

CONSULTATION

Response Document



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Draft Infrastructure Investment Plan – 2021-22 to 2025-26 (Scottish Government)

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Introduction to CIEEM

The Chartered Institute of Ecology and Environmental Management (CIEEM), as the leading membership organisation supporting professional ecologists and environmental managers in the United Kingdom and Ireland, welcomes the opportunity to comment on this consultation.

CIEEM was established in 1991 and has over 6,000 members drawn from local authorities, government agencies, industry, environmental consultancy, teaching/research, and voluntary environmental organisations. The Chartered Institute has led the way in defining and raising the standards of ecological and environmental management practice with regard to biodiversity protection and enhancement. It promotes knowledge sharing through events and publications, skills development through its comprehensive training and development programme and best practice through the dissemination of technical guidance for the profession and related disciplines.

CIEEM is a member of:

- Environmental Policy Forum
- IUCN – The World Conservation Union
- Professional Associations Research Network
- Society for the Environment
- United Nations Decade on Biodiversity 2011-2020 Network
- Greener UK
- Irish Forum on Natural Capital (working group member)
- National Biodiversity Forum (Ireland)
- The Environmental Science Association of Ireland

CIEEM has approximately 600 members in Scotland who are drawn from across the private consultancy sector, NGOs, government agencies, academia and industry. They are practising ecologists and environmental managers, many of whom regularly provide input to and advice on land management for the benefit of protected species and biodiversity in general.

We welcome the opportunity to participate in this consultation and would be happy to be involved in the development process. Please contact Jason Reeves (CIEEM Head of Policy and Communications) at JasonReeves@cieem.net with any queries.

Response to Consultation Questions

Q 1A Do you support the inclusion of natural infrastructure in our definition of infrastructure?

Yes

Q 1B Do you agree with the wording proposed for the revised definition?

No

Q 1C If you do not agree with the proposed wording of the definition of infrastructure, please provide your suggested changes and additional material to support your answers [200 word limit; 94 words in the definition given above].

Our suggested wording for the definition of infrastructure is as follows:

“The physical and technical facilities together with the natural and other fundamental systems necessary for the economy to function and to enable, sustain and enhance societal living conditions.

The infrastructure may be publicly owned, community owned or privately owned and includes:

- 1) The networks, connections and storage relating to the enabling infrastructure of transport, energy, water, telecommunications including digital and internet, to permit the movement of people, goods and services.
- 2) The built environment of housing; public infrastructure such as education, health, justice and cultural facilities; waste management facilities, flood protection structures, and buildings and associated works relating to the emergency services.
- 3) Natural capital whether terrestrial, aquatic or marine including habitats and environments providing ecosystem services and resilience in the face of climate and other emergencies.”

Q 2A Do you agree that the steps proposed in the common investment hierarchy are the right ones?

No

Q 2B If you think any adjustments are needed to the proposed investment hierarchy, please provide suggested changes (and evidence, where appropriate) to support your answers.

We would like to see further integration of environmental principles. There is a need to rebalance the system from being development-led to recognise the urgency of addressing the two global emergencies of climate change and biodiversity loss. Investment priorities should be those which meet the principles of sustainable development. The 17 Sustainable Development Goals, which the First Minister signed Scotland up to in 2015, should be integral to the proposed investment hierarchy. There is also a need to map out how the proposed investment hierarchy maps on to the green recovery route map as outlined by the Committee for Environment, Climate Change and Land Reform Committee (ECCLR). Also, there should be a commitment to the Edinburgh Process for Subnational and Local Governments on the development of the Post 2020 global biodiversity framework.

We have set out our thoughts on specific elements of the proposed hierarchy below:

Determine future need: Resilience is needed in response to population and climate pressures but there are other pressures that also should be considered, such as, a changing economic climate and threats of future epidemics, whether of people, plants or animals. For example, responses to the current Covid-19 pandemic include a greater investment in active travel. The increased investment in active travel that has arisen as a result of the Covid-19 pandemic should be sustained. A large-scale shift away from private car transport in our towns and cities is required, diverting space away from the car and instead to the bicycle, bus, tram etc. New housing developments which are being built on former ‘green belt’ as our towns and cities grow, should be required to include creation of safe, segregated active travel routes into city / town centres.

The Covid-19 pandemic has highlighted the importance of local places for people’s health and wellbeing. Spatial planning policy shapes local neighbourhoods, with significant impacts on the health and wellbeing of both current and future residents. The 20-minute neighbourhood approach underlies Scottish National Outcomes.

The percentage change in population by council area, 2018-2043 as shown on page 17 may change as a result of the current Covid-19 pandemic. In several European countries, there are signs that there is a gradual move away from urban centres to more rural areas as the transition to working from home has highlighted the possibilities of remote working.

Maximise use of existing assets: This should be to maximise the *sustainable* use of existing assets. The fishing industry is a good example where catches are limited to ensure long term viability; a certain amount of duplication and reserves is also needed to provide resilience against unforeseen pressures. It is suggested that this item is revised to insert 'built and natural' between 'existing [sic]' and 'assets' to allow the inclusion of Nature-based Solutions¹.

Replace or New Build: Many of Scotland's rural towns are in need of regeneration. This can be done through regeneration of vacant or derelict land (VDL) and buildings, which should be incentivised over greenfield development in NPF4. There should be a general presumption against construction of new housing on greenfield sites. The Scottish Land Commission and the wider Vacant and Derelict Land Taskforce have already done a lot of work identifying VDL sites and potential opportunities for bringing this land back into productive use. We support the RTPI's recent *Plan the World We Need* report² which highlights the vital role that planners can have in aspects of the Covid-19 pandemic recovery in order to revive the economy, tackle inequality and meet net-zero targets by 2050.

New homes should be energy efficient and large-scale new housing developments should be required to include low carbon heating systems. In addition, opportunities for micro electricity generation should be investigated. Any development should be built with improved public transport links with de-carbonised public transport in mind which would need to be incentivised by low-cost travel.

For any regeneration projects or new builds nature-based solutions should be adopted, where appropriate, in order to address the climate emergency and biodiversity crisis in tandem.

For example, in the urban environment:

- Widespread use of rain gardens as an urban flood prevention measure.
- Green roofs and walls.
- Green communal spaces and ecological networks to be included as a requirement of any new housing build to reduce impacts of fragmentation. More greenery in town centres can also help improve air quality and support pollinating insects. These nature-based approaches will have the added benefit of providing carbon sinks, and of improving health and well-being within our communities. Community gardens and allotments should be added where possible.
- Protection of existing urban trees and planting of further native species in the right places.
- Incorporation of Sustainable Drainage Systems (SuDs) in housing developments. SuDs have multiple benefits in terms of water management (decreasing flow rates to watercourses and improving water quality), improving biodiversity (providing habitat for many amphibians and invertebrates) and amenity value. Although SuDs are a legal requirement for all new developments in Scotland, the design of SuDs is not always considered during initial site design and best practices are not always followed.
- More permeable ground - greenspace rather than block paving and artificial grass in housing developments.

¹ <https://cieem.net/resource/using-nature-based-solutions-to-tackle-the-climate-emergency-and-biodiversity-crisis/>

² <https://www.rtpi.org.uk/research/2020/june/plan-the-world-we-need/>

- To reduce impact of sealed surfaces of grey infrastructure, opportunities should be sought to accommodate infrastructure underground or take routes through underpasses to retain valuable greenspace for absorbing and draining water.
- Natural Flood Management features implemented using catchment opportunity mapping. Better catchment management, or restoration of natural river basins, will aid in improving flood risk. There is good evidence for natural flood management techniques being able to reduce peak flood events, such as the Slowing the Flow project in Pickering, North Yorkshire.
- A focus on nature-based solutions for managing issues such as air quality in urban centres and flooding in many of our towns and cities should be the norm. 'Hard' defences should be the last line of defence in making us more resilient to climate change and its associated effects on flooding and air quality.

Q 3A Do you agree that a dashboard of indicators is the best approach to enable informed decisions to be taken about the long-term trade-offs and choices in our infrastructure 11 investments? Please provide the reasons for your response.

Yes, a set of indicators is needed that cover all relevant aspects as there is no sensible way that a useful single indicator can be developed. A clear set of indicators that can be audited is needed to ensure transparency of decision making. How these are presented will depend on who they are aimed at. A dashboard approach is perhaps best for the general public. However, the example dashboard is really quite complicated and is quite difficult to understand. A straightforward table showing how the indicators map on to the various sets of targets might be easier to understand. Each outcome should have an indicator. There should be a clear link between each outcome/indicator, the 17 UN Sustainable Development goals and the NPF outcomes.

Q 3B What outcomes (and/or indicators) do you think should be included in developing a common assessment framework for prioritising infrastructure investment?

The proposed fifteen topics seem to cover the whole range of factors that need to be considered. Some can be quantified, including greenhouse gas emissions and renewable energy production associated with a project, while others, such as flood risk management, are difficult to quantify due to chance events. Difficulty of quantification is, however, certainly not a reason to exclude such indicators. A qualitative description at least should ensure that the factor is considered. Growth and construction are rather vague terms whose consequences depend on a large number of factors.

We have focussed on the listed factors that are relevant to the work of CIEEM below:

Nature and Biodiversity: This indicator should refer to achieving a net increase in natural capital, biodiversity and ecosystem health. Many aspects of biodiversity are included in international treaty obligations. As well as statutory and non-statutory designated sites for nature conservation, connecting habitat should be equally protected as the value of ecological networks will be increasingly important with changes in climate due to minimise effects of associated shifts in species ranges.

There needs to be a strong emphasis on Nature-based Solutions to address the climate and biodiversity crises. Nature-based Solutions and sustainable land management practices can deliver multiple benefits for people, the environment and the economy. Scotland already has mechanisms in place such as the Peatland Action Fund and we welcome recent announcements of continued funding

for these initiatives³. However, there should be stricter guidelines on what operations can take place on peatland (e.g. severe limitations on peat extraction). In addition, the Intergovernmental Panel on Climate Change has warned that some types of Nature-based Solutions, such as afforestation, could have adverse effects on other Sustainable Development Goal areas including biodiversity and food security if appropriate scale and land type are not considered fully⁴. Opportunity mapping and modelling should be used to identify optimum land type and area scale, which can then be implemented as part of a strategic plan, for example, the master planning approach championed by Scottish Natural Heritage⁵.

In addition, the nature and biodiversity outcomes must be fully integrated in urban developments using green and blue infrastructure to ensure communities will have biodiverse urban green spaces that can perform a variety of functions. This must be implemented using sound ecological knowledge to ensure that such infrastructure delivers true benefits for biodiversity.

Similarly, we have to ensure that Scotland's forestry strategy not only supports ambitious national targets for increasing woodland cover, but also encourages much higher proportions of native broadleaved woodland following the principle of the "right tree in the right place" and measures to encourage natural regeneration not just planting. As well as planting, the protection of woodlands as important ecosystems for carbon sequestration and retention, and statutory protection of all ancient woodland must be ensured.

There is an urgent need for a better understanding of the cumulative impacts of development and land-use on biodiversity and this must be considered here. Such impacts should be fully reflected in Environmental Assessments and considered in planning applications.

There is a potential new employment sector around climate change adaptation, delivery of Nature-based Solutions, restoration, natural flood management, green infrastructure and raingardens. Tree planting and peatland restoration can provide employment, particularly in rural areas where other forms of employment are difficult to find. Funding for these activities must be guaranteed and consistent, otherwise the job opportunities will be lost in the future. We can learn from approaches being adopted in New Zealand, where significant investments have been made to create jobs in large-scale nature restoration projects⁶.

Greenhouse gas emissions: This indicator should refer to a net reduction of greenhouse gas emissions once the carbon costs of construction have been taken into account. However, it should also take account of carbon sequestration by vegetation and soils.

Waste: The planning system should promote investment and development of a low carbon, circular economy. Scotland should seize the opportunity, as it did with renewable energy, to be a world leader

³ <https://blogs.gov.scot/rural-environment/2020/07/20/peatland-action-fund-open-for-new-applications/>

⁴ IPCC, 2019: *Summary for Policymakers. In: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems* [P.R. Shukla, J. Skea, E. Calvo Buendia, V. Masson-Delmotte, H.- O. Pörtner, D. C. Roberts, P. Zhai, R. Slade, S. Connors, R. van Diemen, M. Ferrat, E. Haughey, S. Luz, S. Neogi, M. Pathak, J. Petzold, J. Portugal Pereira, P. Vyas, E. Huntley, K. Kissick, M. Belkacemi, J. Malley, (eds.)]. In press.

⁵ Scottish Natural Heritage (no date) *Nature-based Solutions: urban*. Available at: <https://www.nature.scot/climate-change/nature-based-solutions/nature-based-solutions-urban>

⁶ <https://www.doc.govt.nz/news/media-releases/2020-media-releases/investment-to-create-11000-environment-jobs-in-our-regions/>

in the development and implementation of new technologies which help to solve the challenges we face in this area. There are substantial economic benefits to be achieved from doing so, as other countries around the world seek to deal with the same problems.

This should build on the Waste (Scotland) Regulations 2012 recognising subsequent moves to a circular economy. The Circular Economy Bill has not been progressed due to Covid-19. However, investing in a circular economy would provide employment and reduce the cost of disposing of wastes to landfill. As a matter of principle all 'wastes' generated in Scotland should be processed within Scotland to turn them into useful products. This will require investment in modern recycling plants and in industries that can manufacture new products from the material generated in recycling plants. Alternative waste streams such as mushroom production from waste products should be investigated. Scottish Infrastructure Circular Economy Forum are working up a project to create a national Resource Exchange Mechanism for surplus construction materials, rather than sending them to landfill at the end of projects. CIEEM is supportive of this.

Access to green space: To make places more inclusive, diverse, vibrant, resilient, and empowering we should ensure equitable access to greenspace (both in terms of amount and quality), sustainable transport routes and blue-green infrastructure. Greenspaces should be connected and provide a green 'highway' to all areas of towns and cities. Given the access provisions of the Land Reform (Scotland) Act 2003, this indicator must refer mainly to urban areas where many people do not have readily accessible green space. However, it should also relate to connecting core or other paths in the wider countryside or improving accessibility for people with mobility or other issues. Appropriately managed green space can also help achieve outcomes for nature and biodiversity, greenhouse gas emissions (by acting as a carbon sink), flood risk management, and even healthy life expectancy. The twenty-minute neighbourhood concept could be adopted here to ensure equal access.

Active and green travel options:

A fundamental shift in current thinking around strategic transport is needed. The Strategic Transport Projects Review 2 is very focused on road infrastructure. This will ultimately do little to address the challenges of climate change, reduce rural depopulation, or improve access to goods and services in deprived urban areas. At present the focus on upgrading more roads to improve journey times/road safety on major trunk roads doesn't help us reach net zero, and doesn't sufficiently consider the possibilities for (a) making more use of rail networks for freight or (b) improving public transport access within and between towns/villages/cities.

There must be a fundamental shift towards:

- Local walking and cycle networks within communities, in high quality greenspaces to improve air quality and health.
- Provision of safe, physically separated cycle routes in cities to all areas and in-between to encourage people to cycle for work and pleasure. New housing developments which are being built on former 'green belt' as our towns and cities grow, should be required to include creation of safe, segregated active travel routes into city / town centres.
- Provision of on-street bike storage in cities and towns in all areas to provide people (especially in flats or tenements) with secure places to store bikes
- Strong intercommunity public transport networks, using electric trains and buses to link smaller rural communities with the larger cities as needed
- Localised food production and greater use of rail freight for transport of goods where local production is not possible for foods or other goods.

- Digital connections for all communities to improve connectivity and reduce the need for travel on roads or by air. This could include digital access to key services such as education and some aspects of healthcare, thereby reducing some of the issues with isolated rural communities and deprived urban communities and reducing the need for large scale transportation infrastructure that can damage our natural spaces.

Our international gateways post-Brexit should avoid locations and options which are sensitive to the climate and ecological crises. Ferry routes for freight and people to the rest of Europe should be promoted and/or reinstated. Rail links to our international ferry ports should be a priority, getting lorries off the road, making the environment cleaner and safer. Consideration could be given to how new rail lines could be constructed to avoid the fragmentation of the landscape.

Renewable energy: It is important to develop an appropriate mix of types of renewable energy generation together with storage and transmission. This might include the use of hydrogen or fuel cells. It is also important to recognise any negative effects of renewable energy schemes on natural capital and ensure projects are subject to appropriate Environmental Impact Assessments. Upscaling renewable energy has huge potential in Scotland with the creation of hundreds of jobs. A suite of investment in different types of renewable energies will limit the reliance on one source and thereby add resilience to energy production.

Scotland has already been at the forefront of renewable energy developments and there is great potential to build on this with the transferable skills and expertise that exist in Scotland through the oil and gas sectors. Progressing Scotland's achievements in renewable energy production and de-carbonising our energy systems should continue in pursuit of the goal of achieving net zero. However, increased attention should be focused on facilitating de-carbonise our heating systems, through the development and widespread adoption of sustainable heating systems. New and existing technologies for heating our homes and businesses should be actively promoted. District renewable heating schemes have great potential, but renewable schemes aimed at an individual house scale should also be promoted.

In many rural areas in Scotland, localised community-based renewable energy production has created local jobs for the construction, operation and maintenance of such infrastructure as well as creating revenue to invest back into community projects.

Flood risk management: Flood risk management involves much more than flood protection infrastructure. Other aspects range from rewilding river systems and Sustainable Urban Drainage Systems (SuDs) to making housing and other infrastructure more resilient to flooding, as well as flood warning schemes.

SuD's have multiple benefits in terms of water management (decreasing flow rates to watercourses and improving water quality), improving biodiversity (providing habitat for many amphibians and invertebrates) and amenity value. Although SuDs are a legal requirement for all new developments in Scotland, the design of SuDs is not always considered during initial site design and best practices are not always followed. This must be addressed as part of the indicator outcomes.

Better catchment management through the use of catchment opportunity mapping for Natural Flood Management would also be a key outcome for this indicator. There is good evidence for

natural flood management techniques being able to reduce peak flood events, such as the Slowing the Flow project in Pickering, North Yorkshire⁷.

Thought should be given as to how the framework will be co-ordinated with other assessments that may be needed subsequently such as Environmental Impact Assessments, Business and Regulatory Impact Assessments, Island Communities Impact Assessments etc. to avoid duplication and ensure consistency. The UN Sustainable Developments goals should make a good overall framework within which other work can be nested. Signposting to available guidance and case studies would be valuable.

Good jobs: Upscaling renewable energy has huge potential in Scotland with the creation of hundreds of jobs, and as mentioned previously, there is plenty of existing expertise from the oil and gas sectors. Outcomes for this indicator should focus on providing creating long-term green jobs, as well as providing significant investment in re-training and skills development to ensure a just transition.

Localising production of goods and services, such as local food production for communities and localised energy production and distribution, would create jobs within communities, reducing the need to travel out of local areas to access goods, services and jobs. The latter is especially important for our more deprived urban communities as well as remote and island communities where access to affordable public transport to get to job opportunities or even supermarkets is often a key barrier to improving the quality of people's lives in these communities. This underlies Scottish government ambitions for 20-minute neighbourhoods.

Another key outcome would be a well-established green sector involved in habitat management and creation working with all other development sectors. Currently, loss of expertise in ecology and environmental management in the planning sector is a significant barrier to a green recovery due to a lack of due consideration of environmental impacts.

Q 3C Are there existing tools or methodologies you are aware of which you think the Scottish Government could draw on or adopt in developing its framework?

Biodiversity net gain provides a crucial opportunity to implement a requirement for developments to deliver biodiversity net gain (BNG). BNG is a stepwise approach to development that leaves biodiversity in a better state than before. We have produced a briefing on 'Biodiversity Net Gain in Scotland'⁸ which provides further detail, as well as producing the first UK principles on delivering BNG, together with the Construction Industry Research and Information Association (CIRIA) and the Institute of Environmental Management and Assessment (IEMA)⁹. Further guidance has now been published to help professionals and UK industry address this challenge and to achieve 'Net Gain' targets for biodiversity¹⁰.

⁷ <https://www.forestresearch.gov.uk/research/slowing-the-flow-at-pickering/>

⁸ CIEEM (2019) *Biodiversity Net Gain in Scotland*. Available at: <https://cieem.net/resource/biodiversity-netgain-in-scotland-briefing/> (accessed: 10/11/2020)

⁹ CIRIA, CIEEM, IEMA (2016) *Biodiversity Net Gain: Good practice principles for development*. Available at: <https://cieem.net/resource/biodiversity-net-gain-good-practice-principles-for-development/> (accessed: 10/11/2020)

¹⁰ CIRIA, CIEEM, IEMA (2019) *Biodiversity Net Gain: Good practice principles for development, A Practical Guide*. Available at: <https://cieem.net/resource/biodiversity-net-gain-good-practice-principles-for-development-apractical-guide/> (accessed: 10/11/2020)

We believe that BNG can be an effective 'tool' to reverse biodiversity loss through development. To ensure effective implementation, Local Authorities would need access to competent ecological expertise and advice (preferably in-house) and funding. We feel, based on our professional expertise, that a minimum 10% net gain should be required, possibly with an overall 20% gain on developments in each Local Authority area, achieved by incentivising developers to maximise BNG. The Biodiversity Metric of Natural England, the final version of which is expected to be published early in 2021, presents an example of a method for assessing impacts on biodiversity and calculating desired gain.

Multi Criteria Decision Analysis¹¹ has been widely used to prioritise actions with impacts on a wide variety of factors, not all of which can be quantified, so may prove a useful tool in this case.

Q 4A Do you support the planned approach to developing a new approach to assessing the contribution made by infrastructure investment to Scotland's emissions targets?

Yes

Q 4B Please explain your response and support your response with evidence [500 word limit].

We agree with the statements made in Appendix C. The taxonomy approach has major weaknesses, in particular, the impact of a project depends not only on its type but also the way it is designed and managed. A combination of *baseline & intervention* and *gap analysis* would seem a good way forward although consideration needs to be given to whole lifecycle impacts such as the carbon costs of repair and replacement. It is important that the actual impacts of a scheme are monitored in order to test whether the forecasts were accurate. In practice there may be scope for a hybrid approach using aspects of the taxonomy approach till a more rigorous methodology is established.

Q 5A What are your views on the accuracy and scope of the environmental baseline set out in the Environmental Report?

The baseline seems to be accurate. However, there seems to be rather little quantification of the current situation.

Q 5B What are your views on the predicted environmental effects of the Infrastructure Investment Plan as set out in the Environmental Report?

It is important to understand the factors that may lead to the outcomes not being achieved so that actions can be taken to mitigate them, otherwise the Plan remains a roadmap. This is not recognised in the plan, for example, the statement that "there is the potential for significant positive effects to arise from reductions in GHG emissions" suggests that the plans may not achieve the desired effect.

Q 5C What are your views on the proposals for mitigating, enhancing and monitoring the environmental effects set out in the Environmental Report?

We welcome the emphasis on a place-based approach while recognising that some developments are very important for the country as a whole. Monitoring is essential but should build on existing schemes where possible. There should also be a clear environmental baseline established to monitor

¹¹ <https://www.gov.uk/government/publications/green-book-supplementary-guidance-multi-criteria-decision-analysis>

improvements against. Building monitoring into the operation of infrastructure from the beginning is important and modern digital methodologies provide a much wider range of options than in the past.

We also welcome the recommendation that the use of Nature-based Solutions is maximised wherever possible to ensure the potential for multiple benefits, including for climatic factors and biodiversity, is fully realised.

While the proposed monitoring arrangements covers the necessary areas to provide accountability and transparency on the status and delivery of projects set out in the Infrastructure Investment Plan, it is a disjointed approach and so it would be beneficial to have an overall reporting process for the Investment Plan. This should include milestones in which the progress is addressed against.