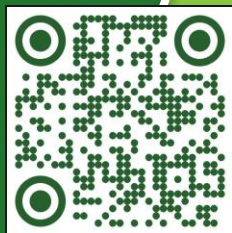




Global trends in construction

Don Ward
CIB Chief Executive
July 2024



www.cibworld.org



SUSTAINABLE DEVELOPMENT GOALS



cib The global construction sector

\$9.7 trillion in 2022

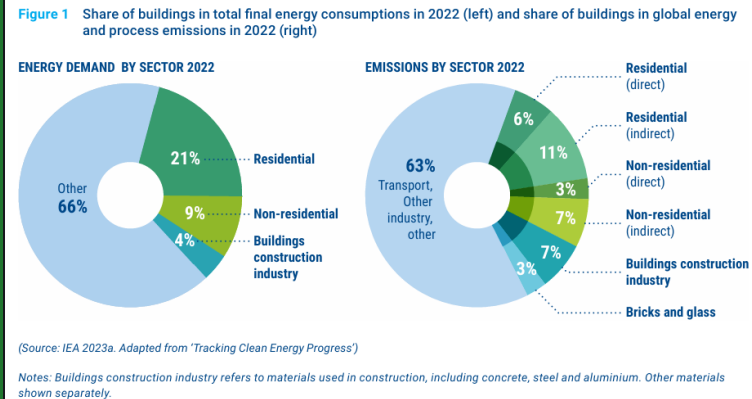
“Growth globally driven by huge opportunities in the global green economy”, \$13.9T by 2037 (*Oxford Economics, 2023*)

Employs 7%-10% of the global workforce (ILO)

Responsible for 34% of energy demand and 37% of emissions (*UNEP, 2024*)

Beyond foundations

Mainstreaming sustainable solutions to cut emissions from the buildings sector



The global network for



Collaboration for



Innovation in the



Built environment

International Council for
Research and Innovation in
Buildings and Construction



Our history

Established in 1953 as an NGO on the initiative of the United Nations

*Conseil International du Bâtiment
pour la recherche, l'étude et la
documentation*

An international association with worldwide membership

“To support an improved building process and enhanced performance of the built environment”

www.cibworld.org



CIB's objectives

Provide a global network for international exchange and cooperation in building and construction research and innovation

Improve the performance of research and researchers through meeting, sharing and learning

Make the sector's knowledge available, and bridge the gap between research and implementation in the industry

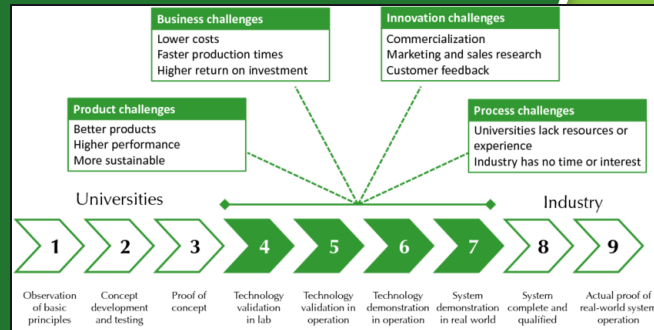
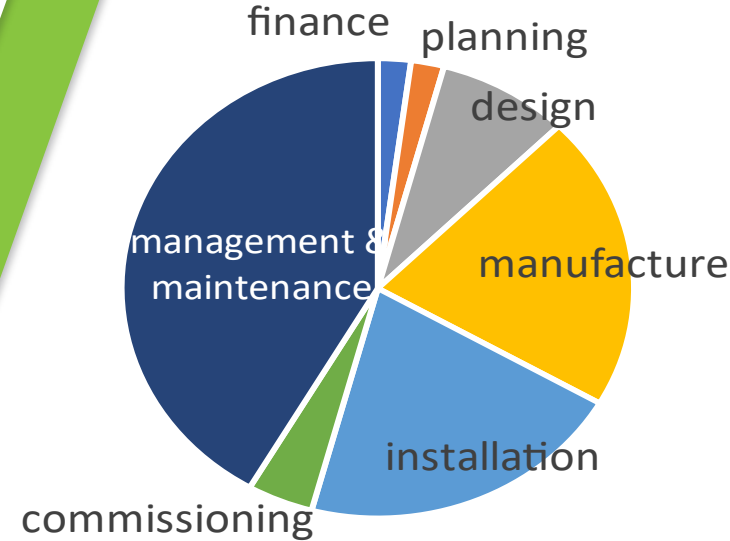
Promote the value of research as a vital contributor to industry development, societal growth and environmental sustainability



cib Scope

- Includes technical, economic, social, environmental, organizational factors
- All stages of the built environment life cycle
- The whole innovation process of basic and applied research, documentation and transfer of research results, and implementation

Built environment lifecycle



Membership

Over 100 corporate members, 50% universities, over 3000 experts in total

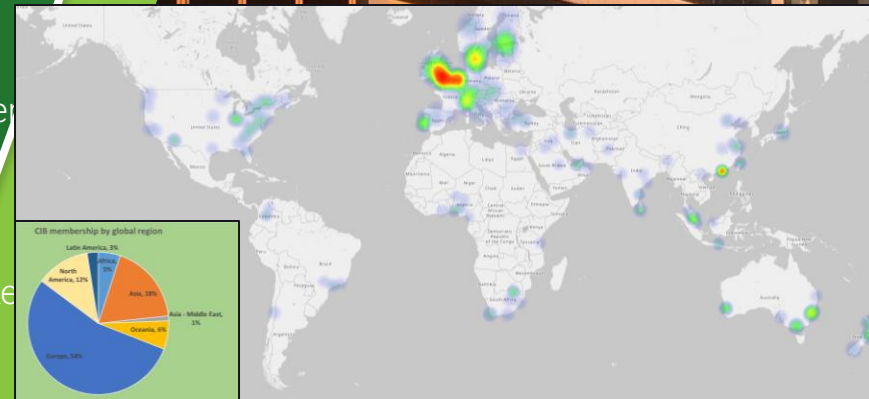
In South Africa:

Coega Development Corporation (Pty) Ltd
University of Cape Town (Sustainability Orientated Cyber research Unit for the Built Environment S \oplus CUBE)
Nelson Mandela University
University of Pretoria
University of South Africa
University of the Witwatersrand
Mangosuthu University of Technology
University of Johannesburg
CSIR Built Environment

Tshwane University of Technology
Central University of Technology
Global Futuristic Engineering and Tourism Training Academy
Amathole District Municipality
University of Zimbabwe
NHBC

Targeting growth in developing and under-represented countries, industry innovators, research funders and policy-makers

www.cibworld.org





**Celebrating 70 years
of international
cooperation to build
a more sustainable
world**

www.cibworld.org

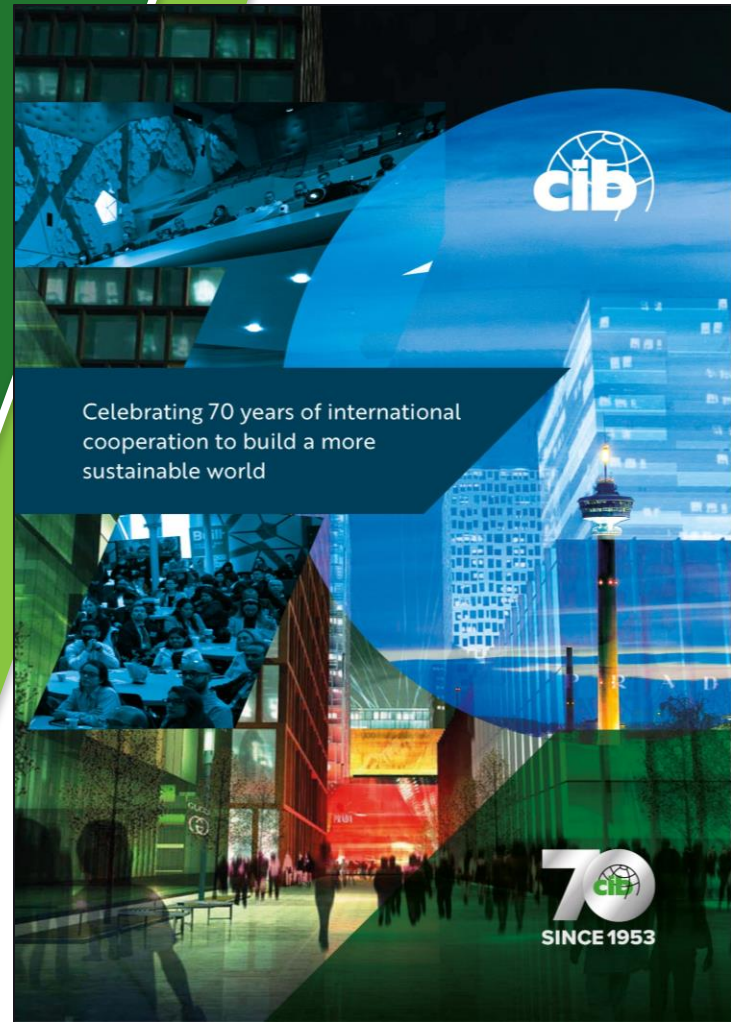


SINCE 1953



Celebrating 70 years of international cooperation to build a more sustainable world

www.cibworld.org



Adding value for global research

Global network for collaboration

41 expert Working Commissions & Task Groups

Conferences, webinars, publications, 32 partner journals, research roadmaps, research database (30,000 papers)

World Building Congress 2025

Supporting tomorrow's talent

20 Student Chapters

New global network for Early Career Researchers

Awards

"CIB in Conversation"

Campaigning on issues which matter, eg impact, research classification

www.cibworld.org



80 Countries



83 Organisations



200 Individual Members



2500 Experts



35 Working Commissions



6 Task Groups



20 Student Chapters



32 Partner journals



30,800 Research papers



40 Working Commissions and Task Groups (2024)

Architectural Design and Management

Building Pathology

Clients and Users in Construction

Construction in Developing Countries

Construction Industry Economics

Construction Materials Stewardship

Culture in Construction

Customised Industrial Construction

Disasters and the Built Environment

Education in the Built Environment

Facilities Management and Maintenance

Fire Safety

Global Construction Data

Heat and Moisture Transfer in Buildings

Informal Settlements and Affordable Housing

Information and Knowledge Management in Building

Information Technology for Construction

Infrastructure

Innovation in Construction

Intelligent and Responsive Buildings

Law and Dispute Resolution

Nature Based Solutions for Climate Resilient Buildings and Communities

Offsite Construction

Open Building Implementation

Organisation and Management of Construction

People in Construction

Performance Measurement in Construction

Prediction of Service Life of Building Materials and Components

Procurement Systems

Public Private Partnerships

Residential Studies

Roofing Materials and Systems

Safety and Health in Construction

Sandwich Panels

Smart and Sustainable Built Environments

Smart Cities

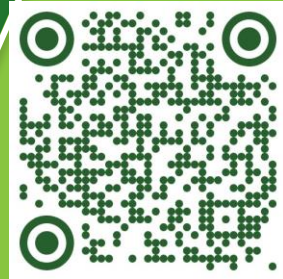
Spatial Planning and Infrastructure Development

Usability of Workplaces

Wall Structures

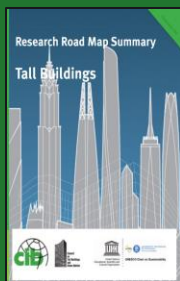
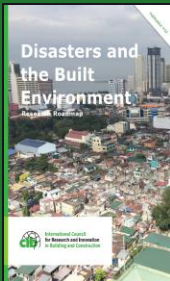
Water Supply and Drainage

Zero-Carbon Building & Infrastructure Design and Construction





Publications and events



CIB W099 & W123 conference on Digital Transformation of Health and Safety in Construction, Porto, Portugal, June 2023

CIB W070 Conference on Facility Management and Maintenance 2023, Trondheim, Norway, May 2023

World Building Congress 2022 (WBC2022), hosted by RMIT, Melbourne, Australia, June 2022

CIB TG96 Smart Built Environment Conference 2021, December 2021

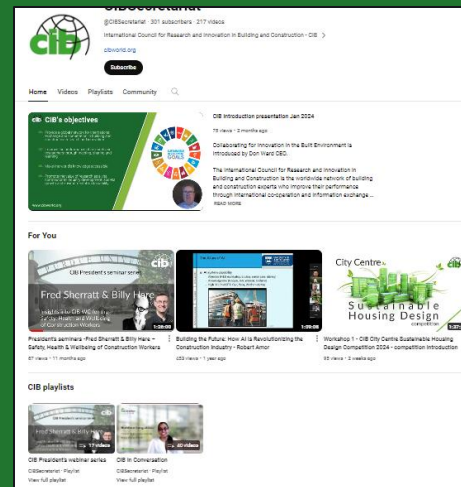
CIB W099 & TG59 International Web-Conference 2020: Good Health, Wellbeing & Decent Work, September 2020








CIB on YouTube

CIB President's Seminar series
 – distinguished women researchers
 CIB in Conversation
 Various webinars and other content



Student Chapters

-  First founded in 1998, now 20
-  Regular events including research seminars, professional development, networking
-  Awards and funding
 - Sebestyén Future Leaders Award
 - Best Doctoral Thesis Award
 - Vistas funding




PGR NEWSLETTER

CIB
STUDENT
CHAPTER



Early Career Researchers (ECR) network

 Global online network since 2021 to support early career development, free to join

 Engage with discipline-specific Commissions or Task Groups; personal development webinars

 Awards:
Hampson Award for ECR-Industry collaboration
Visiting Global Scholar Programme





World Building Congresses since 1959

2025	Purdue	USA
2022	Melbourne	Australia
2019	Hong Kong	China
2016	Tampere	Finland
2013	Brisbane	Australia
2010	Salford	UK
2007	Cape Town	South Africa
2004	Toronto	Canada
2001	Wellington	New Zealand
1998	Gävle	Sweden
1995	Amsterdam	Netherlands
1992	Montreal	Canada
1989	Paris	France
1986	Washington DC	USA
1983	Stockholm	Sweden
1980	Oslo	Norway
1977	Edinburgh	United Kingdom
1974	Budapest	Hungary
1971	Paris/Versailles	France
1968	Ottawa/Washington DC	Canada/USA
1965	Copenhagen	Denmark
1962	Cambridge	United Kingdom
1959	Rotterdam	The Netherlands





World Building Congress 2025

Purdue University, USA



CIB's World Building Congress is held every 3 years



650 people from 39 countries attended WBC2022 in Melbourne



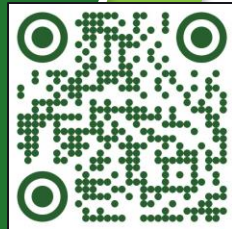
The 23rd will be in West Lafayette, USA, 19-22 May 2025



www.wbc2025.cibworld.org

Call for Abstracts closed in March*
Call for industry case studies in May 2024
Full papers by November 17th 2024

www.cibworld.org



WBC2025
Purdue University, USA



CIB World Building Congress 2025

19-23 May

Conference theme is

***Sustainable built environment –
the role of the construction
community in meeting the UN SDGs***

Call for Abstracts

A call for abstracts has been issued by the WBC2025 organising committee.
Full details on WBC2025 website

Closing date for submitting abstracts
19th February 2024

wbc2025.cibworld.org





Today's macro context for our sector

Political

Post pandemic policies, international conflicts, migration

Economic

Typically 6%-15% of GDP, infrastructure investment, pandemic impacts, oil and gas, globalisation

Social

Changing values and behaviours, work-life balance, demographics, equality diversity & inclusion, well-being

Technology

Digital/BIM, robotics/drones, 3D printing, offsite & pre-manufactured delivery, big data, AI

Legal

Modern Slavery and Bribery Acts, PPP laws, transparency

Environmental

Climate change, extreme weather events, emissions, energy mix and efficiency, resilience, activism, #COP28





Structure, Conduct, Performance of the sector

Structure

- Fragmentation: SMEs, little market consolidation (contractors), long 'supply chains', multiple tiers of sub-contractors
- High self-employed (eg UK) or migrant workers (MENA)

Performance

- Boom-bust
- Projects late and over budget
- Poor profitability
- Skills shortages
- Productivity has flat-lined (see chart)

Conduct

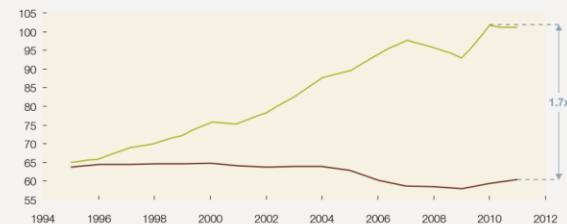
- Fragmented process – design, manufacture, installation, operation
- Focus on capex not opex and whole life cycle
- Highly competitive, lowest price bidding
- Still some corruption
- Poor payment practices
- Poor health, safety, welfare, training practices including modern slavery
- Low digital maturity
- A disregard for the natural environment - and the neighbours!

Exhibit 3 Productivity in manufacturing has nearly doubled, whereas in construction it has remained flat.

Overview of productivity improvement over time

Productivity (value added per worker), real, \$ 2005

\$ thousand per worker



Source: Expert interviews; IHS Global Insight (Belgium, France, Germany, Italy, Spain, United Kingdom, United States); World Input-Output Database



Sector improvement – global trends

Safety, health and well-being

Digital – BIM, drones, robotics, 3D printing etc etc

Modern methods of construction, offsite, industrialised construction

Environmental sustainability, embodied carbon, net zero, resilience

Social value, local employment

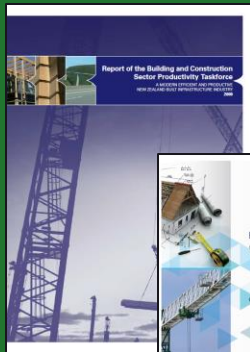
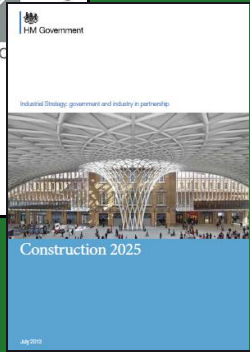
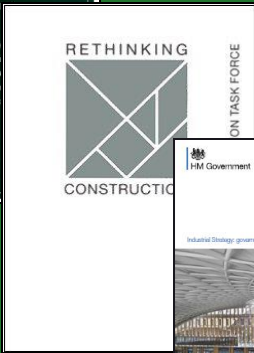
Transparency, traceability

Productivity, lean





Government reports and improvement agenda





The value of common national strategies

(Future) Best practices

Actors	Company level	2.1 Technology, materials and tools			2.2 Processes and operations		
		Advanced building and finishing materials	Standardized, modularized and prefabricated components	(Semi-)automated construction equipment	Front-loaded and cost-conscious design and project planning	Innovative contracting models with balanced risk-sharing	A common and appropriate framework for project management
		New construction technologies, e.g. 3D printing	Smart and life-cycle-optimizing equipment	Digital technologies and big data along the value chain	Enhanced management of subcontractors and suppliers	Lean and safe construction management and operations	Rigorous project monitoring (scope, time, cost)
		2.3 Strategy and business model innovation			2.4 People, organization and culture		
	Differentiated business model and targeted consolidation and partnerships	Sustainable products with optimal life-cycle value	Internationalization strategy to increase scale	Strategic workforce planning, smart hiring, enhanced retention	Continuous training and knowledge management	High-performance organization, culture and incentive schemes	
	Sector level	3.1 Industry collaboration			3.2 Joint industry marketing		
		Mutual consent on standards across the industry	More data exchange, benchmarking and best-practice sharing	Cross-industry collaboration along the value chain	Industry-wide collaboration on employer marketing	Coordinated communication with civil society	Effective interaction with the public sector
	Government	4.1 Regulation and policies			4.2 Public procurement		
Harmonized building codes/standards and efficient permit processes		Market openness to international firms and SMEs	Promotion and funding of R&D, technol. adoption and education	Actively managed and staged project pipelines with reliable funding	Strict implementation of transparency and anti-corruption standards	Innovation-friendly and whole-life-cycle-oriented procurement	

Industry Transformation Framework
World Economic Forum, 2016

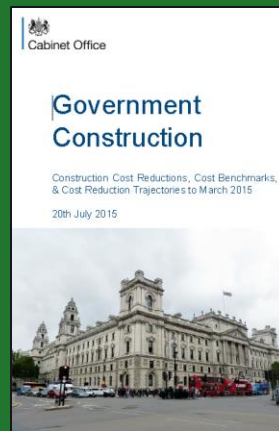
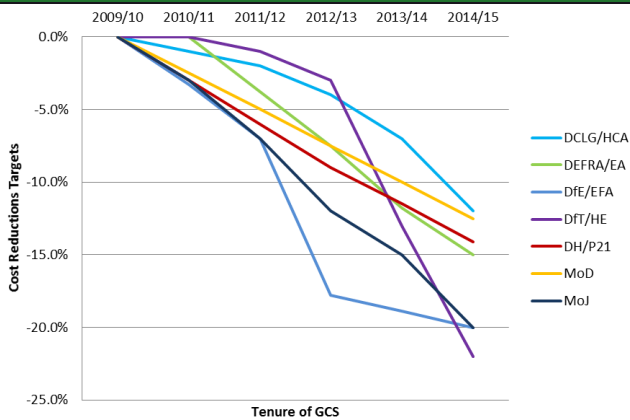
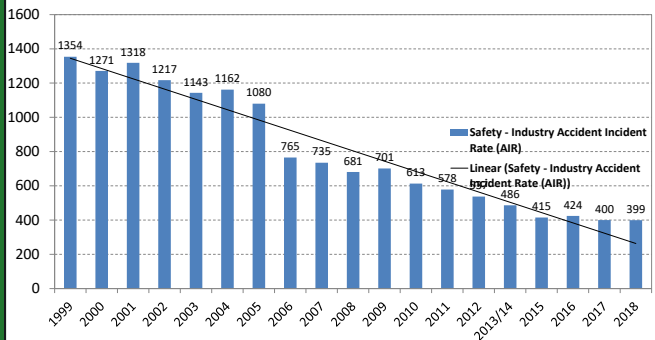


COMMITTED TO IMPROVING THE STATE OF THE WORLD

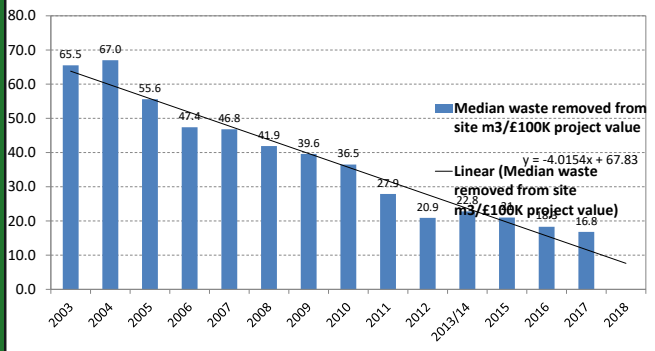


The value of benchmarking and KPIs

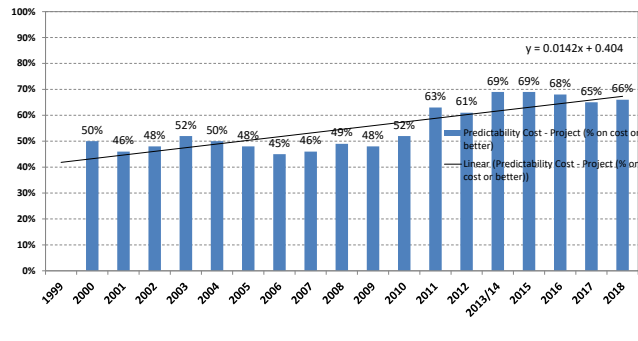
Safety



Construction waste



Cost predictability





The value of mega projects



A blueprint for change

Mega projects of the last 20 years raised the bar in the UK



Palace of Westminster



HS2



Hinckley Point



Tideway



Crossrail



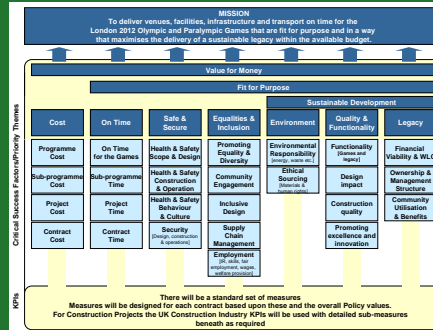
London 2012



T5 Heathrow



BP Andrew



Sustainability Policy

Purpose:
The policy sets out HS2's ambition to build the most sustainable high speed railway of its kind in the world. We want a high speed railway network which changes the way of travel for millions of people, strengthens the rail network, supports the economy, creates jobs, reduces carbon emissions and provides reliable travel in a changing climate throughout the east of England and beyond.

Principles:
Sustainability at HS2 is about delivering social, environmental and economic benefits. This includes delivering value to the UK economy and Government through value for money decisions that seek to get the best value for money through the whole lifecycle of the railway.

Our sustainability approach at HS2 groups our work into three themes reflecting the economic, environmental and social aspects of sustainability. These themes support the HS2 vision of being a catalyst for growth across Britain and our ambition, which includes being an exemplar project in our approach to engagement with communities, sustainability and respecting the environment.

Our five sustainability themes are:

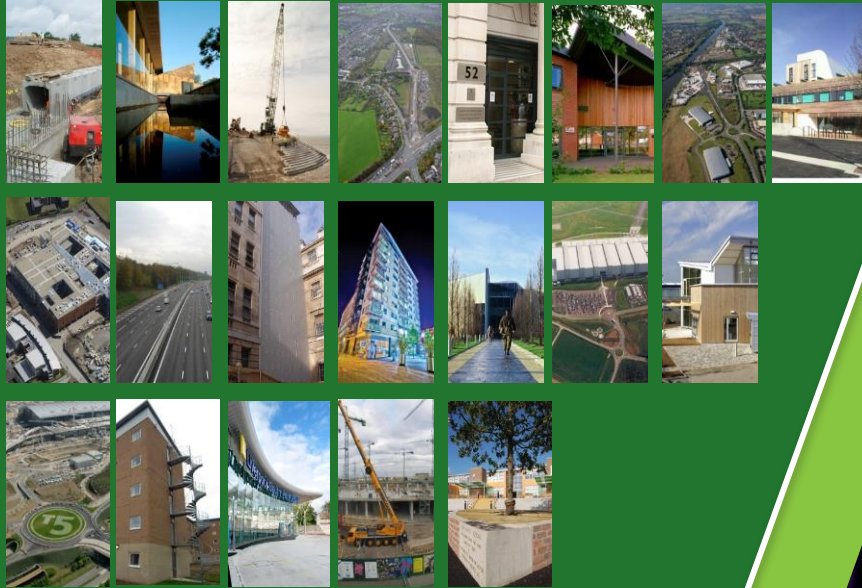
- Supporting the benefits of economic growth and employment**
- Opportunities for local communities**
- Safety at work: Health, safety and wellbeing**
- Respecting our surroundings: Environmental and social impacts**
- Shaping the best of times: Designing a better future**

HS2 is committed to being a catalyst for growth across Britain and our ambition, which includes being an exemplar project in our approach to engagement with communities, sustainability and respecting the environment.

Approved on: 18 May 2012
Mark Thomas, Chief Executive Officer, HS2 Ltd



The value of Demonstration Projects and Awards



Pressures on clients

Funding and finance

Value for money

Economic recession

Legislation and regulation

Safety

Capital costs (capex) vs operation (opex)

Environmental sustainability – resilience
and future proofing

Local employment in the supply chain
(SMEs)

Delivering in operating environments

Open on time

} “more
} for
} less”





The intelligent client - common themes

Understanding value

Client leadership

Budget and affordability

Environmental and social sustainability

Collaborative working

Innovation

'Learning Legacy'

Programme management not just project

www.cibworld.org





The value of frameworks

Frameworks became the norm for public sector programmes in the UK in the last 20 years



Social housing



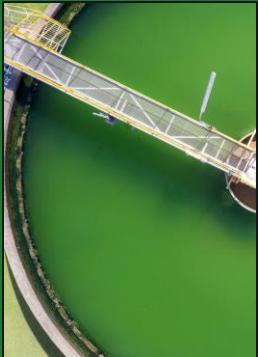
Prisons



Schools



Hospitals



Environment, Water



Highways



Defence

Barriers

Unaligned commercial arrangements

'Lowest-price wins' tendering

Lack of training and updated guidance for clients including from professional bodies

Vested interest of key parties, eg consultant advisors

Inefficient sharing of best practice between clients



The importance of “clock speed”

Pharma: fruit flies and mice...

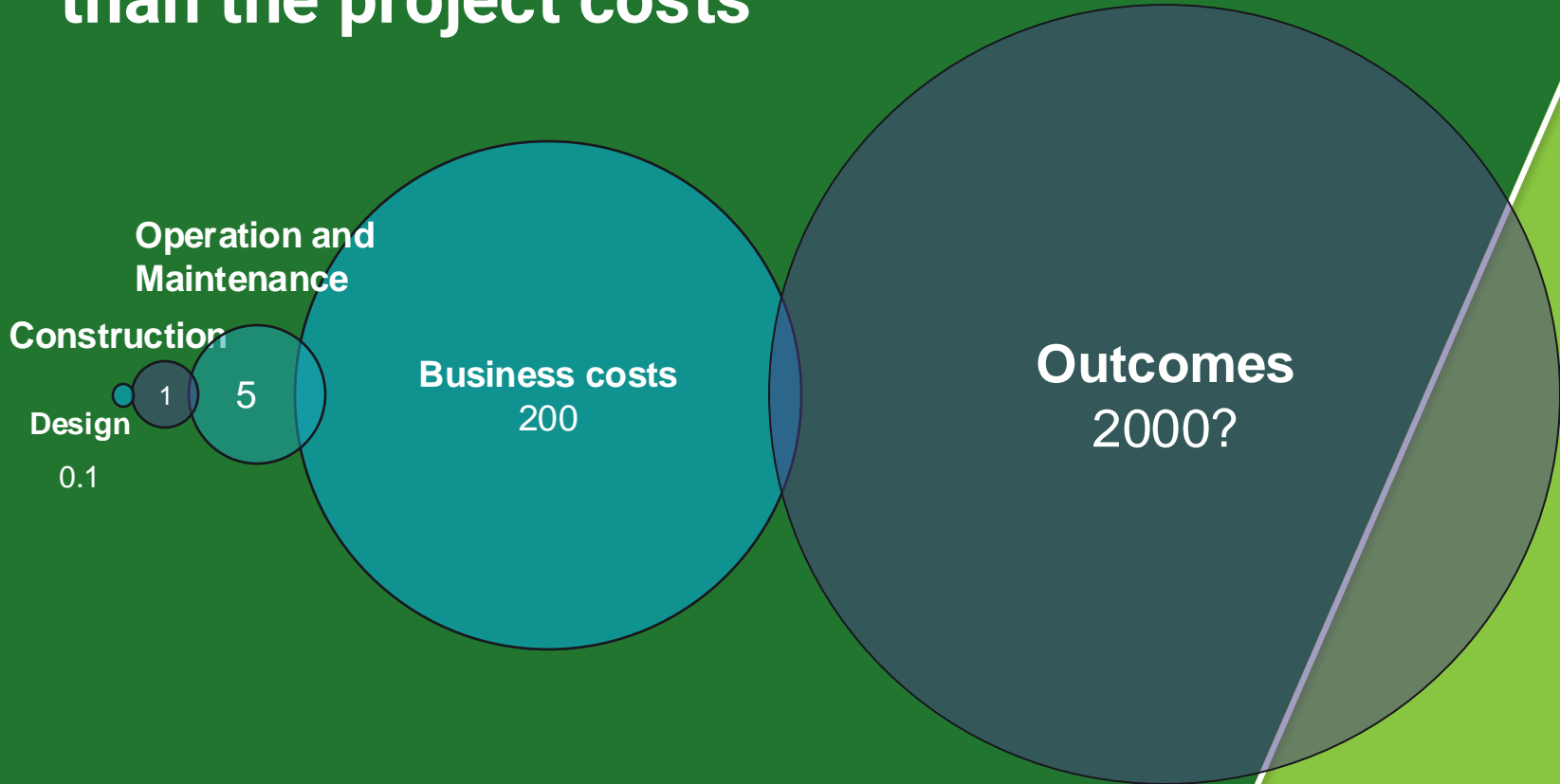
Construction = buildings = project
+ operation

Cycle time (predictability,
continuous improvement, risk
reduction)





The value of client outcomes is far greater than the project costs



The value of good facilities

Hospitals

Evidence-based health-care architecture: acoustics, daylight, colour, nature, single beds, carpets. Extra cost of 3-5% recouped in 1 year

www.thelancet.com *Medicine and Creativity* vol 368 Dec 2006)

Patients discharged in 6.4 days rather than 8.1 due to better environment (CABE)

Schools

Good design increases staff productivity by up to 15% and makes schools cheaper to run (RIBA)

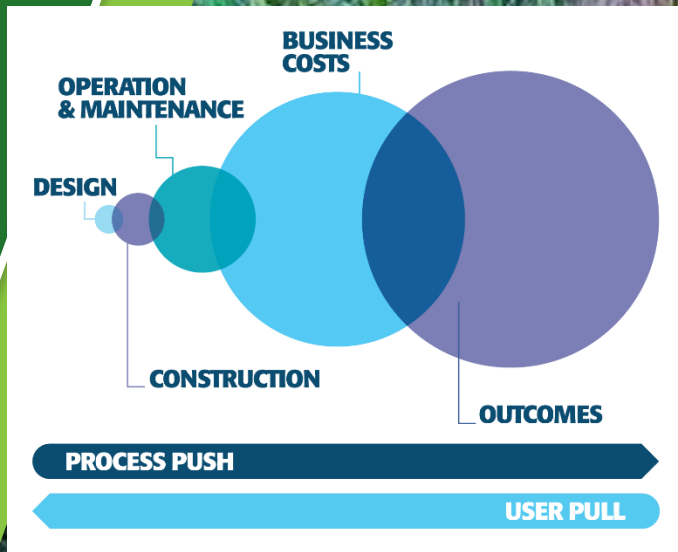
Housing

£2 billion a year is spent on treating illnesses arising from poor housing conditions (RICS)

Offices

Good office environment can increase productivity by 25% and reduce absenteeism by 15% (CABE/BCO)

An improvement of 2.5% in staff performance would pay for the building





UN Sustainable Development Goals 2015



 **Thank you**

Don Ward, Chief Executive

don.ward@cibworld.org

www.linkedin.com/in/don-ward-8203269/

