

CONVENTION ON BIOLOGICAL DIVERSITY (CBD) NOTIFICATION 2015-045

**Key Scientific and Technical Needs Related to the Implementation of the
Strategic Plan for Biodiversity 2011–2020**

Submission by Australia

NOTE: All information provided in this response has been drawn from Australian Government agency inputs only. Consultation with State and Territory Governments was not carried out on this occasion.

Notification 2015-045: Key Scientific and Technical Needs related to Implementation of the Strategic Plan for Biodiversity 2011–2020

Australia refers to the content of a number of recent submissions to the Convention on Biological Diversity (CBD) Secretariat, including responses to notifications 2015-012 and 2015-014 regarding information in addition to that presented in Australia's fifth National Report. There are a number of submissions in progress that will provide further information on actions and policies relevant to progressing implementation of the Strategic Plan for Biodiversity 2011-2020 (the Strategic Plan). We ask the Secretariat refer to these submissions to obtain information relating to the first element of notification 2015-045.

Regarding the second element of notification 2015-045, Annex 1 of the CBD Conference of the Parties (COP) decision XII/1 outlines the key scientific and technical needs related to the implementation of the Strategic Plan. It identifies ten relevant areas and these will be used to set the structure of this response. Emphasis has been added to some of these paragraphs to highlight the most relevant points.

a) *Social science* - The need for better ways to draw on social sciences to motivate choices consistent with the objectives of the Strategic Plan for Biodiversity 2011-2020 and to develop new approaches through, inter alia, better understanding of behavioural change, production and consumption patterns, policy development, and the use of non-market tools. The need for more effective communication, education and public awareness to be spread more widely through school systems and other channels and to devise communication and awareness strategies on biodiversity, complementing communication, education and public awareness efforts with other perspectives including research on intercultural and intracultural communication experiences;

The Australian Government Department of the Environment is investigating the potential to apply behavioural insights to improve environmental policy and programme outcomes, including through project trials. This work is being undertaken in consultation with other Australian Government agencies and academics in the field of behavioural insights and public policy.

b) *Data and information* – The need for more accessible, affordable, comprehensive, reliable and comparable data and information streams through, inter alia, facilitated access to remote sensing, better collection and use of *in situ* observations, proxies, citizen science, modelling, biodiversity monitoring networks, better application of data standards and interoperability related to data acquisition and management to produce policy-relevant products, including indicators and scenarios to inform decision-making;

The Australian Government has delivered considerable investments in research infrastructure through the National Collaborative Research Strategy. Through this Australia has maintained its ability to undertake world class research. The data and information produced by this research is being made more accessible through information focussed projects, such as the Atlas of Living Australia and the Terrestrial Ecosystem Research Network. The Australian Government has also sought to increase access to its information assets through applying the open access principle and associated practices to information it holds on behalf of the community.

National Plan for Environmental Information

The National Plan for Environmental Information initiative is a programme intended to improve the quality and accessibility of environmental information. This comprises several elements, including publications and the National Environmental Information Infrastructure (NEII), which aims to make discovery, access and re-use of environmental information easier. This network of standards based information components will enable the participation of all environmental information collectors and managers. The NEII will improve community access to the environmental information needed for decision making and management.

National Environmental Accounts

Environmental accounts provide a structured and standardised way to organise environmental information. They can be used to determine changes in the environment, ecosystems and their functioning. As part of the National Plan for Environmental Information Initiative, the Australian Government developed an initial capability to produce environmental accounts to help integrate environmental information into decision-making. This includes guides, standards, tools and examples to enable the production of credible, legitimate, relevant and enduring environmental accounts. These [products are available](#) for interested parties to access and apply, on a voluntary basis.

MERIT

The online Monitoring, Evaluation, Reporting and Improvement Tool (MERIT) has been developed for the reporting requirements of the Australian Government natural resource management projects and programmes. MERIT allows grant recipients to lodge reports and data online and increases opportunities for information sharing within communities and the broader public.

MERIT has been operational since 2012. MERIT marks the start of a transition to standardised collection of Australian Government natural resource management programme and project data. As MERIT is reinforced with a greater volume and breadth of data, it will further enhance the monitoring and reporting process by ensuring simpler, but more comprehensive project records. This will enable direct links to be made between NRM activities and contributions to Australia's ecosystem protection and restoration work.

Atlas of Living Australia

The Atlas of Living Australia (ALA) is an Australian Government funded, collaborative national project that aggregates biodiversity data from multiple sources and makes it available and usable online. The ALA is publically accessible and allows data to be analysed geospatially.

The ALA is a registered node of the Global Biodiversity Information Facility (GBIF). Nodes of the GBIF work together to coordinate the biodiversity information facilities of participant countries and organisations to share data, skills, experience and technical capacity.

Citizen Science in the ALA

The ALA states that data and insights gained through the efforts of citizen scientists can be as valuable as that obtained by scientists working in academia, natural history collections, government agencies and business. The ALA is fully accessible and individuals or organisations can upload citizen science data and contribute to the database of plant and animal sightings. Contributions can be made directly to the ALA for individual sightings, or datasets can be uploaded using specially-developed software.

c) *Evaluation and assessment* – The need for improving and promoting methodologies for assessing the status and trends of species and ecosystems, hotspots and conservation gaps as well as ecosystem functions, ecosystem services and human well-being, at the national, regional and global levels;

A number of the programmes referred to in part b above have the capacity to be used for temporal analysis and to produce trend information. Some additional methodologies and programs are presented below.

State of the Environment Reporting

In Australia, State of the Environment reporting occurs at both the National and [State/Territory](#) (sub-national) level. Some regional scale reporting also occurs in some areas. At the national level, the Minister for the Environment is legally required to table a report in Australian Parliament on the state of the environment, every five years. The next National State of the Environment report is due in 2016.

The fundamental objectives of State of the Environment reporting are to:

- make relevant and useful information on the state of the Australian environment available to the Minister, the Environment portfolio and more broadly, to support decisions about environmental policies and management at national and regional scales; and
- give the public access to accurate, up to date information on the state of the environment.

Trend and confidence information for key variables and indicators is presented in the report based on a range of sources, including temporal data and expert appraisal. State of the Environment reporting has recognised the opportunity for improvements in the aggregation and management of long-term datasets. TERN is recognised as having the potential to build capacity at the national scale to report on a broader suite of trends.

d) *Planning and mainstreaming* – The need for improvement and better use of appropriate planning tools, and approaches for mainstreaming, in implementing the Strategic Plan for Biodiversity 2011-2020 through, inter alia: biodiversity safeguards, tools and methods for spatial planning, including integrated land use and coastal and marine planning, valuation of biodiversity, ecosystem functions and ecosystem services; and mainstreaming biodiversity into sustainable development and other relevant policy sectors;

Some Established Mainstreaming Activities

Australia has provided substantial information on mainstreaming activities, including the use of planning tools, integrated land use, marine planning, valuation and sustainable development. Brief descriptions of some of these approaches, policies and programmes are provided below.

- National legislation – *Environment Protection and Biodiversity Protection Act 1999* – requires persons to integrate biodiversity considerations into the development, planning and approval process.
- MyEnvironment Smartphone application – This smartphone application encourages broad interest in environmental values, as it uses GPS functionality to display heritage places, wetlands, threatened species and protected areas that are close to you. This functionality is also available through the browser-based 'Protected Matters Search Tool'.
- Australian Business and Biodiversity Initiative (ABBI) – an alliance of organisations and individuals from business, government, and the community. The alliance is committed to integrating the conservation and sustainable use of biodiversity and ecosystem services into business policies and practices in Australia. The ABBI is Australia's national initiative under the Convention on Biological Diversity's Global Partnership for Business and Biodiversity.
- Green Army – this programme provides opportunities for young Australians to gain exposure, training and experience in environmental and heritage conservation, while participating in projects that generate direct benefits to the environment.
- National Landcare Programme - The National Landcare Programme provides funding for environmental and sustainable agriculture projects and mainstreams environmental protection, restoration and ecosystem services into the thinking and practices of regional bodies, land managers, farmers, fishers and the broader community.

e) *Linking science and policy* – The need for better integration of science and policymaking and for improved science-policy interfaces, particularly at the local and national levels and through the use of IPBES, and the improved and wider use of tools to promote policy coherence and policy evaluation and to produce scenarios and options relevant to policymakers;

There are many established science-policy interfaces in Australia, operating at both the national, sub-national and local scales. Below are some examples of interfaces at the national level.

National Environmental Science Programme

The National Environmental Science Programme (NESP) is an Australian Government initiative that builds upon its predecessor programme, the National Environmental Research Program to support decision-makers to understand, manage and conserve Australia's environment with the best available information, based on world class science. The NESP provides \$142.5 million over six years for the delivery of research through six hubs:

- Clean Air and Urban Landscapes;
- Earth Systems and Climate Change;
- Marine Biodiversity;
- Northern Australia Environmental Resources;
- Threatened Species Recovery; and
- Tropical Water Quality.

Hubs are led by internationally-recognised scholars, who work with teams of high calibre researchers from across Australia's academic institutions and the Australian Government. Funding for NESP will be provided over six years, to provide certainty to researchers and timeframes that allow for meaningful data capture and analysis.

The NESP hubs are currently undertaking research to improve our understanding and ability to manage Australia's unique environment. The NESP hubs will deliver research across six broad themes:

Clean Air and Urban Landscapes – research to support environmental quality in urban areas in relation to air quality and air pollution, urban liveability and on-ground land management.

Earth Systems and Climate Change – research to further the understanding of the drivers of Australia's climate by delivering multi-disciplinary research to assist with modelling climate variability and the climate system in Australia.

Marine Biodiversity - research to further the understanding of Australia's oceans and marine environments, including temperate coastal water quality and marine species.

Northern Australia Environmental Resources – research to support the sustainable development of Australia's northern landscapes, including the management and monitoring of terrestrial and aquatic ecosystems, biodiversity and land and water planning.

Threatened Species Recovery – research to support improved recovery of threatened species and biodiversity in terrestrial and freshwater ecosystems, and marine ecosystems (in cooperation with other hubs).

Tropical Water Quality – research into coastal water quality and coastal management focused on the Great Barrier Reef and other tropical waters including the management of environmental impacts and coastal species.

National Climate Change Adaptation Research Facility (NCCARF)

The NCCARF, hosted by Griffith University, has been refunded to deliver practical, hands-on tools and information to help governments, businesses and communities manage climate risks, particularly in the coastal zone. The Australian Government has committed \$9 million over three years (2014-2017) for this second phase of NCCARF's work.

NCCARF was initially established in 2008 through the Australian Government's National Climate Change Adaptation Program. In its first phase NCCARF managed a research program with around 100 projects based at universities across Australia and carried out numerous outreach activities, including one international and three national adaptation conferences.

National Threatened Species Scientific Committee

The Australian Government has a 'Threatened Species Scientific Committee' (TSSC) in place to advise the Australian Government Minister for the Environment on matters relating to listing, conservation and recovery of threatened species and ecological communities, and listing and abatement of key threatening processes. This committee is independent and required under national environmental legislation. Some of the matters that the TSSC provides advice on are: listing, conservation and recovery of threatened species and ecological communities and the listing and abatement of key threatening processes.

Office of Water Science

The Department of the Environment's Office of Water Science (OWS) is leading the Australian Government's efforts to improve understanding of the water-related impacts of coal seam gas and large coal mining development. This includes through providing secretariat and technical support to the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development, and managing Australia's programme of targeted bioregional assessments and other priority research to improve our understanding of the potential impacts of coal seam gas and large coal mining developments on water resources and water-related assets. These actions are ensuring that the best possible science is available to inform regulatory decision-making in these sectors. Further information on these activities can be found on the Department of the Environment website¹.

Healthy water resources are critical for biodiversity conservation in Australia and the findings and advice of the OWS are also important for biodiversity science practitioners and policy makers.

Australia's Greenhouse Gas Emissions Projections

In addition to fulfilling Australia's reporting commitments under the UN Framework Convention on Climate Change (UNFCCC), Australia's emissions projections reports provide valuable insights on emission trends and information on Australia's likely near-term emission profile. The projections aggregate data from sector-specific models to build a robust system, that includes electricity, direct combustion, fugitives, transport, industrial processes, agriculture, waste and land use change and forestry.

The projections are developed to illustrate where emissions arise in the economy and the drivers behind long-term trends. The projections assist policy makers identify those sectors and activities that could offer future emissions reductions through targeted action. They also have the potential to quantify the likely efficacy of emissions reductions policies. Therefore, the projections are a key information source for policy development and policy evaluation.

¹ URL: <http://www.environment.gov.au/water/coal-and-coal-seam-gas/office-of-water-science>.

f) *Maintenance, conservation and restoration of ecosystems* – The need for better understanding of ecosystem processes and functions and their implications for ecosystem conservation and restoration, ecological limits, tipping points, socio-ecological resilience and ecosystem services; and improved methodologies and indicators for monitoring ecosystem resilience and recovery, in particular for vulnerable ecosystems;

Please refer to Australia's submission on CBD notification 2015-014.

g) *Economic instruments* – The need for better understanding of the performance of economic instruments and their wider use in achieving the objectives of the Strategic Plan for Biodiversity 2011-2020, as well as poverty eradication strategies, taking into account national socioeconomic conditions, and the need for improved guidance and tools to develop positive incentives and for the identification, elimination, phasing out or reform of harmful incentives, consistent and in harmony with the Convention and other relevant international obligations, as well as the integration of biodiversity in national accounting, as appropriate, and reporting systems;

Emissions Reduction Fund

The Australian Government is firmly committed to reducing Australia's emissions to meet its target of five per cent below 2000 levels by 2020. Positive and direct action by the Government, business and community will allow us to meet this challenge. For environmental policy to be successful over the longer term, the two goals of reducing emissions and ensuring economic growth must be pursued together. The Government's approach is built on science and the need to develop global efforts to reduce emissions.

The centrepiece of the Government's approach is the \$2.55 billion Emissions Reduction Fund (ERF). The ERF is already providing the impetus for businesses and the community to improve practices, invest in new technologies, and reduce our emissions. The first successful ERF auction was held over 15-16 April 2015, following which the Government contracted to purchase over 47 million tonnes of emission reductions from 144 projects at an average price of \$13.95 per tonne of abatement. This is the largest emissions reduction commitment by business ever in Australia and will be built upon in subsequent ERF auctions. The full results of the first auction are available on the Clean Energy Regulator website at www.cleanenergyregulator.gov.au.

The ERF is based on the former Carbon Farming Initiative and supports carbon farming, improved land management and other co-benefits, including for biodiversity. For instance, projects in the land sector can reduce salinity and erosion, improve water quality and protect biodiversity. Savanna fire management and revegetation can also provide valued employment opportunities in Indigenous communities. This 'win-win' approach to climate change has a direct benefit to both the environment and the community.

Further information about the Emissions Reduction Fund is available on the Department of the Environment website at www.environment.gov.au.

Reef Trust

The Australian Government has committed \$140 million to the Reef Trust to provide innovative, targeted investment focused on improving water quality, restoring coastal ecosystem health and enhancing species protection.

The Reef Trust is one of the key mechanisms assisting in the delivery of the Reef 2050 Long-Term Sustainability Plan, and will focus on known critical areas for investment – improving water quality and coastal habitat along the Great Barrier Reef, controlling the current outbreak of crown-of-thorns starfish, and protecting threatened and migratory species, particularly dugong and turtles. There will be a strong focus on evaluating and adaptively managing the implementation of the Reef Trust to ensure it continues to contribute to the long-term sustainable management of the reef.

To support adaptive management of the reef the Government has announced the appointment of the Commonwealth Chief Scientist, Professor Ian Chubb, to chair an Independent Expert Panel to advise on future investments for the Reef Trust.

The Reef Trust is delivering multiple projects over several phases of investment. Reef Trust projects are implemented using a range of mechanisms, dependent on the specific outcomes sought, allowing for collaboration, innovation and cost-effectiveness. One key aim is to encourage greater use of market-based instruments, such as competitive tenders/reverse auctions to ensure the greatest outcomes relative to cost. Competitive tenders allocate a fixed budget for goods or services between competing sellers. The Reef Trust reverse tender is providing incentive payments for landholders to carry out actions that support environmental outcomes.

The intention of the Reef Trust is that it will also pool funding from philanthropic contributions and offsets for actions that have a significant residual impact on matters of national and state environmental significance after all reasonable avoidance and mitigation measures have been taken.

h) *Traditional knowledge* – The need for better ways to include relevant indigenous and traditional knowledge systems and the collective actions of indigenous and local communities to complement scientific knowledge in support of the effective implementation of the Strategic Plan for Biodiversity 2011-2020, with the approval and involvement of the holders of such knowledge, innovations and practices;

Australia recognises the outcomes that can be achieved through the integration of traditional knowledge and western science. For additional information, please refer to Australia's submissions on CBD notifications 2015-012 and 2015-043, in particular, regarding Indigenous Protected Areas, joint-management of protected areas, savanna burning under the Emissions Reduction Fund and the World Indigenous Network.

i) *Scientific and technical cooperation* – The need to foster improved scientific and technical cooperation among Parties, scientific networks and relevant organizations, in order to match capabilities, avoid duplication, identify gaps and achieve efficiencies. The need to enhance the clearing-house mechanism of the Convention to make scientific and technical cooperation more effective;

Great Barrier Reef Marine Park Authority

The Australian Government recognises that management of the Great Barrier Reef Marine Park must be underpinned by the best available knowledge. As such, the Great Barrier Reef Marine Park Authority (GBRMPA) engages with research providers and major research programmes through a number of long-standing collaborative relationships, including participation on relevant boards and committees, membership in research teams and one-on-one interaction between staff members and the scientific community. GBRMPA also seeks to engage with Indigenous peoples and recognises the opportunity for building traditional knowledge linkages with policy.

GBRMPA's 'Science Strategy and Information Needs 2014-2019' document sets out the authority's future information needs and aims to ensure that scientific activities are relevant, targeted to address critical management issues and that products are easily accessible.

Some of the established sources of scientific information that GBRMPA works with are:

- the Commonwealth Science and Industry Research Organisation (CSIRO);
- James Cook University;
- the Australian Research Council Centre of Excellence for Integrated Coral Reef Studies;
- the Cairns Institute;
- University of Queensland; and
- the Australian Institute of Marine Science.

Australian Antarctic Division

The Australian Antarctic Division (AAD) delivers a world class science program under the 'Antarctic Science Strategic Plan'. The program focuses on research relevant to the sound environmental stewardship of the Australian Antarctic Territory, the Southern Ocean and Heard Island and McDonald Islands. AAD also undertakes work designed to inform policy development by the Australian Government and meet our international obligations. In particular, work is carried out that assists us further understand the consequences of climate-driven changes and the diversity, structure, function and vulnerability of terrestrial and marine Antarctic environments.

Case Study - SIPEX-2 Project

The Australian-led Sea Ice Physics and Ecosystems Experiment 2 (SIPEX-2) project addressed key knowledge gaps in the understanding of how changes in the physical sea-ice environment may affect ecosystem processes in the Southern Ocean. The 66-day (September 14th – November 19th, 2012) voyage onboard the Australian icebreaker *Aurora Australis* was the second of two major multi-disciplinary and internationally collaborative sea ice field campaigns. The first, SIPEX-1, was conducted in September 2007.

Fifty scientists from seventeen institutions and nine countries were involved in the SIPEX-2 project, which focussed on the sea-ice zone in 115–130 °E sector off Wilkes Land, East Antarctica. Scientists used a combination of conventional and cutting-edge research tools, including remotely-operated and autonomous underwater vehicles, drifting buoys and instrumented helicopters, to understand the dynamics of the sea-ice zone. Results have been published and data has been made publicly available through the Australian Antarctic Data Centre. Research results are currently being utilised in the validation of satellite-products and in the parameterisation of sea-ice processes in climate and ecosystem models, which will inform future fisheries and ecosystem management strategies for the region. A major focus is to determine the importance of sea ice for ocean primary productivity and investigate relationships between sea ice properties and Antarctic krill (*Euphausia superba*) – a keystone species in the Southern Ocean.

Supervising Scientist

The Australian Government Office of the Supervising Scientist and the Environmental Research Institute of the Supervising Scientist assist the Supervising Scientist (a statutory position) ensure that the environment of the Alligator Rivers Region of Australia's Northern Territory is protected from the potential impacts of uranium mining activities. The key functions of the Supervising Scientist include:

- undertaking environmental research, monitoring and reviews into the effects of uranium mining on the environment of Alligator Rivers Region, including Kakadu National Park;
- provision of scientific, technical and policy advice to the Australian Minister for the Environment on uranium mining related issues; and
- conducting more broadly-applicable environmental research on matters of national significance, in alignment with priority program areas, such as aquatic ecosystems protection, ecotoxicology, revegetation and landscape ecology.

Australian Biological Resources Study – Bush Blitz

Bush Blitz is a unique, cross-sector partnership drawing on the knowledge and expertise of government, non-government organisations, industry and scientific institutions to document the biodiversity of Australia, by studying the plants, animals and microorganisms of the National Reserve System (NRS). Based on the estimated 566,398 species in Australia, three-quarters of this biodiversity is yet to be identified. This lack of information impedes conservation and resource management and has flow-on effects to other areas of study, as we are working with deficient data. Bush Blitz surveyed over 60 NRS properties between 2009 and 2013. Survey sites are now chosen using environmental models, developed by the Commonwealth Scientific and Industrial Research Organisation (CSIRO), which identify areas of Australia that are the most data deficient. Bush Blitz also targets key survey taxa based on knowledge gaps articulated in State of the Environment reporting. In the 2011 State of the Environment report, invertebrates and non-vascular plants were identified as being vital to ecosystem function, but data-deficient. Therefore, Bush Blitz currently focuses on these groups to help address this deficiency.

j) *Different approaches* – The need to strengthen non-monetary valuation tools and methodologies for the maintenance of ecosystem functions.

No information provided at this time.