National Audit Office

Environmental Issues associated with Infrastructure

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This presentation

- Introduction to the WGEA paper
- Case study – Olympics 2012
- Questions

The WGEA paper

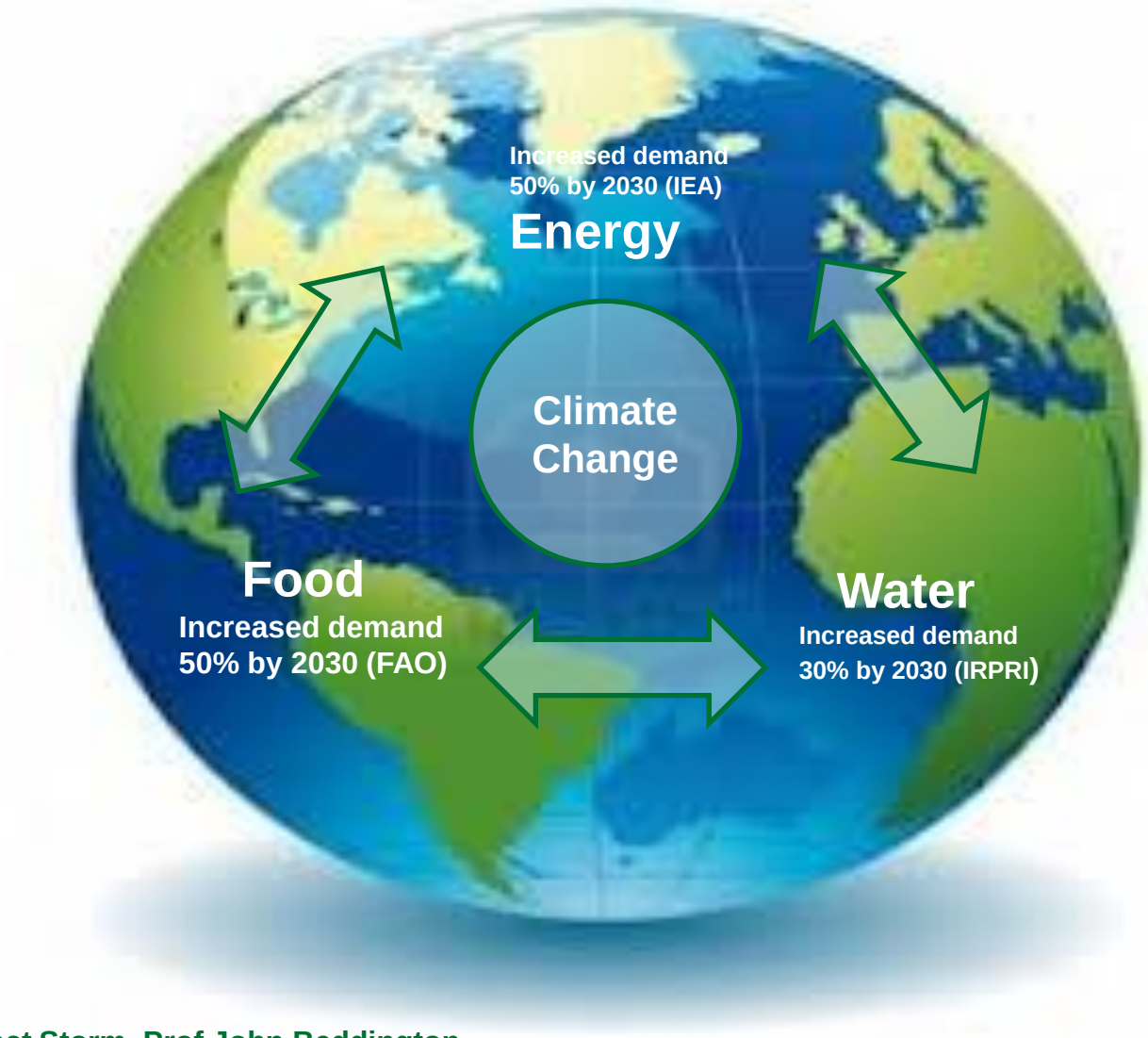
Objective:

- To provide an overview of the common environmental and sustainability impacts associated with infrastructure, along with governance structures that can be put in place to manage them, in order to help the auditor when designing an audit.

Structure:

- Environmental and sustainability impacts arising from infrastructure development
- The stages in infrastructure development
- Governance approaches for managing the environmental impacts of infrastructure
- How SAIs can audit the environmental and sustainability impacts of infrastructure

Context: The “Perfect Storm” will drive infrastructure investment



Source – A Perfect Storm, Prof John Beddington

Infrastructure can be local or have impact across a wider area

Environmental and Sustainability Impacts of Infrastructure Projects

Ecology
Impacts on natural habitats of flora and fauna, movement of animals, species population dynamics

Water resources and the water environment
Impacts on water resources; flood risk; water consumption; and water embedded in the materials used to build and maintain the infrastructure

Land
Land use change affecting resilience to flood risk; deforestation; pollution; and remediation. Impacts on areas of historic or cultural significance.

Energy, Greenhouse Gases & other emissions to air
Impacts from energy use during construction and operation including use of machinery, transportation, lighting and other electricity use

Materials
Impacts embedded in the materials used during construction, including materials derived from natural resources e.g. timber, concrete, steel, etc. and energy used to manufacture the materials.

Human Environment
Impacts on the local community, local and non-local economy and the built/historic environment

But there can also be positive impacts…

- Creating opportunities to minimise water consumption e.g. utilising rainwater
- Re-using or recycling materials
- Incorporation of energy saving features into infrastructure design
- Using local suppliers strengthens the local economy and reduces transportation emissions
- Restoration or enhancement of wildlife habitats affected by developments

Generic Model of Infrastructure Development

POLICY

Wider Context
Stage 1
Identify policy need and how to meet need

- **Identify the policy need** or desired policy outcome.
- **Set out the options** available to solve the problem (including a do nothing and non-infrastructure options).
- **Options appraisal** to identify the best option for meeting the policy need
- Prepare the **high level business case**.

PROJECT

Project Start Up
Stage 2
Draw up Project Brief

- Prepare a **feasibility study**
- Prepare a **business case**
- Address options for **choice of delivery model**

Stage 3
Development of Delivery Strategy

- Prepare **procurement strategy**
- Prepare **output based specification**
- Prepare **contract strategy**

Project Delivery
Stage 4
Draw up Design Brief

- Prepare outline **design brief**
- Prepare **detailed design brief**

Stage 5
Construction

- Procurement
- Build infrastructure
- Test infrastructure
- Monitor construction against performance criteria and indicators

Operational Service
Stage 6
Operate and Maintain Infrastructure

- Monitor performance & benefits realisation
- Contract management
- Maintenance

Stage 7
Disposal / Decommissioning of Infrastructure

- Decommission plan and strategy (including finance model)

Governance approaches for incorporating environmental and sustainability consideration, across the infrastructure development cycle

Wider Context
Stage 1
Identify policy need and how to meet need

- Regulatory framework
- Taxation
- Policy Impact Assessments

Project Start Up
Stage 2
Draw up Project Brief

Stage 3
Development of Delivery Strategy

- Planning controls
- Regulatory regimes
- Environmental Impact Assessments

Project Delivery
Stage 4
Draw up Design Brief

Stage 5
Construct Infrastructure

- Design specifications
- Contract Management
- Procurement standards
- Life-Cycle Costing

Operational Service
Stage 6
Operate and Maintain Infrastructure

Stage 7
Disposal / Decommissioning of Infrastructure

- Environmental Management Systems

We have illustrated the types of audits that can be undertaken

Audits of national approach to infrastructure planning

Audits of infrastructure projects and programmes

Audits of operation of processes to address environmental impacts

Audits of infrastructure projects' contribution to environmental objectives

Case study: Olympics 2012

Olympics 2012:

- July 2005 International Olympic Committee chose London as the host city for 2012
- Prospect of lasting legacy formed key element of bid (in terms of regeneration of the area, use of venues and wider benefits)

Audits of the environmental and sustainability impacts of the Olympics:

- UK NAO reviews considered the risks, challenges and progress in planning for a lasting legacy.
- Commission for a Sustainable London 2012

Audit recommendations included:

- Evaluation framework should include baselines for measuring whether expected legacy benefits are achieved
- The Olympic Park Legacy Company should set out a clear plan for mitigating the costs of maintaining assets after the Games.