Natural Capital Committee

Net environmental gain: The Natural Capital Committee's response to Defra's commission

September 2019

Context

The Natural Capital Committee (NCC) welcomes the opportunity to provide further advice to the government on introducing environmental net gain for the development sector and marine environment. This paper builds on the Committee's initial environmental net gain advice published in May.[1]

Biodiversity net gain consultation

The NCC recognises that the recent net biodiversity gain consultation[2] published in December 2018 was based on habitat creation and therefore has some potential to deliver improvements in certain natural capital assets. However, the gain is not as great as it would be if it had a natural capital focus and considered the environment as an integrated system. A net biodiversity gain might benefit some types of wildlife in England, but it could result in greater fragmentation of habitat types – which is a clear road to extinction for many species.

The NCC's response to Defra's environmental net gain commission

The sixteen topics identified by Defra in the environmental net gain commission are highlighted/boxed in blue. The NCC's advice is provided below each of these boxes.

1. The broad principles that should underpin our development of environmental net gain. These principles could guide policy development and its implementation. We would be particularly grateful for principles which address some key broad questions that we outlined in our consultation.

1. The NCC's view is that a net environmental gain approach for the development sector should:
    a. Be based on key natural capital assets and the associated goods, services and benefits;
    b. Include an assessment of the losses of all the benefits provided by the natural environment because of a specific development;
    c. Present the individual benefits and losses – it should not be reduced to a single netted off figure;
    d. Adopt an 'avoid, minimise, remediate, compensate' hierarchy;

[1] NCC, *Natural Capital Committee advice to government on net environmental gain* (2019): https://www.gov.uk/government/publications/natural-capital-committee-advice-to-government-on-net-environmental-gain

[2] See https://consult.defra.gov.uk/land-use/net-gain/

e. Cover the costs of remediation as well as including a distinct investment component that delivers a gain over and above the starting baseline (including the so-called insignificant impacts identified in a site assessment that are often not included in the evaluation of the damage);
f. Result in a demonstrable, evidence-based increase in natural capital assets compared with the initial baseline. This should include continuing evaluation, in some cases over a number of years, to ensure that the assets are developing and being maintained as proposed and are delivering the intended ecosystem services and associated benefits; and
g. Be applied to all projects, programmes and development covered by the Town and Country Planning Act[3], the work of the Planning Inspectorate[4] and the work of the Marine Management Organisation[5]. Simplified methodologies are appropriate for small development sites, and changes of land or sea use and exemptions may be appropriate for developments below a yet to be defined threshold.

2. All of the impacts of development and the state of the assets introduced through net gain should be collated on a periodic basis and should provide an important input to tracking progress against the 25 Year Environment Plan (25 YEP) targets.[6]

2. Whether 'assets', 'benefits from assets' and/or 'pressures' should be considered in a metric and policy (e.g. in practice, should we measure woodland gain/loss by the number of people benefitting from the woodland).

3. The NCC recommends that all of these aspects should be considered when assessing the potential impact of a development in terms of the 'avoid, minimise, remediate, compensate' hierarchy.
4. Particular consideration will have to be given to some impacts such as those on ancient woodland where it will not be possible to provide a like for like replacement. In such circumstances a multiplier will be appropriate in relation to hectares of new woodland compared with hectares of ancient woodland impacted.
5. Developments will also have to be assessed in terms of the pressures they will place on the environment such as on already stressed water resources and where there will be an additional load of treated sewage into a river that is not meeting water quality objectives.
6. The location of the remediation and compensation aspects of the net environmental gain approach should include considerations such as: maximising ecological gains; promoting a

[3] See: http://www.legislation.gov.uk/ukpga/1990/8/contents

[4] See: https://www.gov.uk/government/organisations/planning-inspectorate

[5] See: https://www.gov.uk/government/organisations/marine-management-organisation

[6] Defra, *25 Year Environment Plan* (2018): https://www.gov.uk/government/publications/25-year-environment-plan

coherent network of habitats across the country; and providing benefit to those people who currently experience the lowest quality environments.

7. Remediation activities should be as local as possible to the development giving rise to the impacts.
8. Investment in the gain aspect (over and above dealing fully with the impacts) can be located elsewhere based on costs and benefits based approaches. An assessment of the benefits will take account of the people benefitting from particular interventions.
9. Natural capital opportunity maps should be drawn up at the local and national level.
10. Net gain approaches must not be seen as a means of avoiding the need to design and build developments which incorporate locally and publicly accessible greenspace. In advice to government on the 25 YEP, the NCC recommended that everyone should have access to local greenspace and recreation for the health and wellbeing benefits it provides. Specific targets should be set; for example, one hectare of local nature reserve per 1000 people, two hectares of natural green/blue space within 300 metres of where they live, and a 20 hectare site within two kilometres. Such considerations are important in the design of new housing developments.[7]

3. Whether a metric and policy should consider changes in assets or benefits from assets related only to direct impacts of development (i.e. land take for development) or also to indirect impacts of development (e.g. impacts resulting from occupation/use of a development such as increased water demand, wastewater discharge and disturbance of biodiversity).

11. The NCC suggests that direct and indirect impacts should be addressed in environmental net gain approaches.
12. Compensation should consider losses of all the benefits provided by the natural environment. Development can generate multiple impacts either directly on environmental assets or mediated through environmental impacts. Some examples include impacts on wild species, recreation and related physical and mental health benefits, water quality, quantity and flooding, air pollution emissions and greenhouse gasses. It is the losses of benefit value generated by development which should be compensated for.
13. An agreed methodology for establishing baseline habitat and natural capital conditions should be developed by government. This should be based on the NCC's How to do it workbook[8] and the recommendations in the NCC's 2019 Annual Report.[9] Baseline

[7] NCC, *Natural Capital Committee advice on government's 25 year environment plan* (2017): https://www.gov.uk/government/publications/natural-capital-committee-advice-on-governments-25-year-environment-plan

[8] NCC, *How to do it: a natural capital workbook* (2017): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/608852/ncc-natural-capital-workbook.pdf

[9] NCC, *Natural Capital Committee's sixth annual report* (2019): https://www.gov.uk/government/publications/natural-capital-committees-sixth-annual-report

assessments need to evaluate the potential natural capital that an area could support were it in a non-degraded state.

14. The perverse incentive to allow the environmental condition of land to deteriorate should be addressed, so that existing landowners are not deterred from improving natural capital on their land.
15. The maps and datasets that would enable a baseline natural capital assessment to be carried out for England should be specified and collated centrally by government. These maps and datasets should then be made freely and widely available.

4. Whether trade-offs between individual benefits from natural capital (or types of asset value), excluding biodiversity, should ever be permissible in the approach (i.e. should we ever trade between flood risk reduction and air quality improvement?);

What are the key risks with such an approach (e.g. do we risk incentivising delivery of only the cheapest benefits)?

16. The NCC recommends that different approaches to trade-offs should be taken in the remediation, and the investing in net gain aspects of a proposal. Any impact on natural capital assets in a development should be dealt with at the remediate stage. The assets should be replaced or compensated for on a like for like basis.
17. In the investment phase choices can be made based on cost and benefit approaches. The economic evaluation is a means of informing the choices rather than a decision making tool.
18. The H.M. Treasury "Green Book" methods[10] should be used to estimate both the market and non-market values of both losses and compensation. The losses and gains in natural capital assets and the associated services and benefits should be calculated in monetary terms so that a comparison can be made between propositions.
19. However, the physical output from compensation activities should be natural capital assets. The remediation, compensation and investment aspects should result in a net gain in physical natural capital assets.
20. In the case of a woodland, alongside the market value of woodland, there will also be the non-market value of recreation, greenhouse gas emissions regulation and storage, biodiversity, natural flood risk reduction and water quality changes.
21. Clear monitoring, verification and quality assurance processes carried out by designated competent people are required, which will provide confidence in the net gain outcomes. The overall system should be as clear and transparent as possible so that those providing data along with those scrutinising it, such as local planning committees, are readily able to understand the information and data they are producing and reviewing.

[10] See: https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent

5. Should certain assets or benefits be prioritised over others depending on the location (e.g. to give a higher weighting to natural flood risk mitigation measures upstream of flood risk zones; or a higher weighting to air filtration measures in air quality management areas); and if so, how?

6. How should national priorities (e.g. food production) be considered against local priorities (e.g. recreation demand, flood mitigation, air filtration)?

22. There are various approaches that can be applied where remediation and compensation projects are targeted. Changes in the location of projects will alter the consequences and benefits they deliver.
23. Choice of location should include considerations such as: maximising ecological gains; promoting a coherent network of habitats across the country; providing benefit to those people who currently experience the lowest quality environments; proximity and providing benefits as close as possible to where the impact occurs.
24. The priority placed on particular assets and benefits will depend in part on local circumstances and will be for local councils / communities / other decision makers to determine within an overall national framework.
25. Consideration needs to be given to the principles underpinning the objectives and hence rules for locating compensation projects. It may be that different rules are applicable to the remediation and compensation aspects of net environmental gain.
26. As outlined in separate advice in NCC's 2019 Annual Report, the NCC is clear that food provision is a private and not a public good.

7. Whether environmental net gains are best determined through explicit measurement at the development level, or by measuring changes in natural capital stocks and flows at a more strategic scale (e.g. catchment, local planning authority, county, or wider region).

8. How total net gains could be calculated across diverse measures of natural capital benefits to set overall targets; Could we add units of reduced flood risk to units of air quality to calculate a net gain overall? Or is it preferable to account for changes in different types of priority natural capital asset and/or benefits from assets separately?

27. The NCC recommends that the overall policy framework needs to take account of environmental net gain at individual development level, local planning authority, catchment and landscape levels. To achieve this, it will require a range of methodologies, policy drivers and governance arrangements.
28. A multi criteria analysis approach will need to be adopted where there are competing priorities and evident trade-offs. If the assessment is carried out to an acceptable standard and incorporates spatial variability then these should be reflected in the benefits and costs of compensation schemes irrespective of the scale at which they are undertaken.

29. The net environmental gain principle tends to be considered as a binary comparison between the existing use and the proposed new use. For example, land in the green belt might currently be of little environmental value because it has been degraded. But it might be capable of being of high environmental value if properly managed.
30. Net gain needs to take account of all options, and not just the narrow option of comparing current use with housing or infrastructure. If land is in a poor environmental condition and landowners have no reason to improve it, a net environmental gain approach that is based simply on the comparison of the existing state and the proposed new use can create an incentive for landowners to allow the condition of their land to deteriorate prior to development so as to reduce compensation requirements.

9. Were government, in the future, to mandate or endorse one particular approach to measuring environmental net gains:

Do the Committee support the wider (though only partially presented) framework of potential environmental net gains set out on page 16 of the net gain consultation?

31. The NCC's approach to environmental net gain is highlighted in this response.

10. In what circumstances do habitat-based metrics, such as those used in biodiversity net gain approaches, work most and least effectively in securing investment in the right natural capital assets?

32. The NCC's view is that habitat based metrics often fail to recognise that many natural capital assets:
    a. Are spatially and context specific;
    b. Provide a service because of where they are located;
    c. Operate at a number of scales, especially with interconnections between habitats including river-catchment-coastal-sea, as well as landscape and seascape; and
    d. Are often not linked to biodiversity 'habitat' types.
33. An example of this is a combination of soils and trees in upstream drainage basin catchments which prevents soil erosion, improves the quality and quantity of water in rivers, reduces downstream flooding risk and improves the quality of water at the coast. These are often relatively small blocks of trees growing on particular soil types on a specific slope in a drainage basin. These blocks of trees may not always be considered as a 'designated habitat type' and within this 'net gain' approach it could be seen as perfectly acceptable to remove these trees and replace them elsewhere with another block of more biodiverse forest. However, these assets (trees) provide a service because of where they are located.
34. Pollination is an example that demonstrates the importance of context and spatiality. If pollinators are located more than 1.8 - 2.0 km from the fields (crops) that need these

services (pollination), they are in effect useless – so 'net gain' is not meaningful outside of this geographic context.

35. Cultural services such as recreation, and mental and physical health and well-being, are often provided by landscapes and green spaces. These may be poor in terms of biodiversity but very important in terms of the services they provide because of where they are located i.e. near to populations that need them.

11. How far do existing environmental net gain metrics (such as the Eco-metric, a tool being developed by the University of Oxford with Defra and Natural England) go towards providing an early blueprint for such a tool in a development planning context?

36. The Eco-metric tool involves applying a standard set of weightings to various measures. As highlighted above, however, the decisions to be taken in relation to a development will depend on the location and nature of a proposed development.
37. The Eco-metric tool might have a role to play in discriminating between alternative ways of delivering a project.
38. As with all tools and approaches they should be used to support decision making not to make decisions.

12. What gaps remain in our ability to measure development's impacts (and dependencies) on natural capital?

13. Given that ecological/biophysical processes and outcomes (including tipping points) are incompletely understood, is it realistic to try to accurately quantify absolute changes in 'benefits from assets' as a result of the impacts of development (direct and potentially also indirect) on assets, or are measures of relative change sufficient?

39. Fit for purpose approaches are available to assess the majority of the costs and benefits of the environmental impacts and compensation interventions associated with development activities. The major exception to this relates to biodiversity.
40. The NCC recommends that biodiversity impacts and gains should be measured in quantitative terms, not economic values, and treated as constraints on the net gain compensation system. Compensation should be considered as insufficient if it allows a loss in wild species of conservation interest and of irreplaceable habitats.

14. What should the temporal and spatial limits be when assessing environmental net gains (e.g. benefits such as flood risk mitigation may be experienced at

significant distance from a development; benefits from the creation of new assets may take a significant time period to be realised)?

41. The NCC's view is that the remediate aspects of net environmental gain should be as close as possible to the development site. The investment aspects as highlighted previously may be more remote. However the public acceptability of a development may be predicated on at least some if not the majority of the investment aspects of net gain being in locations that those impacted by the development can enjoy or benefit from.
42. Some of the benefits, for example carbon sequestration, will contribute to international obligations but the location of the assets giving rise to these benefits may be more local.
43. Temporal considerations can be addressed via the H.M. Treasury "Green Book" approach and its discounting guidance and by taking account of the time taken for benefits to be fully realised.

15. Does the Committee have views on how environmental net gains should be delivered and funded, and by whom, above and beyond mandatory requirements for biodiversity net gain being brought forward as part of the Environment Bill?

44. The NCC recommends that environmental net gain should be mandatory and funded by the developers whose activities give rise to the environmental damage. There are a variety of mechanisms and agencies that can then deliver the compensation schemes.
45. In all cases sufficient funding is required to maintain the existing as well as the new assets that have been created.

16. In addition, we would be grateful for the Committee's views on the feasibility of a future net gain requirement in the marine environment, noting that the direct replacement of any assets lost during a development is generally not possible by management intervention. We also recognise that environmental net gain in the marine environment will often apply over a wider spatial scale beyond the footprint of the licensed area. We would welcome advice on:

a. How the natural capital concept could underpin net gain in the marine environment, for example by offering a common 'currency' for evaluation of the environmental and economic risks/benefits?

46. As indicated in the NCC's Paper on Marine and the 25 YEP[11] the natural capital concept is highly appropriate to apply in the marine environment - particularly consideration of the flows of marine ecosystems services and the benefits they provide. The advice in points 3-9 (above) applies to marine as well as terrestrial ecosystems.

[11] NCC, *Marine and the 25 Year Environment Plan* (2019): https://www.gov.uk/government/publications/natural-capital-committee-advice-on-marine-management

47. The marine environment and most of its biodiversity is largely unseen by the public (compared to terrestrial biodiversity), therefore only a few species among the rich diversity of marine assets are known and treasured by the public as wildlife (e.g. seabirds, seals, dolphins, porpoises and whales). For marine, the systems approach is of major importance. The assets that comprise the marine ecosystem collectively deliver multiple ecosystem services in a highly dynamic (spatially and temporally) and integrated way, with few keystone species that can be targeted for improvement.
48. In order to identify opportunities for creating net gain and sustaining it in the marine environment there will need to be greater emphasis on considering approaches to increase the overall flows of all ecosystem services and benefits. This approach should be taken rather than focusing effort on increasing the underlying biodiversity assets, which would almost certainly also increase in extent and condition as well. This depends on the context. For example, in coastal subtidal habitats and offshore habitats it would be very difficult to target species or habitats for active restoration.
49. Using the benefits valuation approaches outlined in the advice above, net gain should be implemented with the aim to deliver increased flows in provisioning services such as food, biotechnology, genetic and medicinal resources; regulating services such as climate regulation, coastal and flood defence, waste treatment and assimilation; and cultural services such as leisure, recreation, tourism and cultural heritage, as well as increases in the underlying assets.
50. For offshore areas it is not likely to be possible (in the near term) to manage actively to restore natural capital assets in offshore areas. Except in very shallow and intertidal coastal environments, net gain for marine will largely be achievable by reducing pressures on subtidal coastal and offshore habitats to allow the marine ecosystems to improve naturally, or to reconsider the trade-offs and benefits between ecosystem services. For example, through design options offshore developers could act to improve the likelihood of biodiversity colonisation and association with their static constructions and take additional actions to encourage increased flow of other services at their sites. This could include increases in recreation by facilitating access to wildlife watching and sustainable sea angling. It could also include purchase of fishing quota that would reduce fishing pressure and enable improvement in extent and condition of marine natural capital assets that support a more complete marine food web and hence sustain more wildlife, but also increase flows of other services such as climate regulation.

b. What new data, metrics or scientific understanding would be required to facilitate an effective marine net gain approach?

51. There is a significant understanding of marine ecosystems and their interdependencies, including many highly useful models (e.g. from NERC funded Marine Ecosystems Research Programme and the Shelf Seas Biogeochemistry Programme).[12] However, compared to

[12] See https://www.marine-ecosystems.org.uk/Home and https://www.uk-ssb.org/

terrestrial systems, consideration of how to apply natural capital approaches for net gain is considerably less developed. The government should initially introduce net gain into licencing and infrastructure developments in offshore environments and into developments at the coast in a staged way, possibly through pilot or voluntary schemes. Experience gained should guide future policy and legislation, and at the same time help to develop further resources and data. Evaluation should be a mandatory part of compensation. Sharing of data, ideas and approaches must be encouraged, or made mandatory, with incentives to do so (at least initially). Metrics that consider flows of the different ecosystem services that can be used to inform net gain decisions will be required although there are already a large number of indicators available in the academic literature that could be used.[13] A key issue will be a lack of baseline data against which to monitor.

c. The interaction, if any, between terrestrial and marine environmental net gain, particularly at the coastline.

52. The principles and approaches described above should apply to developments at the coastal interface between land and water (e.g. ports and harbour developments) that require both terrestrial planning and marine licensing. Under the natural capital approach, compensation should be considered as an integrated whole for both elements of such coastal developments.
53. Net gain for terrestrial developments should allow for compensation to be achieved in the marine environment (e.g. through improvement of water quality and reduction in microbial contamination and soil run-off to coastal waters, improved access to coastal leisure and recreation opportunities that pertain to the natural environment, and enhancement of natural coastal defences; see other examples in NCC's advice on marine management,[14] and the 25 YEP).[15]

[13] See e.g.: Hattam et al, *Marine ecosystem services: Linking indicators to their classification* (2014): https://www.sciencedirect.com/science/article/pii/S1470160X14004580; Atkins et al*, Identification of a Practicable Set of Ecosystem Indicators for Coastal and Marine Ecosystem Services* (2015): https://link.springer.com/chapter/10.1007/978-3-319-17214-9_5; Broszeit et al, *What can indicators of good environmental status tell us about ecosystem services?* (2017): https://www.sciencedirect.com/science/article/pii/S1470160X17303126

[14] NCC, *Natural Capital Committee advice on marine management* (2019): https://www.gov.uk/government/publications/natural-capital-committee-advice-on-marine-management

[15] Defra, *25 Year Environment Plan* (2018): https://www.gov.uk/government/publications/25-year-environment-plan