

A photograph of an Arctic scene. In the foreground, the back of a person wearing a dark blue hooded jacket is visible, looking out over a body of water. In the middle ground, a red and white boat is on the water, surrounded by ice floes. The sky is a clear, pale blue with some wispy clouds. The overall mood is cold and desolate.

# LEFT OUT IN THE COLD:

**COVID-19 GREEN STIMULUS  
& JOBS IN THE ARCTIC**

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# METHODOLOGY

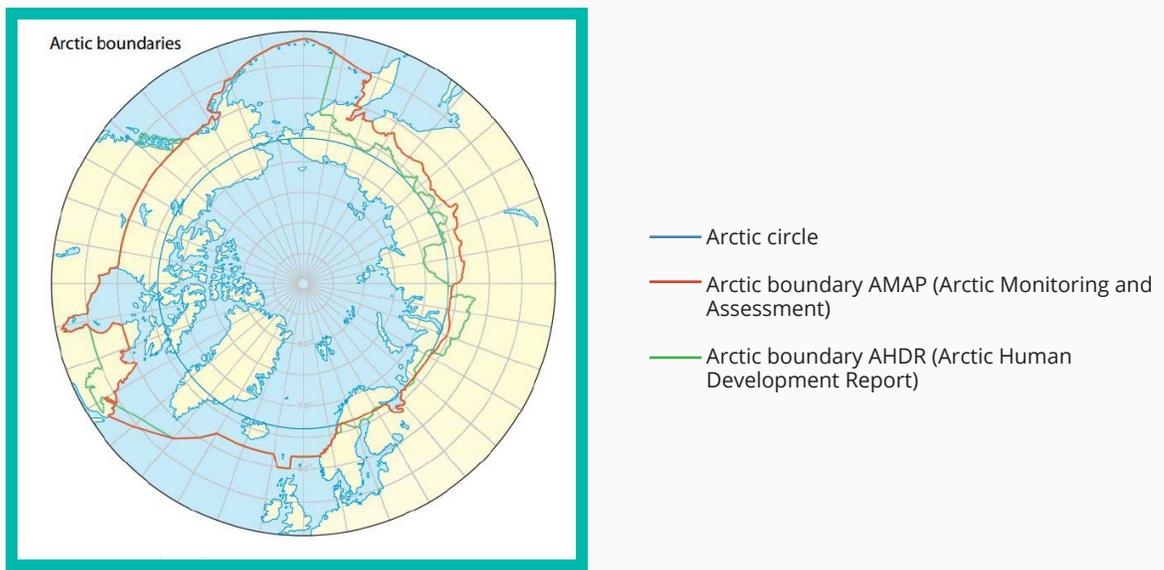
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In August 2020, the WWF Arctic Programme commissioned Vivid Economics to analyse the Arctic countries’ COVID-19 fiscal stimulus measures. This report considers any policies that countries announced or implemented as of 31 October 2020. The analysis is based on desktop research, publicly available information and stakeholder interviews in each of the Arctic countries. For an overview of the report’s findings and a detailed analysis of each Arctic country, please visit [arcticwwf.org](http://arcticwwf.org).

## 1.1 Defining the Arctic region

For this analysis, we based our definition of the Arctic region on that shown in the Arctic Human Development Report (2014)<sup>i</sup>. See Figure 1.

Figure 1: Definition of the Arctic region



Source: Arctic Human Development Report (2014)

**Table 1 sets out the Arctic regions within each country.** The methodology assumes that if 50 per cent or more of a region’s geographical territory is included in the Arctic, the region falls into the Arctic in its entirety.

Table 1: Arctic regions per country

COUNTRY	ARCTIC REGIONS
Canada <sup>ii</sup>	Northwest Territories Nunavut Yukon
Finland	Lapland
Iceland	All of Iceland
Kingdom of Denmark	Greenland and the Faroe Islands (autonomous territories within the Kingdom of Denmark)
Norway	Finnmark Nordland Troms
Russia	Nenets Autonomous Okrug Murmansk Oblast Khanty–Mansi Autonomous Okrug–Yugra Yamalo–Nenets Autonomous Okrug Krasnoyarsk Krai Sakha Republic (Yakutia) Chukotka Autonomous Okrug
Sweden	Norrbottnens County
United States	Alaska

Source: Vivid Economics

## 1.2 Greenness of Stimulus Index methodology

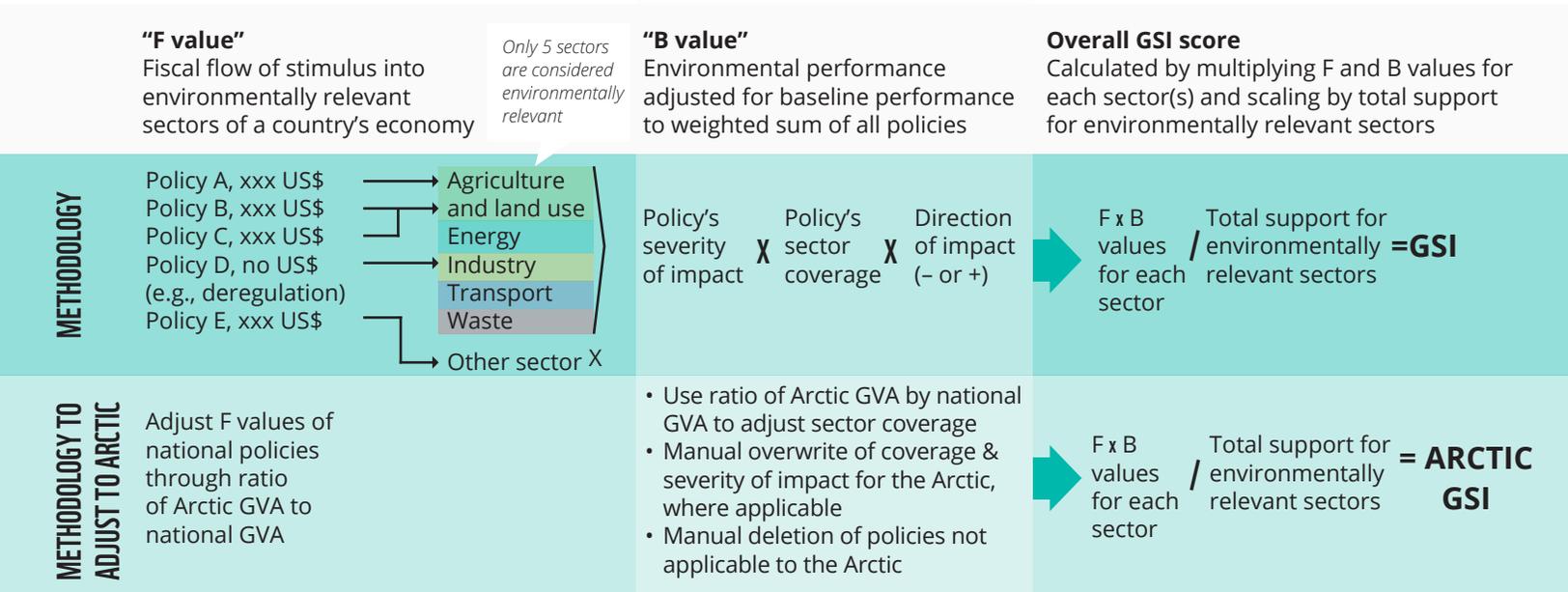
**We constructed the Greenness of Stimulus Index (GSI) by combining the flow of stimulus into five key sectors (agriculture and land use, energy, industry, waste and transport) with an indicator for each sector’s environmental impact; this impact captures both historical trends and specific measures taken under the country’s stimulus measures.** Using the methodology discussed below, the impact indicator assigns a positive or negative greenness value to each sector for each country. The overall GSI indicates total fiscal spending in response to COVID-19, categorized as having either a positive or negative impact on the environment. The final index for each country is an average of sectoral impacts normalized to a scale of –1 to 1.

The five sectors were chosen for their historical impacts on climate and environment. The GSI scores represent a snapshot in time of evolving COVID-19 fiscal stimulus measures and include all policies announced or implemented as of 31 October 2020.

We analysed two components of the stimulus measures: the size of the fiscal flow (F value)<sup>iii</sup> to each environmentally relevant sector, and its overall impact on climate and environment (B value) at both the national and Arctic level. Figure 2 shows the overall methodology and how the scores were calculated for the Arctic:

- The F value is adjusted by multiplying with the ratio of Arctic gross value added (GVA) as a proportion of national GVA
- The B value is determined by:
  - Adjusting the sector coverage by Arctic GVA as a proportion of national GVA
  - Manually overwriting the coverage (for unquantified policies) and severity of impact for the Arctic per policy where applicable
  - Manually deleting policies not applicable to the Arctic

Figure 2 The overall GSI score is calculated by multiplying the fiscal flow (F value) by the environmental performance (B value) of each stimulus policy for both national and Arctic GSI



Source: Vivid Economics

**B is a scaled indicator with a range of -1 to 1 that rates sectors by their level of overall greenness, from most pro-environmental (1) to least environmental (-1).** The B value differentiates between underlying sector context ( $b_1$ ) and specific environmental measures ( $b_2$ ).

- $b_1$  refers to our baseline evaluation of each country using “off the shelf” environmental indicators.<sup>iv</sup> It captures the country’s underlying environmental performance. This includes an evaluation of its rating on multiple environmental performance indicators and the overall country’s climate target progression. This means the index takes inertia into account: countries with a poor baseline score will fail to improve their index score if their environmentally positive stimulus contributions are small.

- **$b_2$  considers any COVID-19 response-specific policy measures we have found that either support or undermine the baseline value.** It takes a negative value if stimulus support boosts harmful activities without regard to environmental targets or deregulates to roll back environmental conditions. It takes a positive value if stimulus advances pro-environmental programmes or includes conditions on environmental performance. Both quantified stimulus measures (such as an amount of funding designated for a certain project) and unquantified stimulus measures (such as rollbacks of environmental regulations that would theoretically reduce compliance costs for firms) can contribute to  $b_2$  values. A major negative stimulus can drag a country's overall score down notably. For example, in Norway, significant oil and gas sector stimulus pulled the country's score down significantly.

**The  $b_2$  score is based on the environmental impact of the policy category and a specific assessment of the stimulus measure based on its intensity and coverage.**

- **Intensity:** We rated each measure for intensity on a scale from 1 to 5, with 1 as the least intense and 5 as the most. The impacts on the environment may be intense in either positive or negative trajectories. Intensity depends on three components: the irreversibility of environmental damage or gain, the concentration or diffusion of impact on environmental and natural systems, and the level of lock-in to either positive or negative development resulting from the policy.
  - An example of an intense negative policy (5) is direct investment in new coal or oil and gas technologies. These projects directly emit carbon into the atmosphere, causing irreversible damage. Pollution from these projects disperses into the air, becoming a global externality. Coal and oil and gas assets lock countries to environmentally harmful trajectories and risk becoming stranded assets.
  - An example of a somewhat intense positive policy (3) is a subsidy for electric vehicles (EVs). When more people use EVs, the quantity of irreversible emissions in the atmosphere drops. Using electricity instead of oil avoids direct air pollution. EV uptake also offers drivers access to likeminded communities, which encourages more uptake and supports a green lock-in effect.
  - An example of a less intense negative policy (1) is a temporary suspension of fees for environmentally harmful activities before resuming fee collection.
- **Coverage:** We determined the coverage of a quantified stimulus measure by rating the policy's monetary size on a scale from 1 to 5, where 1 is the least amount of coverage and 5 is the greatest. For instance, if a country passes two policies that have the same intensity score (for example, one that allocates funds to solar energy and another to wind energy), then the policy with the larger budget would have a larger impact on the sector score and, ultimately, on the final index score. The coverage of an unquantified measure is rated by the level of directness, the number of subsectors or individual firms in a sector that will be affected, and the temporal coverage (that is, how far into the future this positive or negative policy will exist).
  - An example of a high-coverage negative policy (5) would be the suspension of all environmental regulations on an industry. Removing the monitoring and enforcement of environmental standards would extend coverage to all firms in the sector, causing both direct and indirect effects.

- An example of a moderate-coverage positive policy (3) is a ban on wildlife trade. This would be a permanent change in policy that would likely have positive impacts on the specific species no longer being traded as well as indirect impacts on other species that share the habitat. A wildlife trade ban would not affect parts of the agriculture, land use and forestry sector.
- An example of a low-coverage positive policy (1) is a climate-related financial disclosure requirement for firms that generate a certain level of revenue. Requiring firms that have revenue of more than US\$100 million (or another equivalent) would exclude many small- and medium-sized firms, resulting in a policy with incomplete sectoral coverage

**As such, the  $b_2$  score captures deviations from baseline performance: negative if the stimulus is environmentally harmful, positive if it is environmentally beneficial.** For each sector, a country has a positive  $b_2$  value that comes from environmentally positive stimulus ( $b_{2+}$ ) and a negative  $b_2$  value that comes from negative stimulus ( $b_{2-}$ ). We constructed the overall  $b_2$  value for a country from the weighted sum of all stimulus policies for that country.

**We then arrived at the B score for each sector using the following formula:**

$$B = b_1 + (1 - b_1) b_{2+} + (1 + b_1) b_{2-}$$

Countries with low baseline scores are rewarded more for implementing positive policy categories and punished less for introducing negative policy categories because:

- If  $b_{2+} = 1$  (all policies are implemented to the maximum extent) and  $b_{2-} = 0$  (no negative policies are implemented), then  $B = +1$ .
- Conversely, if  $b_{2+} = 0$  (no positive policy categories are implemented) and  $b_{2-} = 1$  (all negative policy categories are implemented to the maximum extent), then  $B = -1$ .

**As set out above, we grouped each environment-specific stimulus policy into positive and negative policy categories that determine the direction of the impact (i.e., positive or negative).** Table 2 and Table 3 describe these policy categories, respectively.

Table 2 Summary of positive policy categories

SECTOR	CATEGORY	DESCRIPTION (WITH EXAMPLES)
AGRICULTURE & LAND USE	Bailouts <sup>v</sup> with green strings attached	Requiring limits on emissions or waste in return for direct funding.
	Nature-based solutions	Creating afforestation and reforestation/forest restoration programmes; restoring wetlands; investing in forest management and nature rehabilitation; restoring peatlands and coasts; sustainable agriculture interventions.
	Loans and grants for green investments	Offering direct loans or tax rebates and subsidies, such as for high-efficiency water irrigation systems.
	Conservation and wildlife protection programmes	Making the sale of endangered animals illegal.

SECTOR	CATEGORY	DESCRIPTION (WITH EXAMPLES)
ENERGY	Bailouts with green strings attached	Offering direct loans and guarantees for oil, gas and coal, with commitments for improving emissions or energy efficiency.
	Loan and grants for green investments	Investing in renewable energy through loans or grants, including solar, wind, biofuels and hydrogen.
	Green research and development (R&D) subsidies	Providing grants for research institutes, academic institutes and private firms to develop new renewable energy technologies and systems.
	Subsidies or tax reductions for green products	Extending tax rebates to households for rooftop solar panels; making green energy products—including utility tariffs with renewable targets—available at a subsidized cost.
INDUSTRY	Bailouts with green strings attached	Imposing conditions on firms relating to emissions, pollution, supply chains or compliance with voluntary agreements or reporting standards.
	Loan and grants for green investments	Investing in low-carbon or low-emissions public infrastructure, including carbon capture and storage (CCS) projects for industry, energy efficiency programs for existing buildings, investment in the hydrogen economy and electrification of industry.
	Green R&D subsidies	Offering direct grants or loans to research institutions, academic institutions and private firms to develop low-carbon industrial technologies, such as CCS, hydrogen and electrification.
	Subsidies or tax reductions for green products	Taxing the use of primary materials in the supply chain; subsidies for firms that ensure compliance in their supply chains.
TRANSPORT	Bailouts with green strings attached	Offering conditional bailouts to air carriers, car manufacturers or shipping, with emission-reduction pledges or commitments to use biofuel or renewable fuel standards in exchange for loans.
	Loan and grants for green investments	Building public infrastructure—including bicycle paths, low-carbon rail or other mass transit, public walkways and railroads—with consideration for climate mitigation and adaptation and other environmental conditions.
	Green R&D subsidies	Making loans or research grants available to academic institutions, research centres, think tanks and private firms to develop electric vehicles, hydrogen vehicles and low-carbon fuel alternatives for shipping, aviation and vehicle transport.
	Subsidies or tax reductions for green products	Offering tax rebates to consumers for EVs; subsidizing low-carbon transportation (including light rail); developing high-occupancy vehicle lanes or low-emission zone fees.
WASTE	Bailouts with green strings attached	Tying bailouts to commitments to shift from waste incineration to more sustainable strategies.
	Loan and grants for green investments	Making direct investments in recycling, municipal solid waste collection, treatment recycling, composting, combustion with energy recovery and landfilling, waste-to-energy, or methane recapture for existing or new waste management facilities.
	Green R&D subsidies	Offering loans or grants to academic institutions, research centres, think tanks or private firms to develop advanced waste management methods, including waste-to-energy and methane recapture technologies.
	Subsidies or tax reductions for green products	Reducing taxes or offering rebates for recycling and composting, including offering buy-back programs; subsidizing environmental producer responsibility (EPR) programs.

**Note:** Descriptions includes examples but may cover additional and alternative programs.

**Source:** Vivid Economics

Table 3 Summary of negative policy categories

SECTOR	CATEGORY	DESCRIPTION (WITH EXAMPLES)
AGRICULTURE & LAND USE	Subsidies or waived fees for environmentally harmful activities	Waiving, reducing or directly subsidizing fees for point and non-point source pollution in agriculture, logging and timber. Removing conservation or preservation laws around forest management and access.
	Deregulation of environmental standards	Removing or repealing, increasing the quantity of pollutants allowed for discharge or extending the compliance period for pollution, emissions or land use change in agriculture and forestry.
	Environmentally related bailout without green strings	Providing loans, guarantees or grants to agricultural producers, including farmers, fishers and cattle ranchers, without requiring improvements in sustainable practices.
	Subsidies or tax reductions for environmentally harmful products	Introducing subsidies for high-emissions agricultural products, including cattle and sheep; reducing existing carbon or environmental taxes on high-impact agriculture and harvested wood products.
ENERGY	Subsidies or waived fees for environmentally harmful activities	Subsidizing utilities, producers or developers of oil and gas or coal production plants; covering the cost of pollution taxes, including carbon taxes; delaying the development or deployment of emissions taxes for energy producers.
	Environmentally harmful infrastructure investments	Making direct investments in the coal, oil or gas sectors, or making loans, grants and guarantees available to private firms exclusively to build oil, gas or coal production plants.
	Deregulation of environmental standards	Removing or eliminating carbon-trading schemes; increasing the cap on emissions or emissions-trading schemes; decreasing the number of firms obliged to participate in emissions-trading schemes; removing requirements for environmental reporting or disclosure; suspending enforcement of environmental regulation.
	Environmentally related bailout without green strings	Extending loans, grants, guarantees or other financing to oil and gas or coal producers without conditions for reducing emissions intensity or output or for decarbonising the energy mix.
	Subsidies or tax reductions for environmentally harmful products	Subsidizing oil, gas and coal (including diesel, home electricity, and utilities) for consumers or producers; reducing existing fuel or carbon taxes.
INDUSTRY	Subsidies or waived fees for environmentally harmful activities	Waiving permit and environmentally related fees for mining, construction or other heavy industrial sectors.
	Environmentally harmful infrastructure investments	Making direct government investments in high-emissions public infrastructure, including factories, data centres and energy-inefficient buildings or heating systems.
	Deregulation of environmental standards	Removing requirements for industrial firms to report or disclose environmental impacts; suspending the enforcement of environmental laws and regulations; removing permit or use requirements for industry; fast-tracking environmentally intensive industrial project development by removing environmental assessments.
	Environmentally related bailouts without green strings	Offering direct, unconditional support through grants, loans, guarantees or other financial mechanisms to high-emissions industrial sectors without requirements for efficiency, energy use or improvements.

SECTOR	CATEGORY	DESCRIPTION (WITH EXAMPLES)
INDUSTRY	Subsidies or tax reductions for environmentally harmful products	Reducing taxes on environmentally intensive products, including manufactured goods and chemicals that have high environmental impacts.
TRANSPORT	Subsidies or waived fees for environmentally harmful activities	Directly subsidizing combustion engines available to consumers or producers; removing or reducing the fees related to tailpipe emissions or fuel taxes.
	Environmentally harmful infrastructure investments	Making direct government investments in infrastructure that supports polluting transport, such as airports or roads.
	Deregulation of environmental standards	Removing regulations that govern the transport sector, such as emission limits for ships, vehicles and aviation.
	Environmentally related bailouts without green strings	Providing direct, unconditional support to high-emissions transport providers, such as airlines, through grants, loans, guarantees or other financial mechanisms.
	Subsidies or tax reductions for environmentally harmful products	Reducing taxes on the sale of high-polluting products, such as automobiles, with no preferential treatment of green alternatives, such as electric vehicles.
WASTE	Subsidies or waived fees for environmentally harmful activities	Removing fees that relate to the environmentally harmful disposal or treatment of waste.
	Environmentally harmful infrastructure investments	Investing in waste infrastructure that does not reduce the environmental impact of disposal or treatment.
	Deregulation of environmental standards	Removing regulations that govern the disposal and/or treatment of waste.
	Environmentally related bailouts without green strings	Extending bailouts to waste industries that use open incineration or do not use methane recapture, or to other waste management systems without requiring them to meet environmental and reporting standards.

**Note:** Descriptions includes examples but may cover additional and alternative programs.

**Source:** Vivid Economics

### 1.3 Arctic green jobs methodology

**We benchmarked the job creation potential of the policy categories per sector, as defined in Table 2 and Table 3 above.** We also used a dataset put together by Vivid Economics on the job creation potential of various stimulus measures. Where possible, we supplemented this with information from stakeholder consultations, Arctic policies and international literature to make it as applicable as possible to both individual countries and the Arctic context.

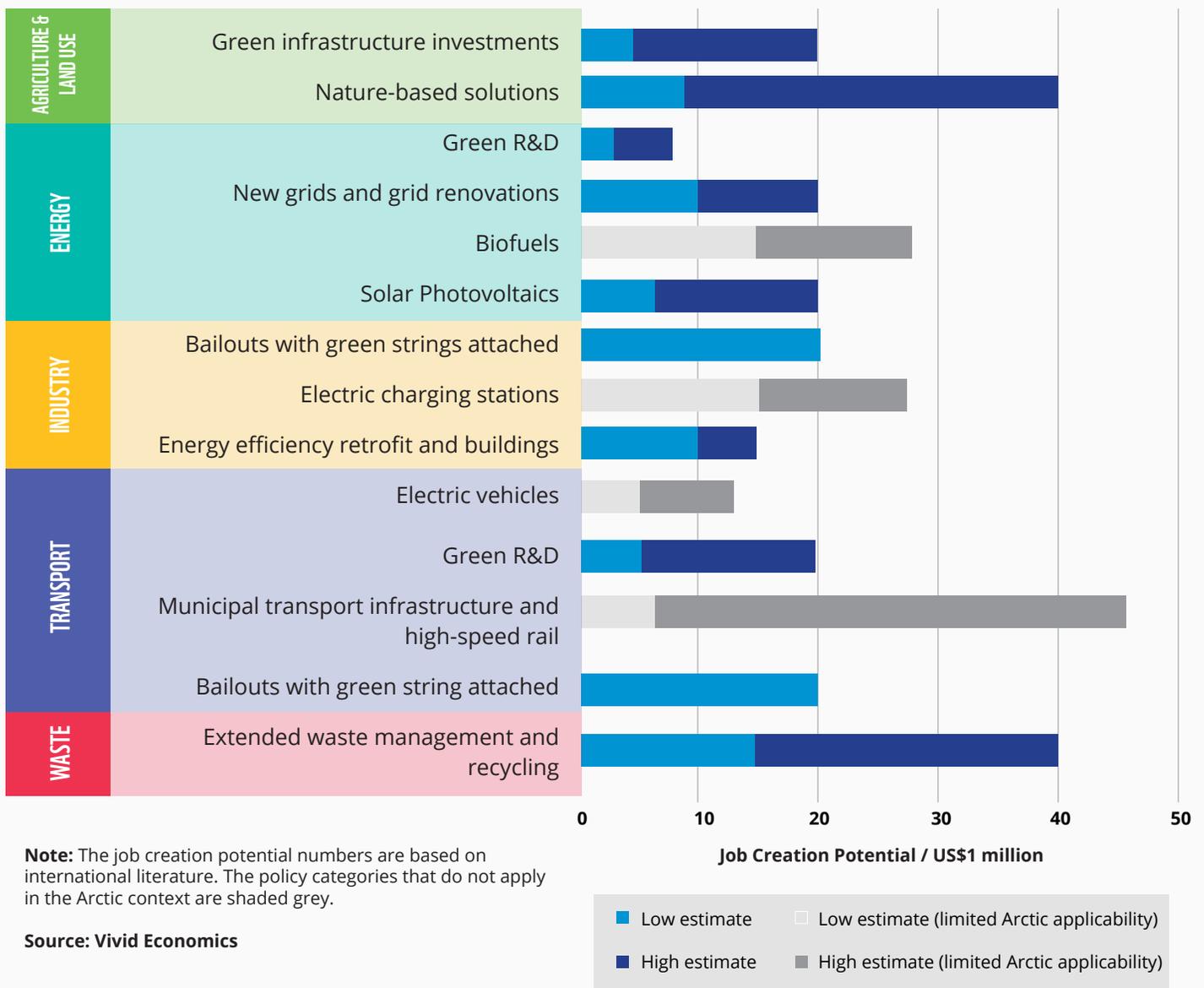
**We then categorized each quantified Arctic green stimulus measure according to its job creation potential per US\$1 million of stimulus spending.** This assessment considers job creation potential in the context of fiscal stimulus. In other words, rather than looking at total green job creation potential, we are looking at the Arctic share of the fiscal packages' potential to create green jobs. The aim is to compare Arctic green job creation across countries. The exercise does not consider additional factors. For instance:

- The analysis focuses on direct job creation only, but it is likely that indirect jobs in related sectors, or induced jobs in the wider economy, will be created as well.

- Jobs are likely to result not only from public spending, but to a large extent from private finance crowded in by public spending. The analysis does not take this effect into account.
- Unquantified policies like deregulation can increase job creation too, but the analysis does not consider these.

We calculated the high-level, top-down Arctic green job creation per country by multiplying Arctic green job creation potential per policy by the dollar value of fiscal stimulus spending to Arctic green policies. Figure 3 sets out the job creation potential by policy and sector, which highlights the opportunity to increase green job creation in the Arctic through green stimulus policies. The policy categories that do not apply to the Arctic context are shaded grey.

Figure 3: Green job creation potential by US\$1 million invested, split by sector and policy



## 1.4 Other policy assessment criteria

Apart from the potential to create green jobs, we have set out three other criteria with which to assess the Arctic policies:

- **Timeliness:** the extent to which funding is shovel-ready
- **Potential for long-term economic transformation**
- **Transitionality** – the extent to which the measure is likely to remain viable if stimulus funding is curtailed

**Timeliness:** As soon as lockdowns start to ease, governments should prioritize recovery measures and projects that get people back to work and do not require lengthy retraining and skill development. This criterion assesses the extent to which investments are shovel-ready and the timelines on which they can be implemented. A score of 1 indicates that projects are not shovel-ready and will need 12+ months for development. A score of 2 indicates that projects are pre-approved or have lab-ready funding but will require some screening. Finally, a score of 3 indicates that projects have high immediacy: they are shovel-ready and the funding or subsidies can be released immediately.

**Potential for long-term economic transformation:** We can advance the transition to low-carbon sectors to achieve equitable and long-term sustainable growth in line with global climate goals. This criterion assesses the extent to which investments will lead to long-term transformation by examining the degree to which governments can generate new revenue and reduce future costs. It also analyses the investment costs and whether the investments will shift the sector to a low-carbon trajectory. A score of 1 indicates no easing of the net fiscal burden (generating new revenue or reducing future costs) and that a business-as-usual trajectory is maintained. A score of 2 indicates that the investment encourages green transformation and that some new revenue or cost reductions will be generated. Finally, a score of 3 indicates that the investment spurs innovation and green sector reforms, generates revenue and reduces future costs.

**Transitionality:** Stimulus measures should be temporary, with funding provisionally available. However, the timeline for a full recovery is uncertain; it is important that governments can ease stimulus measures quickly in the case of a sharp recovery to minimize their growing and already-large debt burdens. This criterion assesses the extent to which governments can remove or curtail funding and the impact that this would have on the investment or policy's outcome. A score of 1 indicates that the funding will be difficult to remove before the project is completed (2+ years). A score of 2 indicates that the funding can be removed, but that this could lead to partial loss or reduced impact. A score of 3 indicates that the policy's funding can be discontinued at any time or is composed of increments that can be discontinued in the event of a sharp recovery.

We used these criteria and two others to assess COVID-19 stimulus measures and their green employment and growth potential in Vivid Economics' 2020 [Green employment and growth report](#).<sup>vi</sup>

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## Endnotes

i Arctic Human Development Report (2014). <http://norden.diva-portal.org/smash/get/diva2:788965/FULLTEXT03.pdf>

ii This definition excludes the Arctic Nunavik region of Quebec and Nunatsiavut in northern Labrador. We made the decision to exclude these sub-regions because the rest of Quebec and Labrador cannot be considered Arctic, and the excluded regions are marginal in comparison.

iii The GSI considers national funding only, not EU funding or international aid.

iv The key indicators used to construct baseline performance are the [Climate Action Tracker](#), [Environmental Performance Index](#) and [Germanwatch Climate Change Performance Index](#).

v In each sector, bailouts refer to capital injections or financial assistance to businesses or industries to save them from collapse.

vi Vivid Economics (2020). <https://www.vivideconomics.com/wp-content/uploads/2020/07/200720-green-labour-note.pdf>