Assessing natural capital in Local Industrial Strategies

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Local Enterprise Partnerships (LEPs) across the country are developing Local Industrial Strategies (LISs) to co-ordinate local economic policy with national funding streams and promote public-private partnerships to deliver economic growth and job creation. As part of this, LEPs are being encouraged by Government to assess the role that natural capital may play in contributing towards economic growth.

What is natural capital?

Natural capital is the stock of natural assets that provides services to support human life and wellbeing. Natural capital includes soil, air and living things, which in turn provide services like food and fibre, air and water purification, climate change mitigation and cultural benefits such as place attachment and outdoor recreational opportunities.

How can natural capital contribute to a Local Industrial Strategy?

Natural capital opportunities for protecting and enhancing local economic growth may include, for example:

- *Protecting infrastructure from climate risks, such as flooding, drought and extreme temperatures*
- *Securing industrial supply chains against climate-induced shortages of raw materials, especially from agriculture*
- *Providing uninterrupted supplies of water to consumers and industrial water users*
- *Providing opportunities for environmental net gain through the planning system*
- *Increasing competitive advantage of a local economy by creating healthy places people want to live, work and visit (and in some cases increasing property values)*
- *Green jobs linked to the protection and enhancement of natural capital to deliver the above benefits*

What is a natural capital assessment?

A natural capital assessment as part of a LIS would typically include an assessment of natural capital trends, key environmental risks to economic growth and the identification of economic opportunities arising from natural capital:

- **Trends:** an initial assessment establishes baseline values for key stocks of natural capital and ecosystem services that are valued by citizens and businesses as part of

the local economy. Indicators are then used to assess change over time, identifying trends that might negatively affect the local economy or represent opportunities for growth. Defra's 25 year plan indicator framework (2019)[1] and Environmental Metrics report[2], provide indicators to assess natural capital in three ways: identifying pressures on natural capital, assessing the condition of natural capital assets and identifying trends in the provision of services or benefits from natural capital. A number of these indicators may already be monitored, with secondary data available to assess trends, and a range of methods and tools exist for collecting and analysing indicator data (see below)

- **Risks:** While some risks will be picked up through ongoing monitoring of these indicators, other risks need to be identified more proactively (e.g. see the UK Committee on Climate Change's Climate Change Risk Assessment, 2017[3]). These may include, for example risks to: infrastructure from sea level rise; human health and wellbeing from extreme temperatures; disruption from water shortages and flooding; emerging pests and diseases, and invasive non-native species

- **Opportunities:** based on an analysis of natural capital status, trends and risks (see previous two points), it is possible to identify opportunities to: 1) use natural capital to protect local economies against environmental risks (e.g. natural flood management schemes or the creation of green infrastructure to manage risks from urban stormwater, store water to increase drought resilience, improve air quality and reduce the urban heat island effect); and 2) protect and/or enhance natural capital and the services and benefits it provides to the local economy (e.g. providing opportunities for urban development that improves the natural environment rather than just mitigating or compensating for loss[4], making local communities more attractive places to live and work in and increasing property values). To prioritise opportunities, a natural capital assessment may include opportunity mapping to identify the relative demand for different benefits arising from natural capital, compared to their current supply, and a cost-effectiveness analysis of activities that could supply benefits that are in demand.

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[1]Defra (2019) Measuring environmental change: outcome indicator framework for the 25 Year Environment Plan. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/802094/25-yep-indicators-2019.pdf

[2] Defra (2019) Environmental metrics: government's approach to monitoring the state of the natural environment. Available at: https://www.nao.org.uk/report/environmental-metrics-governments-approach-to-monitoring-the-state-of-the-natural-environment/

[3] CCC (2017) UK Climate Change Risk Assessment. Available at: https://www.theccc.org.uk/tackling-climate-change/preparing-for-climate-change/uk-climate-change-risk-assessment-2017/

[4] Defra (2018) Net gain Consultation proposals. Available at: https://consult.defra.gov.uk/land-use/net-gain/supporting_documents/netgainconsultationdocument.pdf

How do you do a natural capital assessment?

Steps in conducting a natural capital assessment may include[5]:

Scoping: identify potential risks and opportunities (e.g. via a workshop)

Exploring: further investigate key risks and opportunities (e.g. via desk-based searches and interviews with key stakeholders)

Designing: identify secondary data sources (see below) and assessment tools and methods (see below) that may be used to analyse the most important risks and opportunities arising from the first two steps, and any trends you think may be important to measure, linked to these risks and opportunities

Analysing: use the data, tools and methods identified in the previous step to analyse trends, risks and opportunities

Reporting: close the loop by reporting back to stakeholders involved in steps 1 and 2 as well as communicating to interested parties within the LEP

Integrating: integrate key findings with your Local Industrial Strategy

What Natural capital assessment tools are available?

There is currently no comprehensive resource available to monitor and assess natural capital, but Defra's Environmental Analysis Unit is planning to launch a new online resource for non-specialists called EnviTAG in 2019. Building on guidance in HM Treasury Green Book, EnviTAG will synthesise existing valuation and natural capital evidence, guidance, tools and applications. Until then, there a number of places where existing tools have been reviewed or synthesised:

- The Ecosystem Knowledge Network has a **Tool Assessor**[6], which helps choose between around a dozen commonly used natural capital assessment tools

- The **Local Environment and Economic Development (LEED) Toolkit**[7] was developed by the Environment Agency, Natural England and the Forestry Commission to help LEPs pursue economic development in ways that provide net environmental gain and avoid future costs arising from environmental risks. It has been used by 15 Local Enterprise Partnerships since launching in 2015. The process involves three levels, starting with a one-day workshop to assess natural capital threats and opportunities, leading to in-depth interviews and the collection of further evidence.

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[5] Based on Local Environment and Economic Development (LEED) Toolkit. Available at:
https://ecosystemsknowledge.net/apply/local-economy/LEED
[6] Ecosystem Knowledge Network Tool Assessor. Available at: https://ecosystemsknowledge.net/tool
[7] Local Environment and Economic Development (LEED) Toolkit. Available at:
https://ecosystemsknowledge.net/apply/local-economy/LEED

Natural capital tools vary from fairly quick and simple approaches, to more sophisticated approaches that will typically require external expert support. Some cover multiple types of natural capital and ecosystem service, while some are designed to assess specific types of assets or services[8]. Examples of some of the simpler tools include:

- Natural England's **Ecosystem Services Transfer Toolkit**[9] is an Excel spreadsheet that can be used to find evidence of the likely effects of a given land management decision on natural capital and ecosystem services
- **BeST**[10] (Benefits of SuDS Tool) helps practitioners estimate the impacts and benefits of Sustainable Urban Drainage Systems (SuDS). It uses ecosystem services to understand the overall benefits that SuDS provide over conventional piped drainage, and estimates the economic value of the benefits
- **Co$ting Nature**[11] is a web based policy-support tool for natural capital accounting and analysis of ecosystem services. It identifies the beneficiaries of these ecosystem services and assesses the impacts of human interventions
- **The Green Infrastructure Valuation toolkit**[12] is a set of calculator tools to assess the value of a green asset or a proposed green investment. Where possible, the benefits of green infrastructure are given an economic value

More sophisticated tools include for example:

- **ARIES**[13] (ARtificial Intelligence for Ecosystem Services) is a networked collaborative software designed for rapid ecosystem service assessment and valuation. It gives equal emphasis to supply, demand and flow to quantify actual service provision and use by society (as opposed to quantifying potential service benefits). It aims to provide a suite of models that support science-based decision-making
- **EcoServ-GIS**[14] is a Geographic Information System (GIS) toolkit for mapping ecosystem services at a county or regional scale. It uses input GIS/map data to generate fine-scale maps that illustrate human need or demand for ecosystem services as well as the capacity of the natural environment to provide them
- **InVEST**[15] is a suite of open-source software models for mapping and valuing ecosystem services provided by land and seascapes. It uses data about the environment to explore how changes in ecosystems are likely to affect the flow of benefits to people. It is designed to inform decisions about natural resource management

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[8] The following lists are based on material from the Ecosystem Knowledge Network Tool Assessor: https://ecosystemsknowledge.net/tool
[9] Natural England (2016) Ecosystem Services Transfer Toolkit http://publications.naturalengland.org.uk/publication/5890643062685696
[10] https://www.susdrain.org/resources/best.html%C2%A0
[11] http://www.policysupport.org/costingnature
[12] https://www.merseyforest.org.uk/services/gi-val/
[13] http://aries.integratedmodelling.org/
[14] Download the software at: https://drive.google.com/drive/folders/0B_v9QO2jyC4eNlVUbzY1UUstZU0
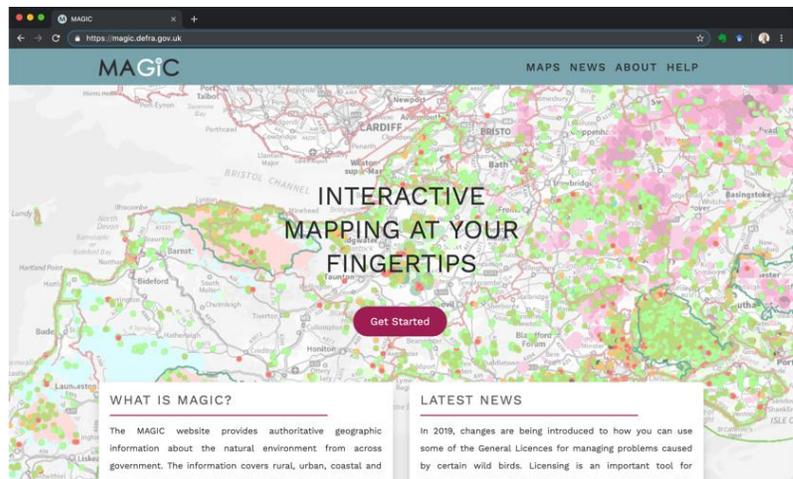[15] http://naturalcapitalproject.stanford.edu/invest/

- LUCI[16] (Land Utilisation and Capability Indicator) explores the capability of a landscape to provide ecosystem services. It uses map data to look at how the landscape is being used and the services that are currently being provided, and compares these to an estimate of the landscapes potential to provide services. This is used to identify areas where change may be beneficial, or where existing landscape features should be preserved

Where can I find existing data on natural capital and ecosystem services?

The only comprehensive natural capital and ecosystem service mapping tool available in England and Wales is Defra's MAGIC website17. It provides spatially explicit data about the natural environment from across government. The information covers rural, urban, coastal and marine environments and is presented in an interactive map which can be explored using various mapping tools that are included in the website.

Other than this, many of the most comprehensive assessments to date are national in scale, and so not easy to re-purpose for LEPs, for example the National Ecosystem Assessment[18] and the National Ecosystem Assessment Follow-On[19]. The majority of datasets focus on single types of natural capital or ecosystem service, and so it can be time consuming to integrate these sources at the scale relevant to your LEP. Following the LEED approach (above) however, you would have already identified key natural capital stocks and ecosystem services for assessment through workshops and interviews, so this is typically a fairly targeted search for relevant data. For example

- You can get detailed soil maps[20] to identify carbon-rich soils you may want to restore or manage, for example through the Peatland Code[21] which enables you to attract

16 https://www.lucitools.org/
17 https://magic.defra.gov.uk/
18 http://uknea.unep-wcmc.org/Home/tabid/38/Default.aspx
19 http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx
20 http://www.ukso.org/static-maps/soils-of-england-and-wales.html
21 http://www.iucn-uk-peatlandprogramme.org/peatland-code/code-information

private investment in restoration for quantifiable climate mitigation benefits (in this case the Peatland Code then has detailed assessment methodologies for working out the current condition and likely carbon benefits of restoration).

- Alternatively for cultural ecosystem services, Natural England's Monitor of Engagement with the Natural Environment[22] provides recreation and other data on how people use the natural environment in England.

Find out more

This briefing note written by Professor Mark Reed for Rural Enterprise UK, with support from N8 AgriFood.

For more information about Rural Enterprise UK, visit:

https://www.ncl.ac.uk/cre/research/current/ruralenterpriseukreuk.html

For more information about N8 AgriFood, visit: https://www.n8agrifood.ac.uk/

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[22] https://www.gov.uk/government/statistics/monitor-of-engagement-with-the-natural-environment-headline-reports-and-technical-reports-2016-2017-to-2017-2018