Multisolving co-benefits for En-ROADS

Energy Supply

Renewables

Subsidizing reduces air & water pollution, improves health, productivity, savings, energy access, and job opportunities.



Coal

Taxing reduces chance of harmful oil spills. Improves national security & lowers military costs.

Taxing improves water

security & quality, protects

wildlife and biodiversity.

Taxing frees land for food

production. Improves

water & air quality,

protects habitats.

Bioenergy

Taxing reduces air and

community and

ecosystem health.

water pollution, improving



Natural Gas

Nuclear

Research advancements in new technologies can create jobs and may be useful for other

New Zero Carbon

Taxing reduces risk of

nuclear meltdown or

hazardous waste.

of uranium miners.

Protects health

exposure to radiation from

applications.

Carbon Price

Improves air quality, healthcare savings, & worker productivity. Makes renewable energy relatively cheaper. Funds can be earmarked for social programs.

Transport

Energy Efficiency

Increasing lowers energy costs. Improves public transit reduces traffic congestion & noise. Biking & walking increases physical activity & health savings.

Electrification

Increasing creates jobs in manufacturing & sales of electric batteries & engines. Improves air quality at the source. increasing health savings & worker productivity.

Buildings & Industry

Energy Efficiency

Increasing reduces energy demand & cost. Improves indoor air quality & health outcomes. Creates weatherization jobs.

Electrification

Increasing reduces noise pollution from motor engines, generators, & furnaces. Lowers energy costs. Improves indoor and outdoor air quality.

Economic Growth

happiness.

Growth

Population

Access to family planning, reproductive services, & education enhances quality of life for women.



& sustainable forestry

Carbon Removal

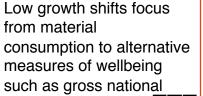
Afforestation

livelihoods.

Increasing creates jobs in tree planting & care. Urban tree canopies reduce urban heat island effect which conserves energy.

Technological

Growth in nature-based carbon removal approaches like agricultural soil sequestration may help improve small-holder and farmer profits.







Land and Industry Emissions

erosion, protects pollution & protects marine habitats. Plantbiodiversity. ecosystems, & food based diets are healthier sources. Preserves smallfor individuals and scale resource gathering ecosystems.

Equity Considerations for En-ROADS

Energy Supply

Taxing raises energy costs. Low-income individuals rely on coal jobs yet suffer the most negative impacts of its_ production.

Oil

Coal

Industry protections must be eliminated. Essential to provide low skill and high skill workers new job pathways.

Natural Gas

Poor communities & communities of color experience negative impacts of drilling and burning.

Bioenergy

Subsidizing may accelerate deforestation and can negatively impact farmer livelihoods by shifting agriculture markets.

Renewables

Many developed countries limit subsidy programs to homeowners. Poorer communities remain unable to access the technology.

Nuclear

Plants, mines, & waste sites often located in lowincome areas that lack resources to advocate for stricter regulations

New Zero Carbon

There are unknown consequences and risks associated with new energy sources.

Carbon Price

Fossil fuel workers risk losing their jobs. Higher costs may be passed on to consumer. Companies can find loop holes or exemptions due to corruption & rent-seeking.

Transport

Energy Efficiency

High-quality pedestrian & cycling infrastructure is often concentrated in wealthier, white communities. Improved public transportation can improve social equity.

Electrification

Electric vehicles and charging stations are not affordable or available to everyone. Lithium and copper mining severely harms ecosystems.

Buildings & Industry

Energy Efficiency

High up-front costs of efficiency improvements. Policies often directed to property owners, inhibiting low-income renters from accessing the benefits.

Electrification

High up-front costs of switching energy systems to electric. Household air pollution is unevenly distributed within and across countries

Growth

Population

Policies around limiting population growth should be voluntary, accessible, & empower women to make the choices that are best for them.

Economic Growth

Gains in growth have gone to the world's wealthiest in recent decades. Policies must be tailored to specific local and regional circumstances.

Land and Industry Emissions

Deforestation

Preservation efforts have restricted the access of Indigenous people who have lived sustainably on the land for generations. Policies to reduce deforestation need local stakeholder engagement.

Methane & Other

Cultural values attached to certain foods. Policies to reduce methane & other gases may decrease food security. Local economies and employment that rely on industrial agriculture can be threatened.

Carbon Removal

Afforestation

Large shifts in land can compromise historic land access. Policies to grow afforestation should avoid creating monocultures of trees that are all the same species & age.

Technological

Many approaches have not yet been developed at scale and growing technological removal poses unknown risks and consequences to the communities they are situated within.

