Principles for a Green Energy Transition

Signs of the growing climate crisis are all around us. Fortunately, signs of the huge potential for a green energy transition that can help us meet critical emission reduction targets are also growing stronger and stronger. Renewable energy deployment is booming worldwide and technologies continue to improve — and drop in cost. Storing energy from intermittent sources like solar and wind is becoming ever more viable thanks to solutions like battery storage banks. Meanwhile, the shift to electric vehicles is accelerating faster than most in the automotive industry ever expected. Interest in things like heat pumps is following a similar faster-than-expected trajectory as people embrace the benefits of high-efficiency, low carbon systems.

This critically important transition will, however, come with new demands for resources and serious environmental impacts. Understanding how to minimize these impacts as we move forward with climate solutions is important to maximize the benefits of adopting green solutions. For example, securing the metals needed to build solar panels or batteries may mean opening many new mines. Everything from where these mines are located to what lower impact alternatives exist (from different technologies to recovered materials) is something that will have to be considered carefully before proceeding. The following principles are meant to address how Canada can approach the fast-moving shift to green technologies in a positive way that makes the most of this transition for our climate and our communities.

Ensuring that we make the most of the resources and energy we use

To minimize the impacts of mining, it's crucial to maximize resource efficiency to reduce the demand for new materials while meeting the goals of a green energy transition.

In transportation, this requires:

- **EV battery recycling:** Canada should support ambitious battery recycling and reuse (e.g., for utility-scale power storage) to minimize the demand for new raw materials. Canadian companies should be strongly encouraged to join the Global Battery Alliance and to adopt best practices for recycling and reuse.
- **Electric vehicle efficiency:** Just as automakers have needed to improve fuel efficiency to save drivers money and reduce GHG emissions from gasoline vehicles, the same principle of energy efficiency must be applied as we transition to zero-emissions vehicles. Requiring electric vehicles to meet a kWH/km electricity consumption standard will encourage a shift towards the production of smaller, lighter vehicles, less resource-intensive batteries and the use of more innovative battery chemistries.
- **Reducing car dependency:** Transitioning to EVs is not an end-all solution to reducing transportation emissions. The government must also invest in infrastructure and support changes in land-use planning in cities to shift travel demand towards more public and active modes of transportation.

In the power sector, this requires:

- **Deep energy efficiency:** The least costly and lowest impact way to meet our energy needs is to improve energy efficiency. Smart systems and new technologies, such as heat pumps, LED lighting and AI building controls, can massively reduce the need to build new power genera-

tion infrastructure. Distributed power systems, such as rooftop solar, can also meet power needs more efficiently by locating power generation much closer to where it is needed and maximizing available power in peak periods (hot summer days).

- **Integrated and diverse systems**: Instead of the old, centralized model of power production, combining multiple renewable sources can create important synergies, such as combining wind power that is strongest in winter and at night with solar power that is strongest in summer and daytime. Combining new renewable sources with existing waterpower systems can also enhance storage of intermittent power with less need to "over build" new renewable sources. Similarly, using EV batteries to store power and feed it back to the system in peak periods makes much greater use of vehicles that sit idle 95% of the time on average.

Make our economy circular

Adopt strong policies and incentives to shift Canada toward a circular economy, one that prioritizes reducing resource demand to more sustainable levels and ensuring our economy functions within planetary limits.

A circular economy is about much more than recycling. It requires a shift to meeting human needs without overrunning planetary limits by redesigning processes, services and products to lower their environmental impact and reduce pressure for more resource extraction. From shifting to meeting needs by providing services rather than products and extending the life (and repairability) of products to substituting materials with a lower environmental footprint, simplifying product design to reduce hard-to-reuse material mixes, and changing codes and standards to incent better design, the circular toolkit is deep. One of the most important elements of circularity is reducing "induced demand" — the demand driven by things like planned obsolescence, single-use products and relentless pressure to buy new (and often wastefully oversized) products.

Canada lags Europe and countries such as China and Japan in circularity and our current economy is only minimally circular. The federal government needs to develop a national circularity strategy with buy-in from provincial and territorial governments because coordination of efforts is going to be the key to success. Whether it is creating industrial material exchanges or ratcheting up collective levels of material recovery, reuse and recycling or developing common standards for product design and durability, governments have to go far beyond current basic level programs and deliberately design circularity into processes, from resource extraction and production to resource recovery.

Do mining right

The development of new mining projects must be approached with greater attention to the broader cumulative effects of such projects on biodiversity, climate change and water systems and with the full participation of Indigenous communities in informed decision-making processes that lead to true consent.

Canada, as the home to many of the world's largest mining companies, must develop mechanisms to ensure the industry is held to the highest possible standards for respect for Indigenous rights, human rights and protection of the environment. At a minimum, all new mining projects in Canada must be certified by the Initiative for Responsible Mining Assurance as complying with best practices on an ongoing basis.

In order to properly understand the potential impacts of a proposed mining project, Canada must move beyond project-level environmental assessments and properly consider how such projects may

contribute to cumulative impacts on biodiversity, waterways and natural carbon storage using tools such as Regional and Cumulative Assessments. Characterizing such assessments as "red tape" or "barriers" reflects a poor understanding of the significant trade offs involved in developing mining projects whose impacts must be fully understood and mitigated before projects proceed, particularly in intact ecosystems. Building comprehensive scientific baselines of current conditions and ensuring Indigenous communities have the capacity to fully engage in decision making is the best way to expedite decision making instead of cutting corners on rules and regulations meant to protect vital natural services and communities.

Prior to approval of any new mining activity, an assessment of potential impacts on stored carbon and carbon sequestration potential due to the landscape change should be required. An assessment of potential impacts on carbon sinks and the net carbon balance of projects will help ensure that mining activity is compatible with meeting national climate targets.

Recovering minerals from tailings and reassessing the potential of decommissioned mines, and examining opportunities in close proximity to existing infrastructure should all be prioritized over opening up new greenfield mines that would cause irreparable harm to intact ecosystems, communities, carbon sinks and habitat for threatened wildlife.

Governments should also be clear about the actual end uses of mined metals and avoid projects that contribute minimally to a green transition and where material recovery or substitution or demand reduction offers a more sustainable solution.

Green transition initiatives must also include a firm commitment to meeting the goals of the Kunming-Montreal Global Biodiversity Framework, which includes a target of conserving 30 percent of the world's lands and oceans by 2030, recognition of Indigenous rights, and Indigenous leadership in conservation. This must include prohibitions on prospecting, staking, exploration and mining in protected areas and support from the mining industry for the creation of new protected areas and Indigenous-led conservation initiatives in Canada.

We must avoid deep-sea mining that would cause irrevocable harm to the ocean floor, wildlife and weaken the global role and importance of oceans as a climate regulator for the planet.

Ensuring mining embraces environmental justice

Environmental justice seeks to ensure that environmental risks and burdens are distributed fairly in society. Mining projects raise major environmental justice concerns in terms of who benefits and who bears the health, environmental, social and economic risks and costs of mining projects.

There are five major components to ensuring that mining projects deliver environmental justice:

- **Environmental, health and community impacts:** Mining is a very high impact activity that generates toxic waste streams that can require management for millennia. Mine sites in Ontario have left a legacy of environmental contamination, including acid waste drainage and tailings containing heavy metals and toxic chemicals. Environmental justice requires that the environmental, health and community impacts be fully considered in assessing whether mining developments are appropriate. Moreover, mine projects should not be approved where these impacts are unacceptable to the affected communities.
- **Public participation:** Environmental justice requires that individuals who may be directly impacted by mining have the right to meaningfully participate in decision-making. The decision-making process should be transparent and provide the public with a full understanding of the impacts, risks, costs and benefits associated with mining projects and the distribution of these risks and costs in society. For Indigenous communities in particular, projects must

be developed in compliance with constitutional duties and consistency with the principles established by the *United Nations Declaration on the Rights of Indigenous Peoples*, including "free, prior and informed consent."

- **Equitable revenue sharing:** Environmental justice requires that there should be an equitable distribution of the revenue from mining projects to the communities that bear the health, environmental, social and economic impacts of mining development.
- **Mine closure and clean-up costs:** Environmental justice requires that a mine closure plan and funds to cover clean-up costs are in place prior to the commencement of mining operations so that these costs are not borne by the public. In addition, provinces must have an effective strategy for securing and cleaning up orphaned and abandoned mine sites prior to approving any further mining development.
- **Full life-cycle impacts:** The environmental, health and community impacts of mining do not stop at the mine site. Mined materials are then processed and manufactured into products that are either (partially) recovered or disposed of after use. Environmental justice requires that the downstream environmental, health and community impacts of mined materials be accounted for and addressed as part of a full life cycle (or cradle-to-grave) approach. For example, mined materials used in batteries and electronics are a growing source of waste and pollution. If not handled properly, they can release toxic materials, causing environmental and human health problems.

Make Indigenous Nations co-governance standard practice

Mining development proposed on Indigenous Nations' territories should proceed on the basis of shared decision-making with the Nation (or Nations) from the outset, with the Nation retaining ultimate decision-making authority as to whether the project proceeds.

The paradigm of Indigenous consent being sought *after* mining exploration has taken place and development is being proposed on Indigenous territory has become a largely empty exercise that undermines, rather than respects, Indigenous sovereignty.

Canada has now committed in law to uphold the principles enshrined in UNDRIP, which include free, prior and informed consent and the principle that Indigenous peoples have the right to develop and control their lands and resources, as well as set priorities for the development and use of their lands and resources.

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