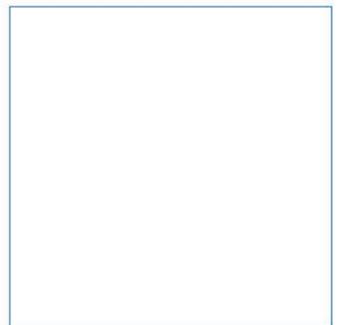
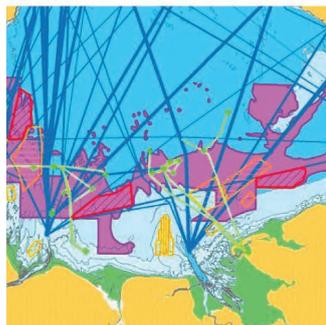
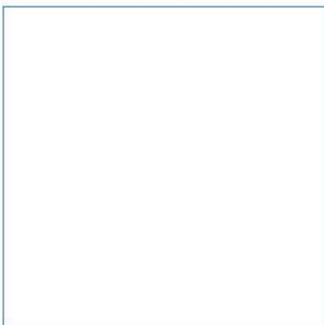
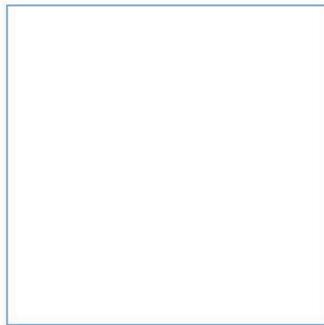


White Paper

# Marine Environmental Net Gain

The case for introducing a statutory system

March 2019



Innovative Thinking - Sustainable Solutions

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# Marine Environmental Net Gain

The case for introducing a statutory system

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# Introduction

This White Paper argues the case for introducing a statutory system of Environmental Net Gain (ENG) for England's marine environment, and considers what the necessary components of such a system might be. This paper focuses on English waters, but the principles are equally relevant to waters managed by all the UK devolved administrations.

The 2011 Natural Environment White Paper (NEWP) - The Natural Choice<sup>1</sup> made a commitment to leave the environment in a better state for the next generation. However, notwithstanding this bold promise, biodiversity continues to decline, including aspects of marine biodiversity. For example, the European Environment Agency (EEA) State of Europe's Seas report<sup>2</sup> clearly documents that our seas are not being managed in a sustainable way.

The sea is a public resource. While public and private rights exist in the sea, management of this resource should be in the public interest. Management which contributes to a continuing decline in natural capital assets and the many benefits that society derives from these assets is not sustainable. If we are serious about achieving our objectives for the marine environment, we need to change our approach to management. As the Natural Capital Committee (NCC) observes in its sixth report<sup>3</sup>, *'Business as usual is going to lead to failure'*.

**'Business as usual is going to lead to failure'**  
**Natural Capital Committee**

The 25 Year Environment Plan<sup>4</sup> has started to set out the Government's proposals for achieving the NEWP commitment. This includes a commitment to *'embed an 'Environmental Net Gain' principle for development, including housing and infrastructure'* within England.

## About Net Gain

Net Gain is a relatively new concept in the UK. In 2012 the Department of Environmental Food and Rural Affairs (Defra) consulted on proposals to introduce a system of Biodiversity Net Gain within the planning system in England. However, the policy wasn't taken forward at that time. At the end of 2018, Defra consulted on proposals to introduce a mandatory system to achieve Biodiversity Net Gain for development under the Town & Country Planning Act in England<sup>5</sup>. Under the proposal, Net Gain would result in a development that leaves the environment or biodiversity *'in a better state than before'*. The consultation also invited stakeholder views on moves towards a wider system of ENG which would incorporate Biodiversity Net Gain, but also take account of broader environmental benefits such as flood protection, recreation and improved water and air quality.

In relation to the marine environment, the consultation noted *'While marine planning and licensing policy and nationally significant infrastructure projects are not in scope of this consultation, we are considering how to best support and mainstream the net gain approaches that many infrastructure and marine projects are already taking. For marine planning and licensing, we will evaluate the actions that*

<sup>1</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/228842/8082.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/228842/8082.pdf)

<sup>2</sup> <https://www.eea.europa.eu/publications/state-of-europes-seas>

<sup>3</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/774218/ncc-annual-report-2019.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/774218/ncc-annual-report-2019.pdf)

<sup>4</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/693158/25-year-environment-plan.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf)

<sup>5</sup> [https://consult.defra.gov.uk/land-use/net-gain/supporting\\_documents/netgainconsultationdocument.pdf](https://consult.defra.gov.uk/land-use/net-gain/supporting_documents/netgainconsultationdocument.pdf)

*projects are already taking to address their environmental impacts and consider how best to implement net gain in the marine context'.*

In January 2019, the Natural Capital Committee (NCC), in its sixth report<sup>6</sup>, recommended that the net environmental gain principle should be extended to cover development and activities in the marine environment. The NCC suggested that *'The government should work towards an innovative sea management system, akin to and working with land use planning and management systems. This should extend beyond licensing activities in the marine environment and redirect the use of public money and other incentives to enable users of the sea to become better stewards of it'.*

## How have we got here?

From a marine perspective, the historic presumption was that the sea was so vast that human activity pressures could not significantly affect it. Modern science and monitoring over the past century or more has helped to document the major impacts that our exploitation of the seas has caused.

There is now a strong emphasis in marine environmental policy and law about managing human activity pressures within sustainable limits, for example, through implementation of European Directives such as the Wild Birds and Habitats Directives (BHD), Common Fisheries Policy, Environmental Impact Assessment Directive, the Water Framework Directive and Marine Strategy Framework Directive.



The decrease in native oysters is an indicator of broader biodiversity decline

This view is based on the presumption that, if we manage human pressures on the marine environment, our seas will recover. For example, UK Marine Protected Area (MPA) programmes are increasingly introducing measures to manage the levels of human activity pressures within MPAs to support achievement of MPA objectives. Marine licensing routinely includes licence conditions to mitigate the significant environmental effects of development activities in the marine environment, based on the findings of robust environmental assessments.

While the current system of marine management is good in focusing on managing human activity pressures, to date it has not demonstrated that it is sufficient to improve the marine environment for the next generation. The UK's marine environment continues to experience biodiversity decline; for example, the collapse of sea bass stocks across Europe and the decimation of native oyster beds in the Solent.

While there are mechanisms in place under the BHD and Marine and Coastal Access Act (MCAA) to fully offset significant adverse impacts from plans or projects within MPAs, provisions outside MPAs are more limited, for example, the provisions of s41 of the Natural Environment and Rural Communities Act to protect priority habitats and species. Furthermore, there is a lack of marine environmental policy and law that seeks to restore the significant historic damage that we have caused to marine ecosystems.

<sup>6</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/774218/ncc-annual-report-2019.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/774218/ncc-annual-report-2019.pdf)

## The value of marine ENG

In this context, marine ENG could make a significant contribution to reversing biodiversity decline as part of an overall system of marine management. In countries such as the United States, restoration ecology has emerged as an important theme over the past few decades and has been widely practised to restore coastal wetlands, seagrass and oyster beds.

**Interventions need to be at the correct scale and work with natural processes to effectively contribute to Marine ENG**

Within the UK, managed realignment is a well-established approach for the long-term sustainable management of coastal flood defences and as a mechanism for offsetting development impacts to intertidal habitats within Natura 2000 sites.

Various other initiatives have also emerged seeking to restore native oyster populations (for example the European Native Oyster Restoration Initiative in the Blackwater Estuary).

A wide range of measures have also been implemented to support coastal birds, for example, provision of rafts and shingle islands for nesting terns<sup>7, 8</sup>, as well as measures to support fish migration using self-regulating tide gates<sup>9</sup>.

This experience demonstrates that interventions at the correct spatial scale and which work with natural ecosystem processes can contribute to delivering marine ENG. Such interventions are particularly effective in coastal environments, where much of our marine biodiversity has been lost. It should be further recognised that such interventions can yield multiple benefits, for example, the creation of saltmarsh habitat contributes not only to marine biodiversity but can also provide many other benefits including flood protection, remediation of waste, carbon storage and sequestration and fish production.

The remainder of this this paper explores what a system of marine ENG might look like and how it might be implemented.

## Scope of Marine ENG

Similar to the terrestrial environment, the scope of marine ENG is likely to necessarily focus on achieving Biodiversity Net Gain in the first instance, with the potential to incorporate wider aspects of ENG over time.

While ENG on land has focused on development activities, the characteristics of the marine environment and the human activity pressures affecting it suggest that a broader approach to marine ENG may be appropriate.

**For marine ENG to reverse biodiversity decline we will need to focus on more than just development activities**

The marine environment is characterised by multiple human pressures encompassing activities such as commercial fishing, shipping and recreation, extractive industries and land-based sources of pollution.

<sup>7</sup> <https://community.rspb.org.uk/placestovisit/langstoneharbour/b/weblog/posts/wave-after-wave-of-fledglings>

<sup>8</sup> <https://www.sciencedirect.com/science/article/pii/S0301479711800046>

<sup>9</sup> [http://evidence.environment-agency.gov.uk/FCERM/Libraries/FCERM\\_Project\\_Documents/tide-gate\\_report.sflb.ashx](http://evidence.environment-agency.gov.uk/FCERM/Libraries/FCERM_Project_Documents/tide-gate_report.sflb.ashx)

Scientific research has consistently demonstrated that these activities are amongst the most significant pressures on marine ecosystems<sup>10, 11</sup>.

If marine ENG is to be limited to development activities in a similar manner to terrestrial ENG, this would fail to deliver marine net gain from some of the most polluting activities and would not be consistent with the polluter pays principle.



The need to extend marine ENG beyond development activities has been recognised by the NCC in its sixth report *'This should extend beyond licensing activities in the marine environment and redirect the use of public money and other incentives to enable users of the sea to become better stewards of it'*.

Marine ecosystems are typically open systems which are significantly controlled by prevailing physical processes operating at broad spatial scales. When considering marine ENG it is therefore important that interventions work with prevailing natural processes and are implemented in appropriate locations and at appropriate spatial scales. This suggests that a more strategic approach to marine ENG may be appropriate compared to the on-site focused approach advocated for terrestrial ENG.

A further significant difference between the terrestrial and marine environments is the multiple use of marine space. Marine activities and development are often taking place within MPAs, for which there are specific obligations stemming from the BHD and the MCAA. For example, over 80% of UK estuaries and more than 50% of inshore waters are protected as MPAs. In these areas, it should be recognised that existing obligations for MPAs (such as the provision of compensatory measures under the BHD and measures of equivalent ecological value under the MCAA) will take precedence over any requirements for marine ENG. To maximise the benefits of marine ENG, it may be necessary to seek some flexibility in the approach to delivering compensatory measures and measures of equivalent value.

**To maximise the benefits of marine ENG, it may be necessary to seek some flexibility in approach to delivering compensatory measures**

## Why ENG Needs a Statutory System

Since the publication of NEWP in 2011, the overarching goal of environmental policy has been to leave the environment in a better state for the next generation. However, there is no mandatory requirement within policy or law to achieve ENG and, particularly for the marine environment, the drivers for ENG are currently weak. Thus, to date, the policy has largely been aspirational, lacking the tools to achieve the policy goal.

There is already a wide range of environmental legislation relating to the marine environment, with much of it being highly prescriptive in terms of requirements. For example, European Directives are supported by extensive guidance and case law. Marine environmental decision-making must take

<sup>10</sup> <https://www.eea.europa.eu/publications/state-of-europes-seas>

<sup>11</sup> <https://www.ospar.org/documents?v=7198>

account of these specific requirements. While this provides clarity in terms of environmental requirements, it also reduces flexibility in decision-making. For example, marine licensing decisions will typically need to take account of the separate requirements of the Environmental Impact Assessment Directive, BHD, Water Framework Directive and MCAA requirements amongst others. There is a tendency for the specific requirements of environmental directives to become an end in themselves rather than being seen as a means to achieving broader environmental goals and desired environmental outcomes.

Given that none of these requirements mandate ENG, it cannot be expected that the serial application of these requirements will result in the achievement of ENG. If this is to be a key goal of environmental policy, then it is axiomatic that this goal is specifically supported in legislation and policy. As the NCC points out in its sixth report *'It is not enough to will the ends: the means have to be provided to achieve them'*.

**'It is not enough to will the ends: the means have to be provided to achieve them'**  
**Natural Capital Committee**

If we are serious about reversing marine biodiversity decline and want an ENG approach to be part of the solution, then the policy needs to be given sufficient weight in law to be able to influence existing decision-making processes. Rather, the policy might best be furthered by placing a clear statutory duty on decision-makers to achieve marine ENG. This will help decision-makers to focus on achieving the goal of environmental policy more than any specific individual means that might contribute to achieving the policy. It is recognised that such an approach may require increased flexibility in the interpretation of requirements of individual pieces of legislation to achieve better environmental outcomes.

## Accounting System

Many of the broader principles around terrestrial ENG, such as applying the mitigation hierarchy before considering requirements for ENG, recognising the irreplaceability of features, and taking sufficient measures to deliver clear ENG are all readily transferable to the marine context.

**The Defra Biodiversity Metric 2.0 should be extended to all marine activities**

However, to promote consistency of approach and proportionality in a system of ENG, it is necessary to have a clear framework for quantifying both the negative impacts from the activity on biodiversity/the environment and the positive benefits associated with the enhancement measures to demonstrate net gain.

For the terrestrial environment, this framework is provided by the Defra Biodiversity Metric 2.0<sup>12</sup>, which quantifies the impact of development in terms of 'biodiversity units'. The metric is designed to provide a transparent method to represent biodiversity that can be exchanged between sites and habitat types. The metric scores different habitat types (e.g. woodland, grassland) according to their relative biodiversity value and adjusts this according to the condition and location of the habitat. Where new habitat is created or existing habitat is enhanced, then the associated risks of doing so are factored into the metric.

<sup>12</sup> <http://publications.naturalengland.org.uk/publication/6020204538888192>

There is currently no agreed accounting metric for the marine environment, although some coastal habitat types were covered by the (2012) Defra Biodiversity Metric 1.0, including saltmarsh and saline lagoons.

As noted above, given the breadth of pressures on the marine environment, for marine ENG to be effective in improving the marine environment and in line with the polluter pays principle and better regulation, it will be desirable that the metric covers all those activities that are contributing to impacts on the marine environment. This could include a habitat metric for those activities which primarily impact habitats but could also include species metrics and pollutant loading metrics for issues such as eutrophication.

## Types of metrics

A habitat metric could be developed along similar lines to the terrestrial Defra metric 2.0. This might usefully take account of:

- Existing hierarchical classifications for the marine environment such as the EUNIS habitat classification system;
- Information on the productivity, diversity and functions (ecosystem functions/ecosystem services) of habitats (as an equivalent to the distinctiveness criterion applied to terrestrial habitats in Defra metric 2.0); and
- Quantification of loss of specific habitats and damage to specific habitats based on information on the sensitivity of habitats to different physical pressures.

Species considerations have not been attempted on land yet. For marine ENG, the measures could focus on mobile species, particularly fish, marine mammals and birds. Where activities give rise to mortalities of mobile species and these are quantifiable, it should be possible to establish a clear basis for marine ENG.

Where activities cause disturbance to mobile species, it is likely to be more challenging to quantify an absolute level of impact, although it should be possible to establish rules of thumb that could be applied. Careful thought would be required as to the level of flexibility that might be afforded by marine ENG, for example, whether ENG for species impacts could be provided through habitat gains.

Pollutant loading metrics should be relatively easy to quantify for monitored point source discharges, but potentially more problematic for diffuse sources such as from agriculture.



Marine ENG measures could also encompass mobile species such as marine mammals

**Without an accounting system, we are valuing marine biodiversity at £0, perpetuating decline**

Consideration could also be given to including other pressures such as the introduction of invasive non-native species within the metric, if suitable indicators exist.

It is important to acknowledge that any accounting system for marine ENG will have significant limitations and particularly so if it seeks to encompass the full range of relevant pressures and impacts. However, in the absence of such an accounting system we are essentially valuing marine biodiversity at £0 and

perpetuating biodiversity decline, so it is important to start somewhere and then seek to improve and refine the system over time.

In the longer term, it may be beneficial for the accounting system to also take account of the wider benefits of marine ENG interventions in line with aspirations in the Government's 25-year Environment Plan, but this is likely to be even more complex and should be seen as part of the continual improvement of the system.

## Delivery Mechanism

For a system of marine ENG to be effective, mechanisms for delivery of interventions need to be found.

As identified above, marine ENG is likely to require more strategic approaches compared to terrestrial ENG, with careful planning of the nature, location and scale of interventions to meet regional and local priorities. It is likely that this will require a level of co-ordination by relevant public bodies and greater focus on off-site measures. The strategic approach may mean that, depending on scale, some interventions may be better led by public authorities rather than individual developers/activities. This may entail developers/activities making financial contributions to interventions to deliver their ENG obligations.

To pursue such a strategic approach, co-ordinated work will be required by public bodies to identify local and regional scale opportunities and priorities. There is already a degree of co-ordination of opportunities for coastal habitat creation carried out by the Environment Agency as part of Regional Habitat Creation Programmes linked to Shoreline Management Plans and Flood Risk Management Strategies.

More recently, the Marine Management Organisation (MMO) has undertaken a research project to identify habitat creation opportunities in English waters which can help to inform English Marine Plans<sup>13</sup> (MMO Project 1135). This project sought to identify locations suitable for managed realignment and wider interventions such as oyster and seagrass restoration. The Environment Agency is also taking forward an initiative (REstore MEadows, MARshes & REefs REMEMARE) as part of its contribution to the 25 Year Environment Plan to identify opportunities for saltmarsh, seagrass and oyster restoration.

**One option could be to establish regional committees with a broad membership to build consensus on regional priorities**

More broadly, initiatives such as IPENS<sup>14</sup> (Improvement Programmes for England's Natura Sites) have identified a wide range of marine and coastal improvement opportunities that could be pursued as a contribution to marine ENG.

Separately, the work of third sector organisations such as the RSPB and the Wildlife Trusts in creating and enhancing coastal habitats for nature conservation, and the work of Blue Marine Foundation and the European Native Oyster Restoration Initiative in seeking to restore native oyster populations in the Solent and Blackwater respectively, provide good examples of the kind of strategic approaches that are needed to deliver marine ENG on the ground.

<sup>13</sup> <https://www.gov.uk/government/publications/the-location-condition-and-features-of-significant-sites-for-habitat-creation-or-restoration>

<sup>14</sup> <https://www.gov.uk/government/publications/improvement-programme-for-englands-natura-2000-sites-ipens>

Currently, the development of marine habitat and species restoration plans for England is in its infancy. While it is helpful to develop national overviews of the potential opportunity, as has been done in recent MMO and EA work, these broad opportunities then need to be crystallised into distinct and deliverable projects to attract investment and engender stakeholder participation at progressively more localised levels.



Use of dredged material has attracted localised investment and stakeholder participation

A good example of this process is work that has been done over several years around the Solent to develop specific opportunities for the beneficial use of dredged material.

This has included broad scale work such as for the South Marine Plans (MMO 1073)<sup>15</sup> to identify broad areas of opportunity, more focused identification of specific opportunity areas (Solent Forum Beneficial Use of Dredged Sediment (BUDS) project phase 1)<sup>16</sup>, and the development of specific project proposals in partnership with local stakeholders (Solent Forum BUDS Project Phase 2)<sup>17</sup>.

Given that the development of marine ENG plans is likely to require input from multiple public bodies as well as the third sector, one option would be to establish regional committees with a broad membership and constitution to work together to build consensus on regional priorities and to develop specific proposals for interventions for which funding can then be sought. Such an approach recognises the importance of partnership in delivering marine ENG and would help to provide a strategic focus.

## Funding and Licensing of Marine ENG

In line with the polluter pays principle, it would be appropriate that those causing damage to the marine environment bear the cost of achieving marine ENG. For such an approach to be equitable, it should target all activities contributing to that damage.

For developments authorized under the marine licensing system, licensing conditions may provide a mechanism for securing commitment to achieving the interventions. However, as has been experienced with the delivery of compensatory measures under the BHD, these measures have often been underpinned by separate legal agreements to provide additional certainty of delivery. Such legal agreements can be time consuming and expensive.

A more effective solution may be to introduce provisions within the MCAA, similar to the s106 agreement provisions under the Town & Country Planning Act, which have proved an effective mechanism for underpinning delivery of developer obligations relating to planning permissions for terrestrial development.

<sup>15</sup> <https://www.gov.uk/government/publications/use-of-beneficial-dredge-materials-in-the-south-inshore-and-offshore-marine-plan-areas-mmo-1073>

<sup>16</sup> [http://solentforum.org/services/Current\\_Projects/buds/Phase1Report.pdf](http://solentforum.org/services/Current_Projects/buds/Phase1Report.pdf)

<sup>17</sup> [http://solentforum.org/services/Current\\_Projects/buds/](http://solentforum.org/services/Current_Projects/buds/)

A good example from the terrestrial environment is the use of s106 agreements to deliver strategic mitigation for increased pressures on SPA bird populations associated with new housing development. For example, to finance measures to reduce bird disturbance within the Solent SPAs, local authorities charge a levy via s106 agreements equating around £564 per dwelling<sup>18</sup>.

It may be that different approaches could be applied for other types of activities. For example, the issuing of commercial fishing licences could include an environmental charge based on vessel size, fishing methods and fishing locations. A fertilizer tax on agriculture could be used to fund restoration work to combat impacts caused by eutrophication, and environmental charges could be included in environmental permits for aquatic discharges. While fertilizer taxes have not proved wholly effective in tackling nutrient pollution<sup>19</sup>, such a tax would provide a source of funding to support wider marine restoration work. Given the political will, none of these measures would be difficult to implement and would be in line with the polluter pays principle.



s106 agreements have funded measures to mitigate pressures on SPA bird populations

For activities such as commercial shipping which are governed by international legislation and for non-UK/non-English fishing vessels, it may be more difficult to implement suitable interventions, although for fishing vessels this might change following Brexit.

## Conclusions

If we are serious about tackling marine biodiversity decline, business as usual is not an option. To give effect to the policy goal of leaving the environment in a better state for the next generation, additional policy measures are required to underpin work to halt and reverse biodiversity decline. While removal or reduction of human activity pressures can contribute to improving marine biodiversity, there is a need for a much stronger focus on restoring marine ecosystems if our goals for the marine environment are to be achieved. Marine ENG provides a potential mechanism for this. Initially this should focus on biodiversity net gain but over time could be extended to deliver ENG.

### Marine ENG needs to become a focus for management

For marine ENG to be effective, it will need to have a clear statutory basis and to become a focus for management. As demonstrated from experience with the terrestrial environment, for marine ENG to work, there needs to be a framework within which it is applied including an accounting system for quantifying impacts and delivering net gain. There also need to be clear delivery mechanisms.

The characteristics of marine ecosystems require that the approach adopted to marine ENG will need to be more strategic than on land with greater reliance on off-site measures and more strategic co-ordination by public authorities at appropriate ecosystem scales.

<sup>18</sup> <http://www.birdaware.org/CHttpHandler.ashx?id=29372&p=0>

<sup>19</sup> [http://ec.europa.eu/environment/enveco/taxation/pdf/ch9\\_fertilisers.pdf](http://ec.europa.eu/environment/enveco/taxation/pdf/ch9_fertilisers.pdf)

# Document Information

Document History		
<b>Title</b>	Marine Environmental Net Gain	
	The case for introducing a statutory system	
<b>Commissioned by</b>	White Paper	
<b>Issue date</b>	March 2019	
<b>Date</b>	<b>Version</b>	<b>Revision Details</b>
05.03.2019	1	Issued for circulation

## Suggested Citation

ABPmer, (2019). Marine Environmental Net Gain, The case for introducing a statutory system, ABPmer White Paper, March 2019.

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## Images

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