SCIENCE FOR ENVIRONMENT POLICY

Protected areas provide mental health benefits worth US$6 (€5.55) trillion globally

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Exposure to nature is known to improve mental health and wellbeing. As poor psychological health has an economic cost and positive mental health contributes to a stronger economy, nature reserves, therefore, have additional economic value — alongside the value arising from ecosystem services and tourism — through their beneficial impact on visitors' wellbeing. This Australian study considers how to calculate the economic value of protected areas in terms of mental health, focusing on the costs saved as a result of reduced uptake of mental health services, using data on one-off, yearly and lifetime visitors to the country's national parks.

In the EU, the Birds Directive[1] and the Habitats Directive[2] underpin the EU-wide Natura 2000[3] network of protected areas. Currently, the network comprises 27 000 sites covering almost 18% of the EU's territory and 9% of EU seas and is designed to protect habitats and species of European importance. Whilst its primary purpose is to conserve biodiversity, the network also provides various ecosystem services as co-benefits, a range of which are related to health and social wellbeing — including mental health.

The Council of the EU's conclusions on the Economy of Wellbeing, adopted on 24 October 2019[4], underlined that measures contributing to the promotion of mental health contribute to a stronger economy. The Horizon 2020-funded INHERIT (Intersectoral Health and Environment Research for Innovation)[5] project identified concrete examples of triple-win approaches (those which benefit social development, economic growth and environmental sustainability), at the interface between living, moving and consuming, that protect the environment and promote health.

Over the last two decades, the relationship between citizen health and green environments has been studied in detail. While evidence of the value of nature is growing, more is needed if it is to be successfully used as a business case by investors or to inform and drive political

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advocacy. This study seeks to add evidence by demonstrating a direct link between protected area visits and personal mental health and wellbeing.

The study analysed three methods to determine the economic health benefit of visiting protected areas:

- Quality-adjusted life years or QALY (a measure of health combining the duration of life and its degradation by disease or death, e.g. a year of perfect health has a QALY of 1.0);
- two-step transfer functions (the ratio of the output of a system to the input of a system) based on measures of protected-area use and psychological health and the cost components of each measure associated with poor mental health;
- direct correlations with costable parameters (the same approach as the two-step method without the intermediate psychological health component).

These parameters correlated with park use to include events such as absenteeism from work or visits to mental health clinicians.

Subsequently, there were three pilots using the QALY method — these determined how national parks had altered visitors' mental wellbeing over one visit, one year of visits and a lifetime of visits. Personal Wellbeing Index (PWI, a measure of quality of life) values for visitors were gathered, compared against national statistics, and scaled up to achieve firstly a per-visitor US dollar value for Australia, and, secondly, global estimates for the US dollar value of the health services provided by protected areas. The various methods yielded global estimates of between US$4 (€3.70) trillion and US$31 (€28.65) trillion per year, and all saw improved mental wellbeing.

The proportion of the population visiting Australian national parks annually is between 54–70%. The beneficial change in PWI for visitors was 2.4–3.4% from a single visit. The second pilot study, based on visits in 2018, found the change in PWI to be 2.2–3%, with a mean frequency of visits across the population of 2.6/year. The third pilot, based on reported lifetime visitation (of at least twice annually), found a change in PWI of 3.1%. Each of these trials adopted a different method for estimating area visitation.

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Using a conservative estimate of a change in PWI of 2.5%, US$/QALY=$200,000 (€184 857) and the Australian population of 20 million, the annual health services provided by Australia's national parks is around US$100 (€92) billion. This is in addition to other values of parks arising from biodiversity, tourism, and ecosystem services. This is about 7.5% of Australia's GDP and 1.6 times the entire annual turnover of Australia's tourism industry. Scaled up globally, a conservative estimate using QALY was US$6 (€5.55) trillion annually — six times the value of outdoor tourism, which is around US$1 (€.92) trillion a year. It should be noted that economic benefits were only costed in terms of savings that could be made on health service spending on treating mental ill-health. The positive contribution from factors such as improved workforce capacity or reduced demand for social security was not taken into account[6], [7].

Such estimates are sufficient to become a powerful new tool in global conservation. Governments, policymakers and health insurers have not historically included such valuations in financing for conservation or health, but the researchers[8] suggest it should be quantified and considered in future policy decisions.

1. Directive 2009/147/EC: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L01472. Directive 92/43/EEC: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043

3. Natura 2000: https://ec.europa.eu/environment/nature/natura2000/index_en.htm

4. Council Conclusions on the Economy of Wellbeing: https://data.consilium.europa.eu/doc/document/ST-13171-2019-INIT/en/pdf

5. INter-sectoral Health and Environment Research for InnovaTion: https://eurohealthnet.eu/inherit-intersectoral-health-and-environment-research-innovation

6. Various European studies have produced research on the contribution from these factors: e.g. McDaid, D., Park, A. L. and Wahlbeck, K (2019) The economic case for the prevention of mental illness. Ann. Rev. Publ. Health 40: 373–389.

7. See Chapter 1 on mental health: OECD/European Union (2018), Health at a Glance: Europe 2018: State of Health in the EU Cycle, OECD Publishing, Paris/European Union, Brussels: https://ec.europa.eu/health/sites/health/files/state/docs/2018_healthatglance_rep_en.pdf

8. The researchers are continuing their work with a focus on the design of nature therapies and the valuation of wildlife biodiversity via human mental health.