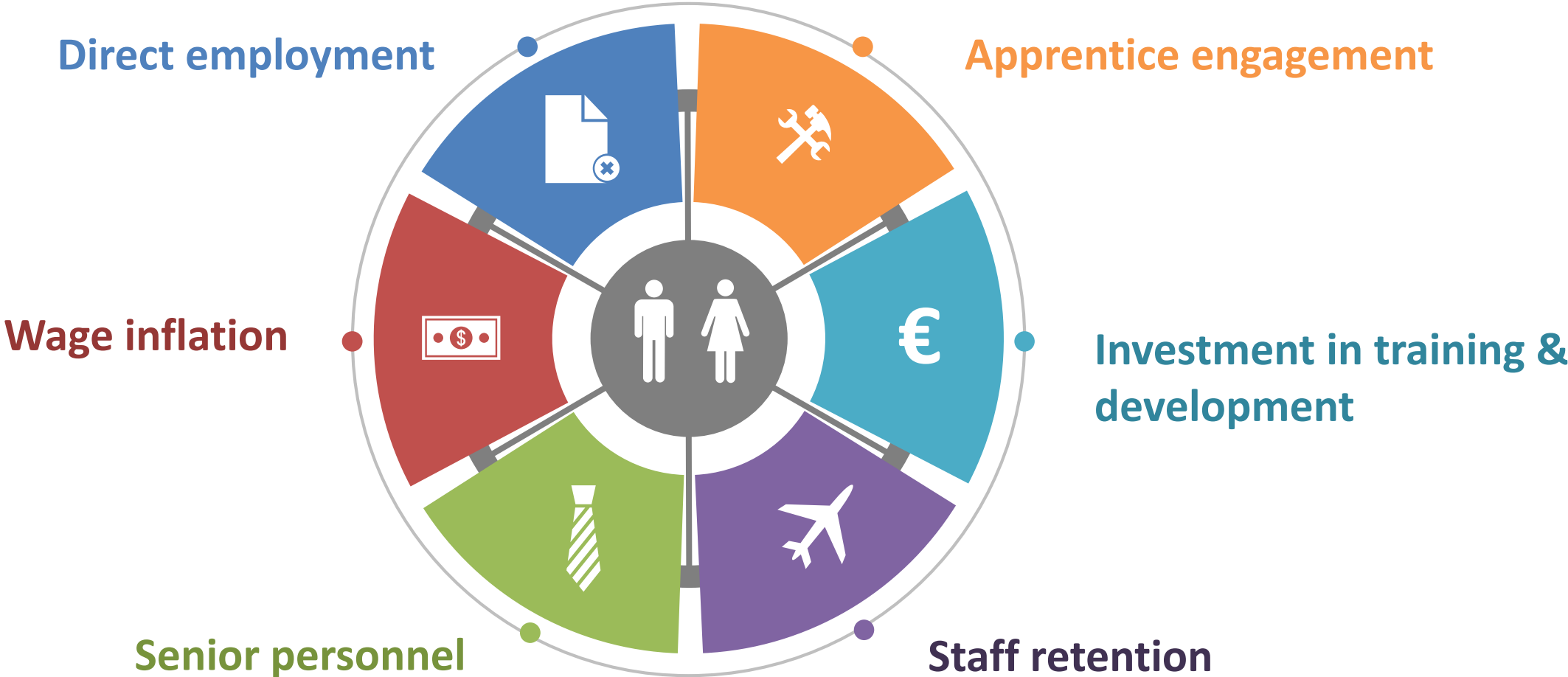


# Shortage of Construction Workers

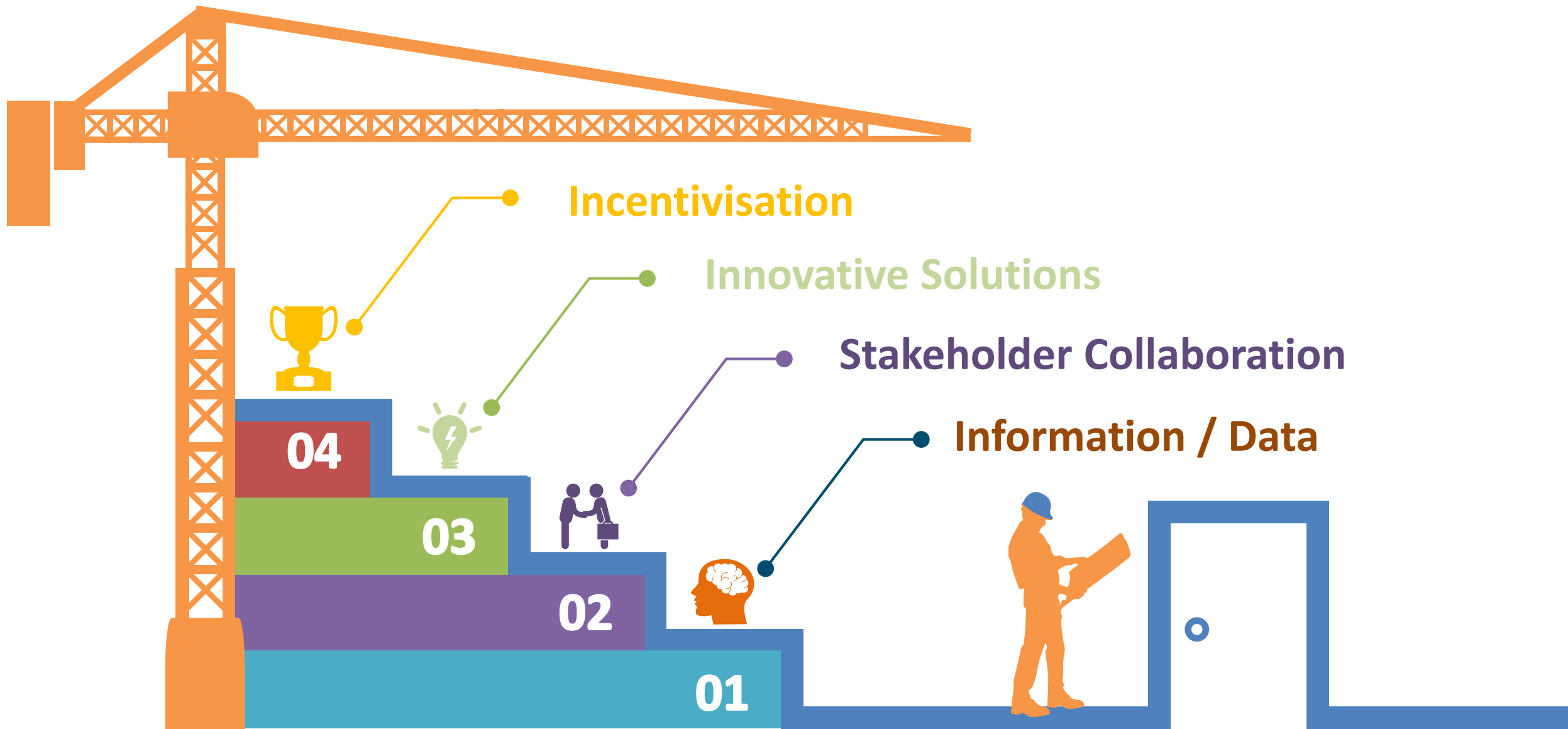


O'Murchadha, E. and Murphy, R (2018) Trades and Apprenticeships Skills Survey: An Employers Perspective. Report undertaken on behalf of the Construction Industry Federation (CIF)

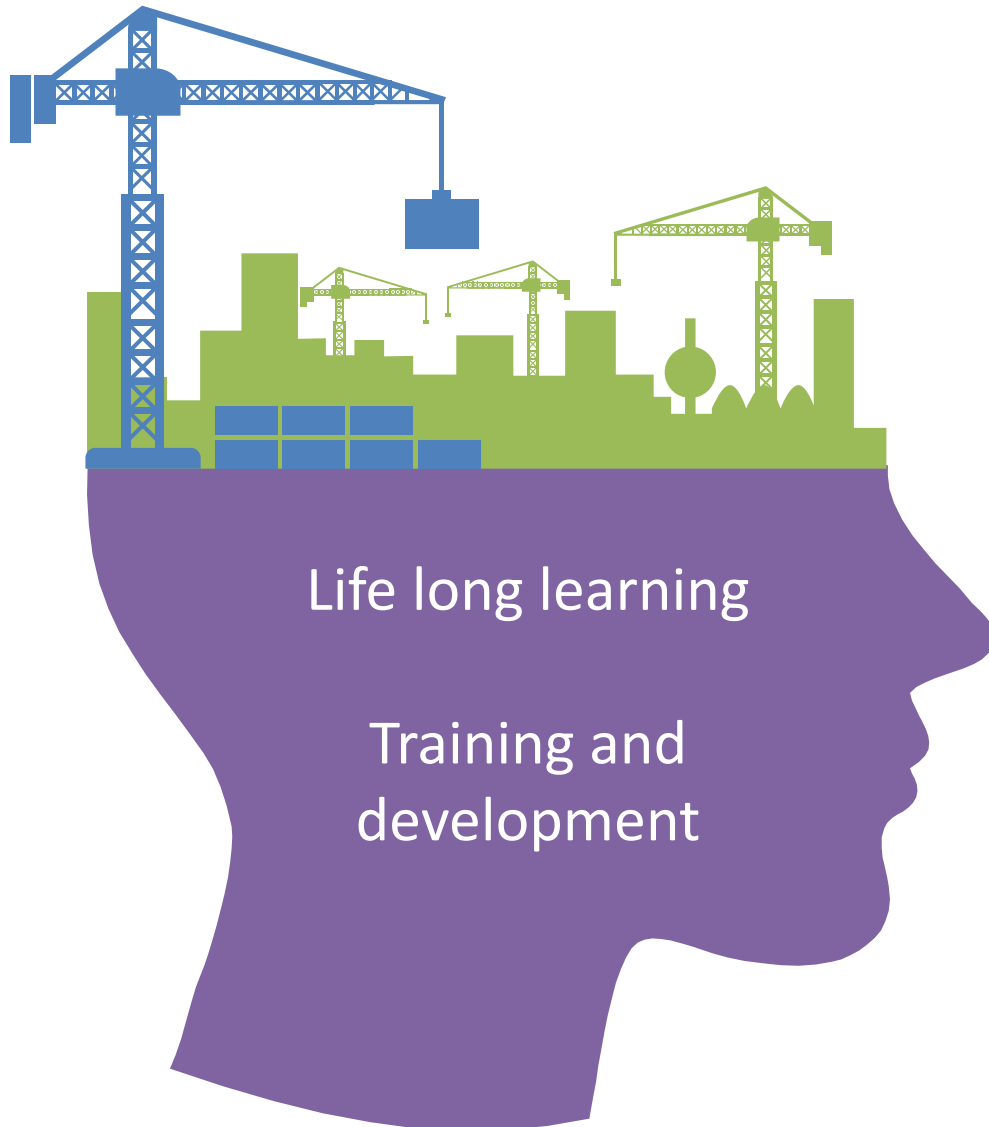
# Labour Market Challenges







# Skills for the future



**TRADITIONAL SKILLS / CRAFTS**



**DISCIPLINE SPECIFIC SKILLS**



**DIGITAL SKILLS**



**SOFT SKILLS**

**Thank you**



**An Roinn Caiteachais  
Phoiblí agus Athchóirithe**  
Department of Public  
Expenditure and Reform

# Infrastructure investment in an era of uncertainty

Conference on public investment governance, reform and innovation

**#PERInfraConf**

