



ICCSU

International Council for Science

ICCSU Foresight: International Science in 2031

Exploratory Scenarios

Presentation outline



- Why a foresight process?
- Exploratory scenarios
- The ICSU foresight process
 - Megatrends and key drivers
 - Exploratory scenarios

Why a foresight process?



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- New scientific developments requiring international collaboration
- Grand challenges with long term character and large scale
- Emerging scientific powers
- Global interdependence

Such drivers of change create uncertainty around the organisation and conduct of science, the skills and infrastructures required, and the ends to which science might be directed

The ICSU process



A **consultative** process to:

- Describe the **present landscape** for international science
- Identify **drivers** of international science
- Develop **exploratory scenarios**
- Develop a **Success Scenario**
- Identify options and **choices for ICSU** (and Members)

ICSU is well positioned



- Extensive networks, both (inter)disciplinary and geographically,
- High quality researchers and institutions in the networks
- Experience in different forms of foresight:
 - Identification of emerging issues (2002)
 - Earth system visioning process (2010)

Why a scenario approach?



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- Tool for ordering perceptions about alternative future environments in which decisions are played out
- Storylines to stimulate creative thinking on future actions



What factors influence international science?



- **Megatrends:** those factors whose future trends are reasonable clear
- **Key Drivers:** those factors whose direction and evolution is very uncertain

Megatrends

- Demography
- Natural resource availability
- Global environmental change
- Human health and well being
- Technological change
- Enabling information technologies

Key Drivers

- State sovereignty, regionalism and globalism
- Science and Society
- Global science agendas and arenas
- Epistemic organisation of science
- Values, beliefs, ethics
- Scientific integrity and self regulation
- Spatial organisation
- Private sector/military science
- States and markets
- International collaborative research infrastructures
- Nature of the scientific record
- Science education and careers

The Triumph of Globalism

Scenario 1: Global and Engaged with society



Global ←

interest

Science for sale in a global market place

Scenario 3: Global and Detached from society



↑ Engaged
science
outlook
↓ Detached

Science Supplying National Needs

Scenario 2: National and Engaged with society



states

National →

Rise of Aggressive Nationalism

Scenario 4: National and Detached from society



The Triumph of Globalism

Scenario 1: Global and Engaged with society

A single strong organisation representing the independent voice of global science

Globally coordinated strategic research

Global networks of decentral research facilities

Activist scientists

Greater mobility of scientists

Less curiosity-driven research opportunities

Increased external regulation of science



Global Governance has received new lifeblood

More interdisciplinarity at the expense of disciplinary research; integration of natural and social sciences

Science Supplying National Needs

Scenario 2: National and Engaged with society

After a series of major global economic crisis, nations have adopted an order of self-sufficiency: focus on local sustainability

Science socially embedded

Different national science strategies

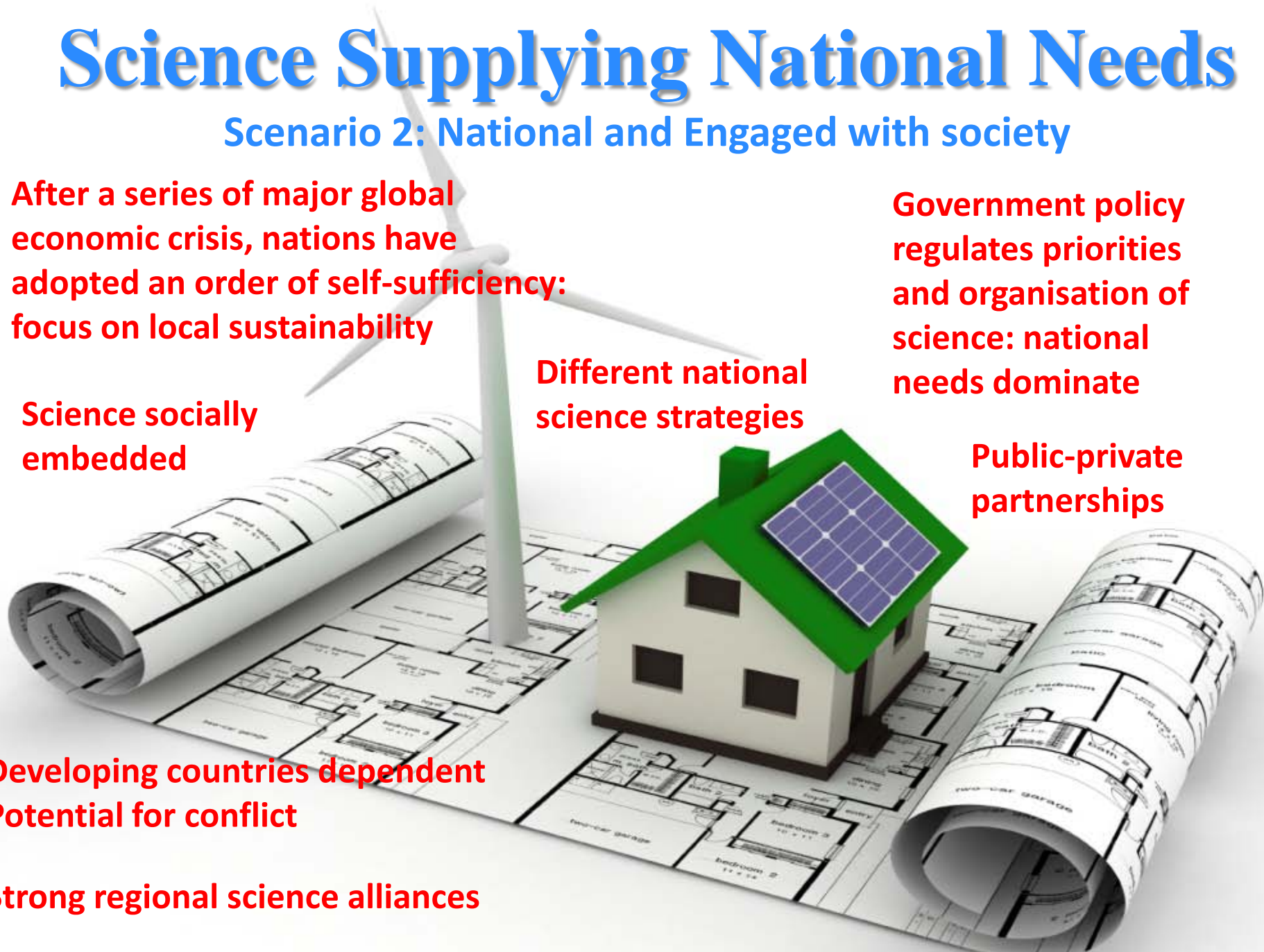
Government policy regulates priorities and organisation of science: national needs dominate

Public-private partnerships

Developing countries dependent
Potential for conflict

Strong regional science alliances

Less curiosity-driven research opportunities



Science for sale in a global market place

Scenario 3: Global and Detached from society

Converging
technologies and
medical sciences new
frontiers of science

New multinational companies drive
fast globalization

Detachment from society
Public trust in science declines

Science informs
policy, but decisions
not driven by science

Global
universities

Global governance
structures dominated
by business

Countries have specialized in
particular fields of research

Countries have increasingly specialized in
supplying only certain products to global
markets and by doing so become more
dependent on the global system

Science gained independence
through new breakthroughs
More curiosity-driven research

Rise of Aggressive Nationalism



Scenario 4: National and Detached from society

Strong competition between nations and a power struggle for global leadership

**Greatest potential for conflict and for harmful use of knowledge
Military science**

Less developed countries are isolated

Trust in international assessments and predictions has eroded

Nodes of strong national science

**Culture of secrecy
Parallel research efforts**

**Decline in researcher mobility
Growing education divide**

International governance of science dominated by economic powers

National languages promoted for scientific communication