The Great Barrier Reef is struggling to cope with the impacts of climate change and development.

kinds of long timescales that my team looks at, then things are even worse than what you might have heard,” he says.

Pandolfi’s team has documented declines in *Acropora* corals, which are vital to the reef framework, that date back to the 1920s (G. Roff *et al. Proc. R. Soc. B.* **280**, 20122100; 2013). The losses are probably linked to changes in agriculture that were brought in by European settlers and affected water quality and damaged the reefs. Current reports therefore may underestimate declines in reef quality because they are often based on comparisons to a degraded state of the reef, rather than its truly pristine state, an issue known as shifting baselines. The GBRMPA is using Pandolfi’s work to try and address this problem.

Modern pressures include the effects of nearby land development, such as run-off fertilizer from farming. Russell Reichelt, the GBRMPA’s chairman and chief executive, says that the threat from the proposed dredge dumping was overblown, but that the GBRMPA will encourage government and local businesses to adopt a policy whereby their activities have a positive

net impact on the reef, not just a neutral one, as is the case now. It is also introducing targets for maintaining habitats and species as well as systems for assessing cumulative impacts.

Marine scientist Bob Kearney at the University of Canberra says that designating the reef as a marine park has fostered an “inappropriate” focus on fishing, given the bigger threat posed by climate change. The reef is highly sensitive to changing temperatures and ocean acidification, but global action is needed to tackle the carbon emissions that are the root cause of these issues. Similarly, last week, the Australian Academy of Science criticized a multimillion-dollar reef sustainability plan drawn up by the Australian and Queensland governments because it “fails to effectively address” any of the major pressures on the reef.

MacNeil is more optimistic, thanks to the current collaborative approach between the government, universities and the private sector to solving the reef’s problems. “By working together I think we’re in a better position to understand and address threats to the Great Barrier Reef than ever before,” he says. ■

MARINE PARKS ON TRIAL

Indonesian corals in controlled test

The effect of marine park areas (MPAs) — parts of the ocean that are protected and managed for conservation — is difficult to tease out, not least because ocean ecosystems are affected by so many variables. Now, a study akin to a randomized controlled trial is aiming to do just that in the remote Bird’s Head Seascape in Indonesia.

Sitting in the ‘coral triangle’ north of Australia, the seascape contains more than 2,000 islands, many of which have remained undeveloped. Gabby Ahmadi,

a marine scientist at the conservation organization WWF, has been searching for areas that can be used as controls for seven newly created MPAs within the Bird’s Head.

Distance from fishing markets and exposure to waves, for example, must be matched between a park and its control. Ahmadi’s team will then measure factors such as fish biomass to determine whether the park designation is making a difference. “We really need to get to the question of are these MPAs working, and, when they are working, why,” she says. **D.C.**

FUNDING

Basket of gifts for German science

Despite looming recession, research gets a windfall.

BY QUIRIN SCHIERMEIER

Germany’s economy may be shaky, but its science is in rude health. On 30 October, ministers from the federal government and Germany’s 16 states pledged €25.3 billion (US\$31.6 billion) over the next 6 years to support special programmes for research and higher education.

With a research-and-development expenditure of about €100 billion per year — some two-thirds of which is corporate money — Germany is the fourth-highest science spender worldwide, behind the United States, China and Japan. Public funding for special programmes remained strong even after the global financial crisis of 2008. Now the windfall looks set to continue for the country’s universities and large science organizations, despite drops in exports and industrial production that suggest that the economy could tip into recession.

The bulk of the money is for universities. Currently, some 2.6 million students are enrolled at Germany’s roughly 300 universities — around 400,000 more than in 2005. First-year enrolment is projected to grow by 360,000 or so by 2020. To cope, the federal government plans to continue a pact with the states, launched in 2007, to jointly contribute nearly €20 billion by 2020.

Ministers have also agreed to continue a deal that guarantees 4 non-university research organizations, including the Max Planck Society, annual budget increases of 3% until 2020. Since 2005, the combined budget of the four organizations, which run a total of 254 institutes and large research centres, has risen from €5.2 billion to €7.9 billion. The rises are not earmarked for particular fields, but national priorities include energy, specifically renewables, and health, owing to the ageing population.

The federal government also plans to boost the budget of its main grant-giving agency for university research by 5% next year to €2.95 billion, and by 3% annually from 2016 on. And ministers agreed in principle that the German Excellence Initiative, a €4.6-billion university competition for top-up funds launched in 2006, may continue beyond its initial expiration year of 2017. ■