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Panel 1B, 13 September 2018

**Fostering cooperation and
synergies while avoiding
unnecessary duplication of
facilities**

Dr Beryl Morris, TERN Director
ICRI 2018, Vienna

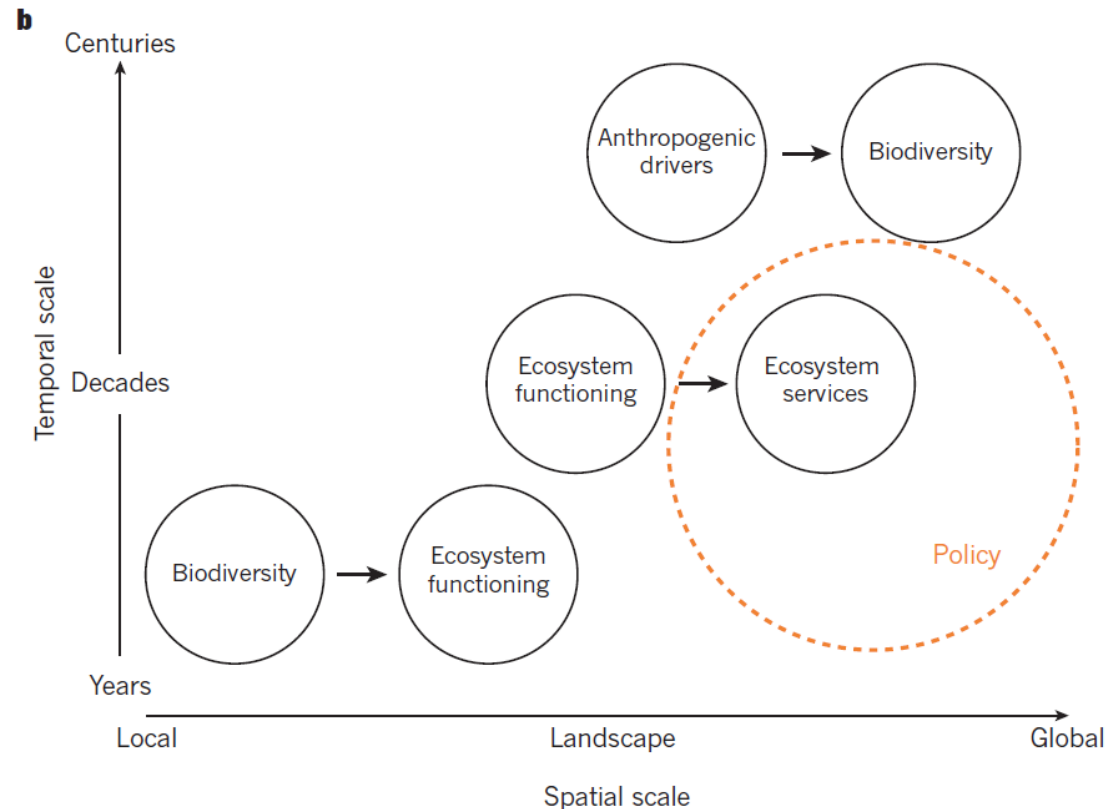
Global RI cooperation: biodiversity loss



- Biodiversity loss substantially diminishes several ecosystem services by altering ecosystem functioning and stability, especially at the large temporal and spatial scales that are most relevant for policy and conservation.

Global RI cooperation: biodiversity loss

At the global spatial scale over decades or centuries, the ever-increasing and unprecedented extent and impact of human activities on land and in the oceans is dramatically reducing global biodiversity

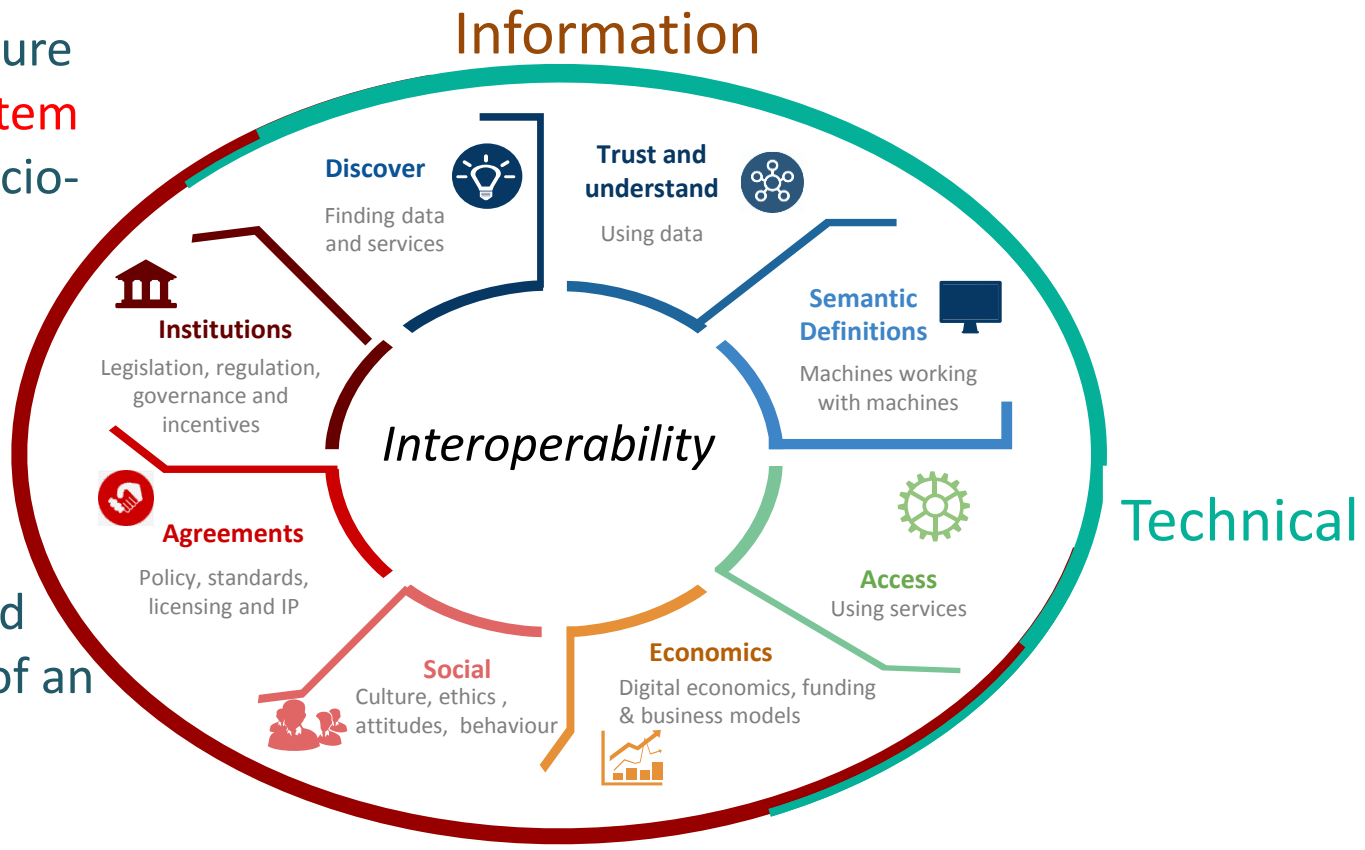


Fostering cooperation in building global RI

Not all problems have a technological solution “Tragedy of the Commons”

Information infrastructure is a **socio-technical System** requiring integrated socio-technical design

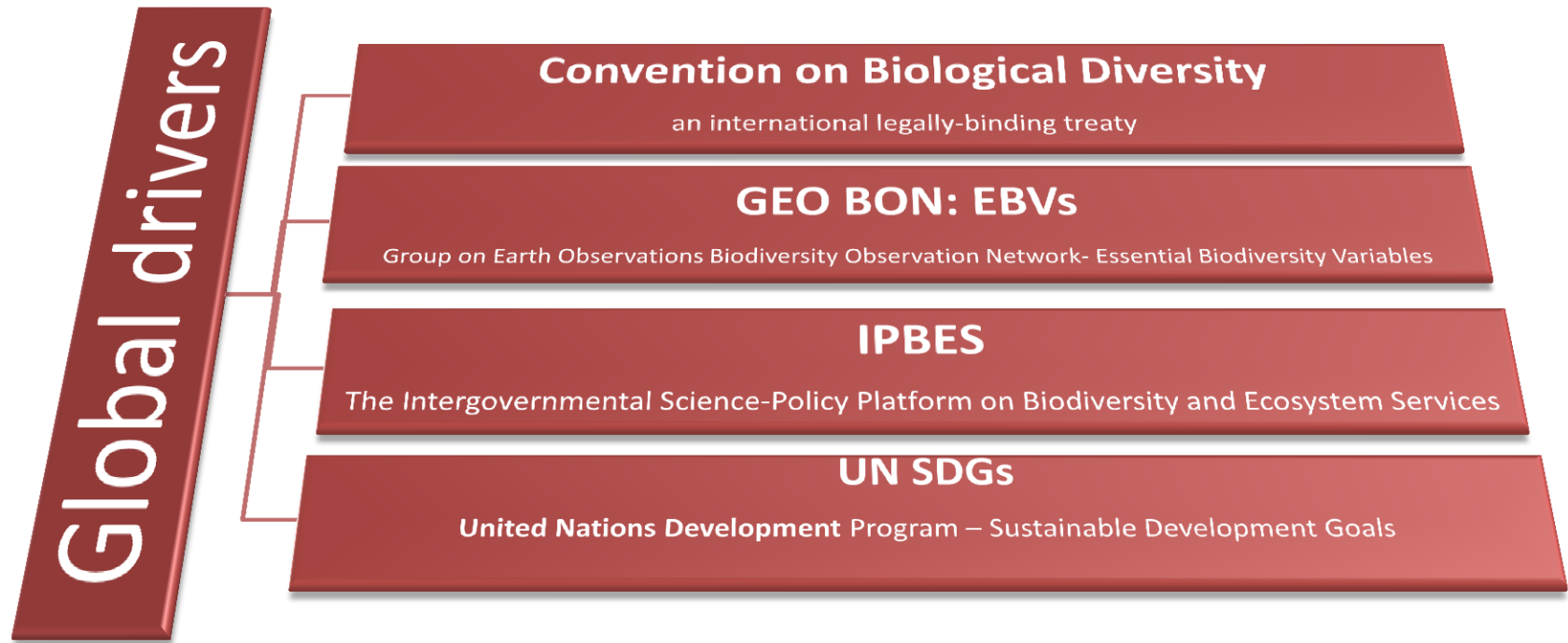
Social
Social systems involved the conscious design of an environment that encourages a desired range of behaviours leading towards some goals



<https://research.csiro.au/oznome/>

Global organisations: biodiversity targets and measures

For example...



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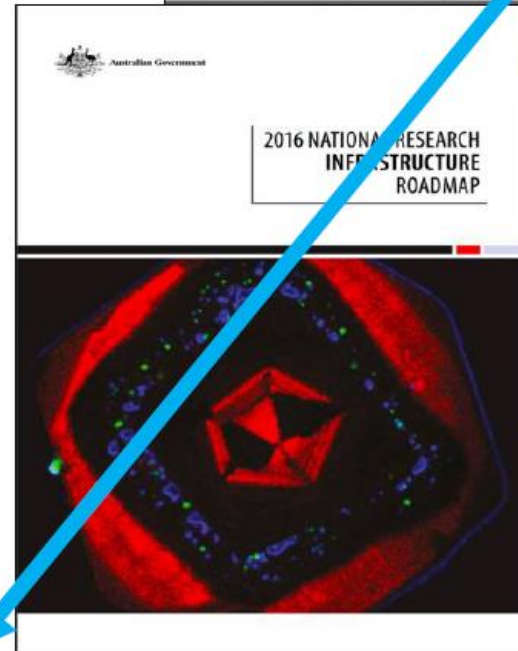
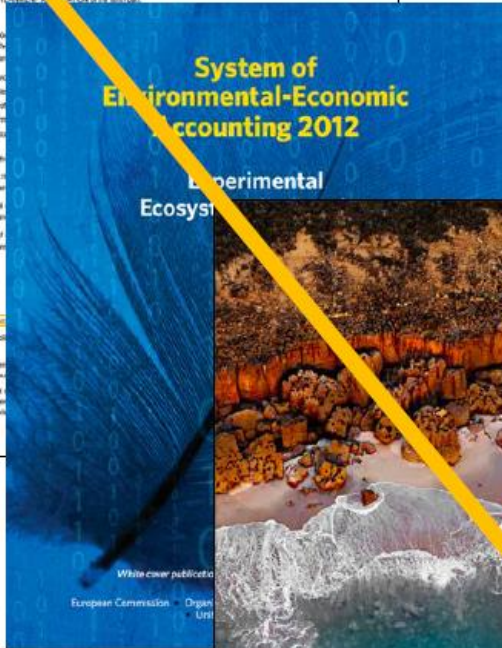
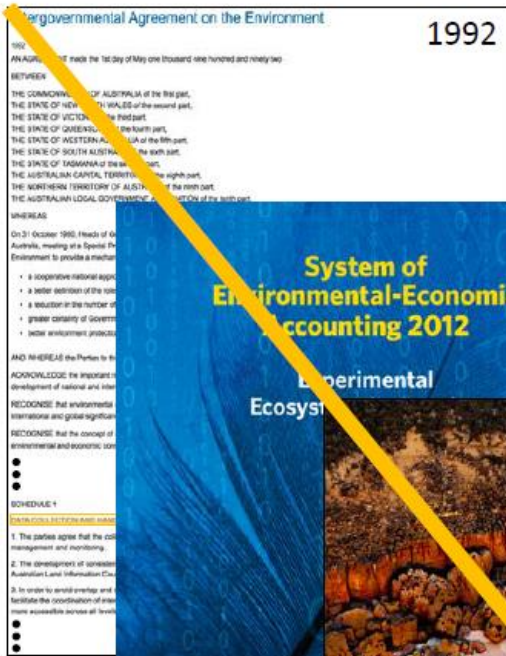
Social infrastructure: Tanami Indigenous cooperation

- Data on the biodiversity of more than 10 million hectares of land in central Australia are now openly available to the world via TERN RI.
- Collected by Indigenous rangers and traditional owners in collaboration with the mining industry, land council and environmental consultancy partners with TERN protocols
- The data is being used to assess the spatial and temporal trends in the occurrence of threatened species, and the impacts of mining on the region's flora and fauna



Timing, capability and circumstances are important for fostering cooperation

TRANSFORMATIONAL ENVIRONMENTAL INFORMATION INFRASTRUCTURE & SUPPLY CHAINS IN AUSTRALIA



Operational prediction infrastructure



POPULATION PROJECTIONS FACT SHEET

WHAT ARE POPULATION PROJECTIONS?
 Population projections illustrate how the Australian population would change in the future (if specific assumptions about fertility, mortality and migration were to occur). These potential scenarios are based on current and projected demographic trends. As we do not know what will happen, different assumptions are used to illustrate a range of possible outcomes. The scenarios are based on assumptions such as population level, growth, distribution and composition.

WHAT ARE POPULATION PROJECTIONS USED FOR?
 Population projections are used by governments, policymakers, planners, the private sector and researchers. They are commonly used to estimate future demand for products, services and infrastructure. For example, a high growth scenario with a young population may require more schools and hospitals. Currently, population projections are important for the Australian population.

WHAT IS THE DIFFERENCE BETWEEN A PROJECTION AND A FORECAST?
 Population projections do not predict or forecast how the population of Australia will change. They are based on assumptions about non-demographic factors which influence population change, such as migration, health treatment or the occurrence of natural disasters. Projections are based on what would happen if the demographic assumptions made were to occur. Forecasts are based on what is expected to happen, so projections illustrate possibilities.

WHAT DOES THE ABS USE TO PRODUCE POPULATION PROJECTIONS?
 The ABS uses data that involves making assumptions about future levels of fertility, mortality and migration. These are applied to a starting (or base) population (in the 2012), split by sex and single year of age, to obtain a projected population. These are then applied to this new (projected) population to obtain a projected population at the end of the projection period.

WHAT IS COVERED?
 The ABS uses data as at 30 June 2012 is used as the base for the projection series. The series cover the period from 30 June 2012 to 30 June 2101 for Australia, and 30 June 2012 to 30 June 2101 for each state and territory region.

WHAT FACTORS OF POPULATION CHANGE ARE CONSIDERED IN ABS POPULATION PROJECTIONS?
 The ABS uses demographic information taken into account in the creation of population projections, Australia 2012 (8454) (TO 2101) 2022.2

Seasonal Streamflow Forecasts

Each month, the Bureau forecasts likely streamflow volumes for the next three months for more than 140 locations across Australia. These forecasts inform decisions made by those who use rivers and water storages—in particular, managers of water supplies for towns, irrigation and the environment.

How does the seasonal streamflow forecast service work?
 The service applies a statistical approach, using the relationship between climate indicators, past catchment conditions and historical rainfall and streamflow at a location to forecast its total streamflow volume for the following three-month period. Forecasts are provided as the likelihood of high, near-normal or low streamflows (also known as tercile forecasts).

Information on forecast accuracy is provided with each forecast. This includes the typical forecast quality for that particular time of year, comparing past forecast volumes with actual observed volumes.

The forecasts are issued daily in each month at locations with economic, environmental and social significance. These are generally key water management locations and water control infrastructure including water storages.

What are the benefits?
 Together with other information and planning tools, seasonal streamflow forecasts can influence important decisions such as:

- Water allocations
- Cropping strategies
- Water market planning

Who can use it?
 The seasonal streamflow forecasts are available to everyone via the Bureau's web page. Organisations responsible for managing water, such as storage and river operators, can use forecasts to assist decision-making and scenario planning for the months ahead. Irrigators, farmers and local government can use it to plan water use into the future. Recreational users may also consult forecasts when planning activities.

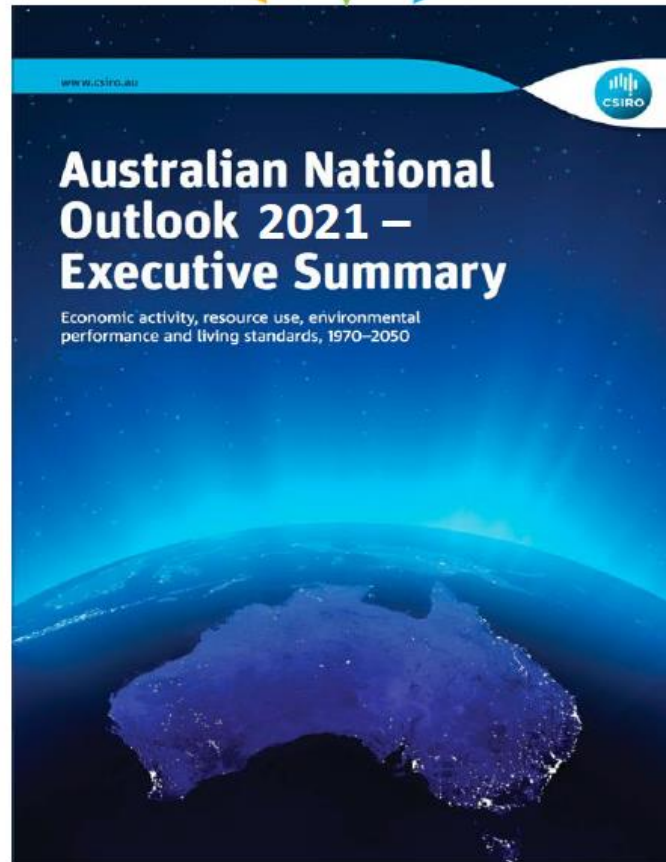
What is the Bureau's role?
 The Bureau's Improving Water Information Programme is building a comprehensive and reliable picture of Australia's water resources to support policy and planning. It collects and manages water information as part of its responsibilities under the Water Act 2007.

Use the most likely of medium or low flow to show the forecast.

Digital Earth Australia (DEA):
 From Satellites to Services



potential prediction system outcome



Integrated understanding of environmental, economic and societal response to plausible futures



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A national integrated environmental prediction system (NEPS)

PRINCIPLES

- **ADOPT–ADAPT–(INVENT)**: Construct the NEPS through networking of existing infrastructure, where possible
- **ENHANCE–ACCELERATE**: Invest in the strengthening of existing national research infrastructure elements to enhance their accelerating abilities in inter-operability
- **USER–CENTRED**: Grow the NEPS by prioritising early developments in innovative, valued information products for users
- **COLLABORATIVE**: Prepare for medium-term integration with relevant environmental information systems outside the government’s national research infrastructure, such as the ACCESS model and Data Integration Partnerships for Australia
- **INTEGRATED**: Plan for inter-operability with economic and social system models

Fostering cooperation and synergies while avoiding unnecessary duplication of facilities

NEPS: using what we have through partnerships...



Citizens



Research



Industry



Government

Fostering cooperation

Challenge is to harmonise our existing Networks and to formalise Global Environmental RIs



Aim is to achieve an international, comprehensive, integrated, and sustained Global Environmental observation system that provides the tools and data to help “take the pulse of the planet”

