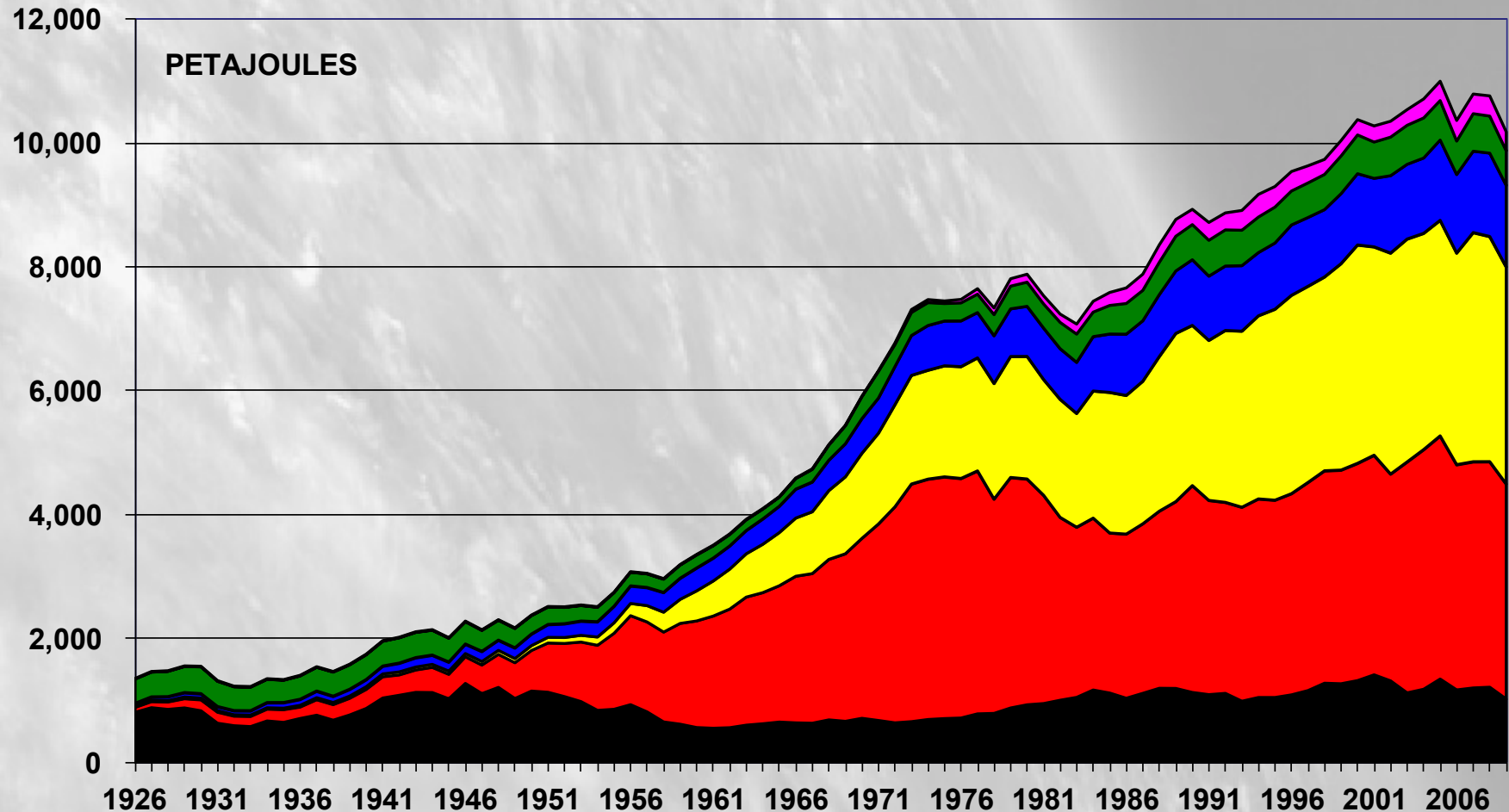




# House Rules

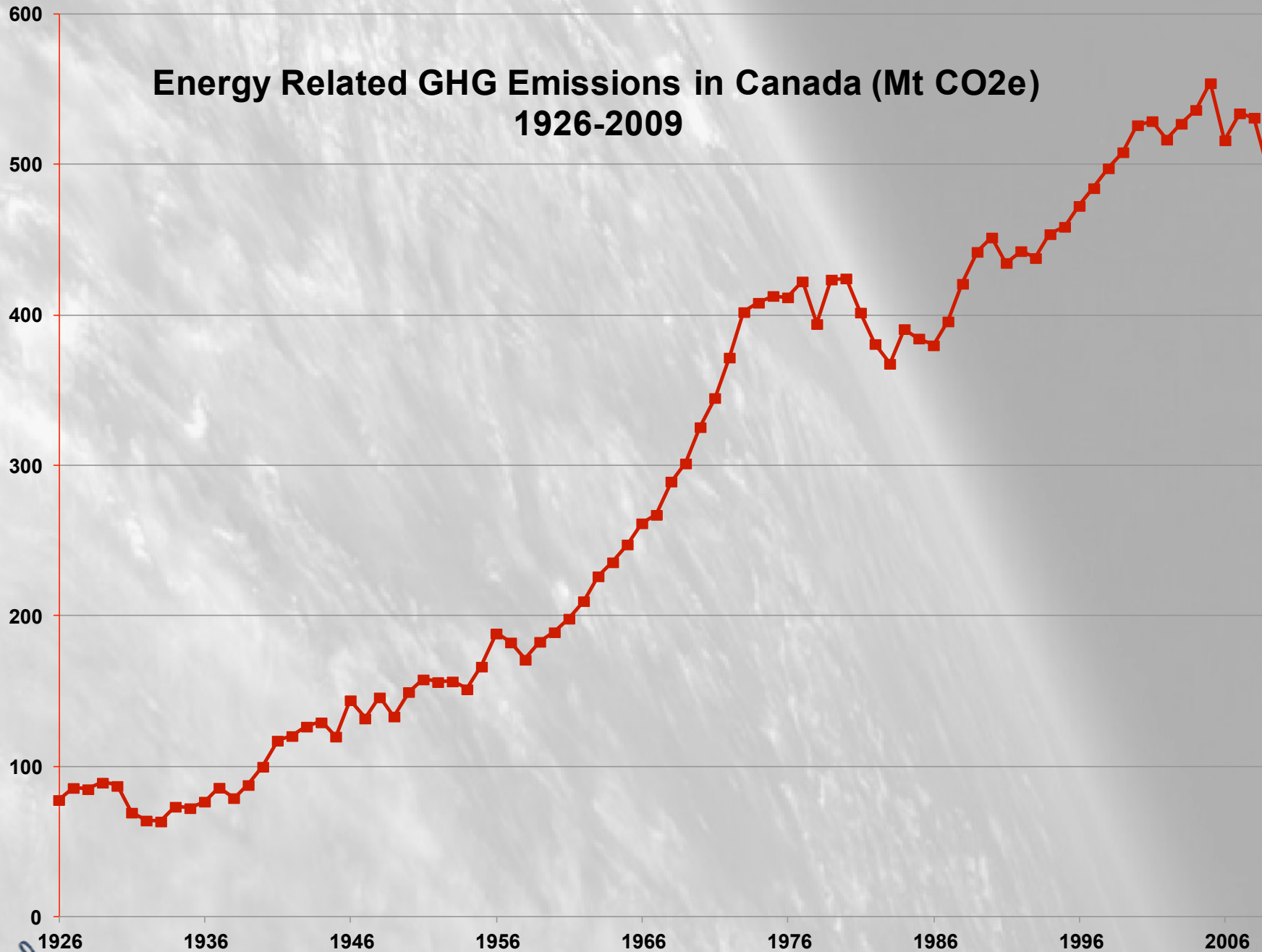
- Everything goes somewhere (There is no waste)
- Everything is connected (You can never do only one thing)
- Nature is an independent power (Laws of physics and chemistry are non-negotiable)

# Primary Domestic Energy Demand 1926-2009

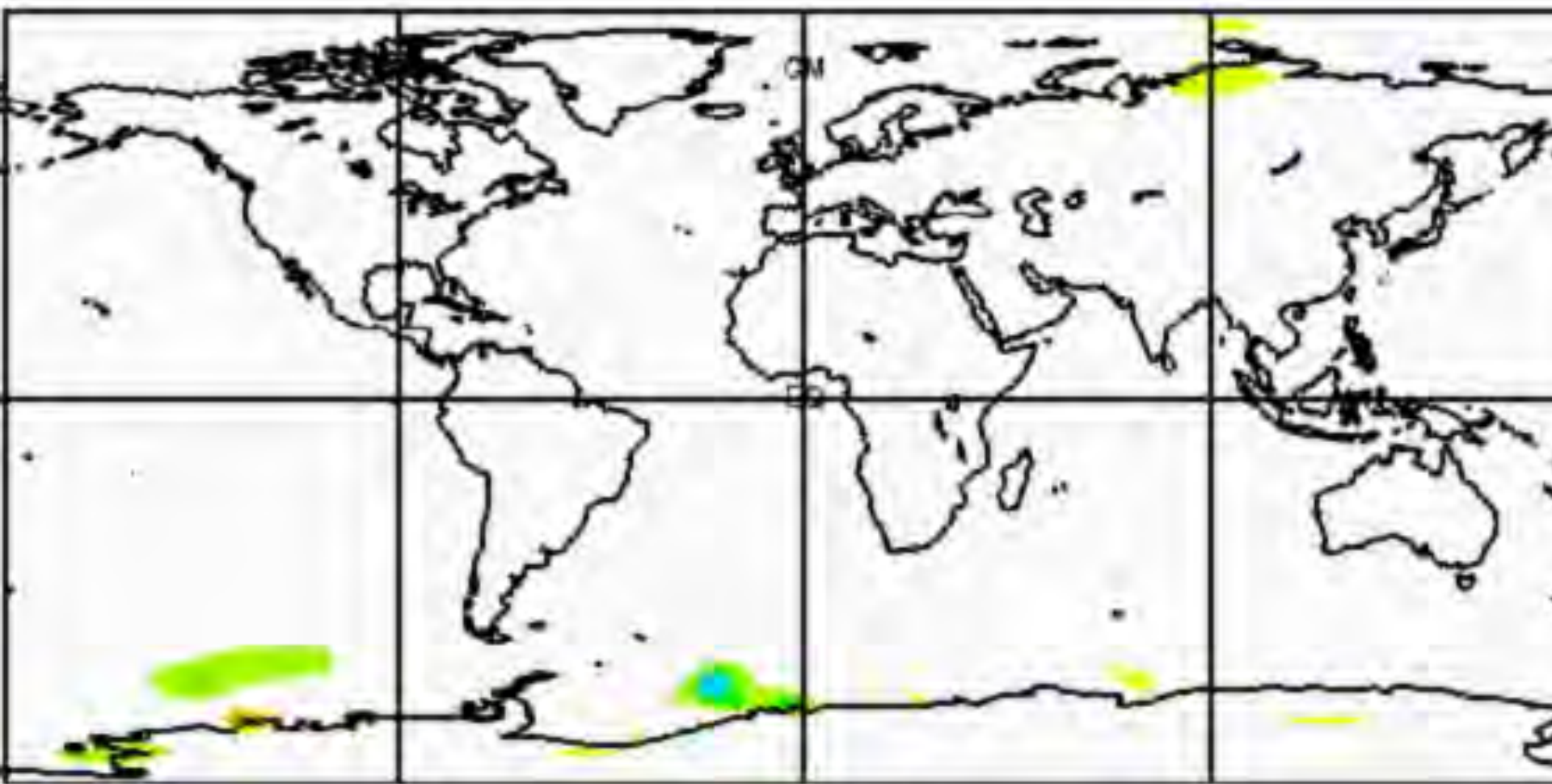


■ Coal ■ Petroleum ■ Natural Gas and NGLs ■ Hydro ■ Wood ■ Nuclear

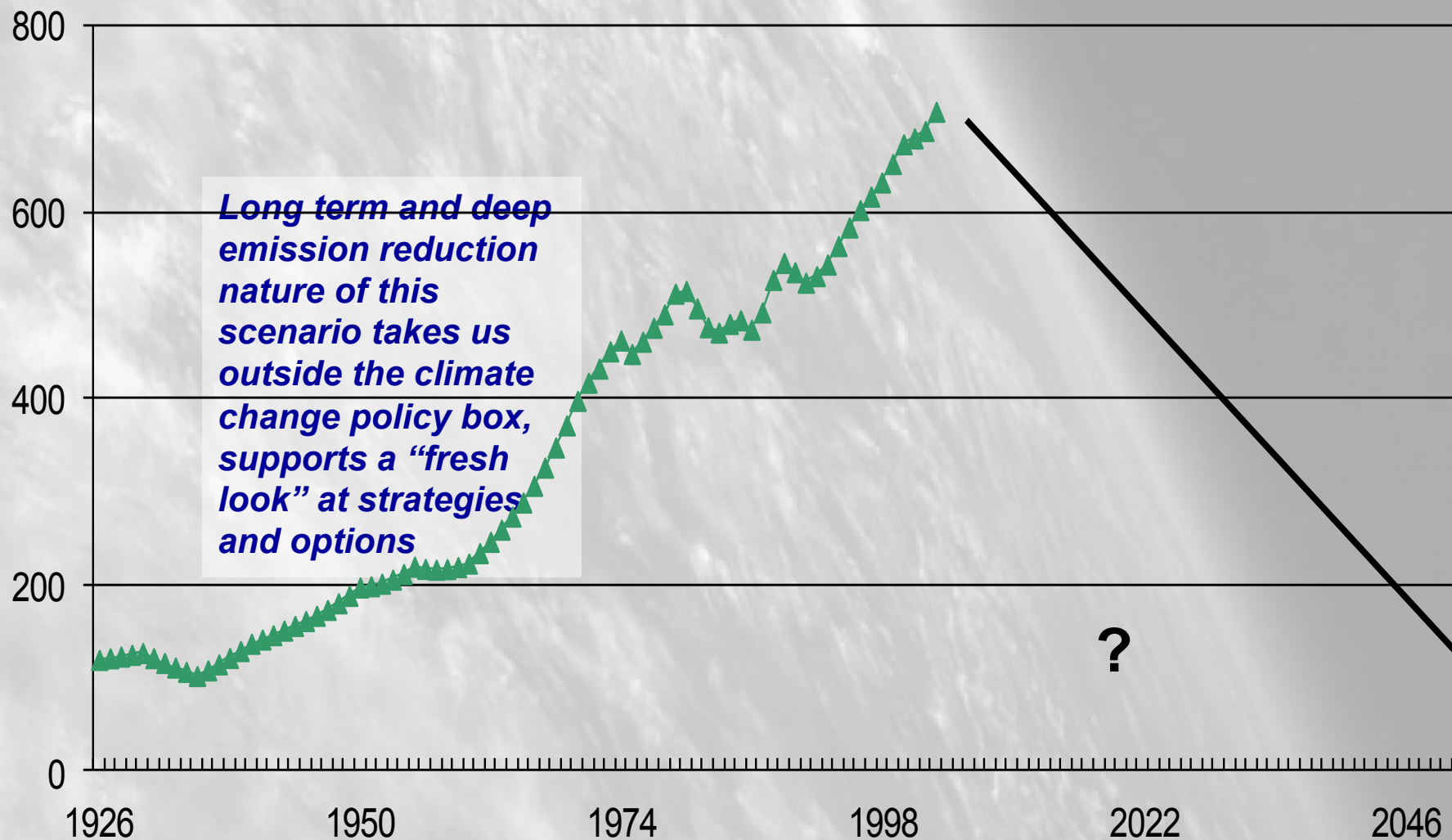
# Energy Related GHG Emissions in Canada (Mt CO<sub>2</sub>e) 1926-2009







1991



# Toward a Low-Carbon Future for Canada:

## *Three broad levers available to lower emissions:*

Consumption Per Unit of Activity	Decarbonization/ Fuel Switching	Activity Level
<ul style="list-style-type: none"><li>• The efficiency with which fuel, electricity are used to deliver energy services</li></ul>	<ul style="list-style-type: none"><li>• No- and low-carbon fuels</li><li>• Carbon capture</li></ul>	<ul style="list-style-type: none"><li>• The level and pattern of activity in the economy that generates demand for energy services</li></ul>

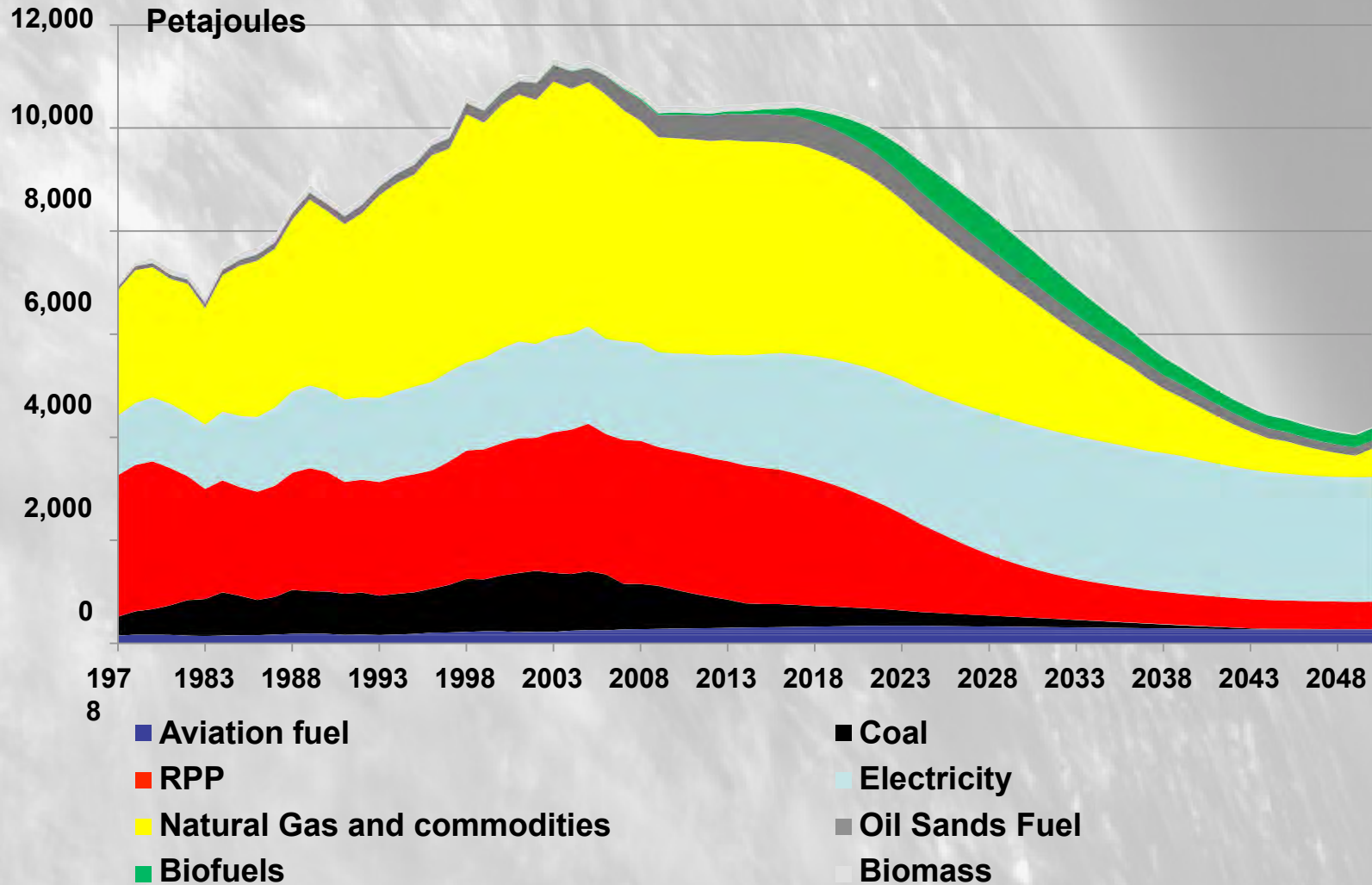
\* Carbon management (CCS) considered final lever due to cost/tonne

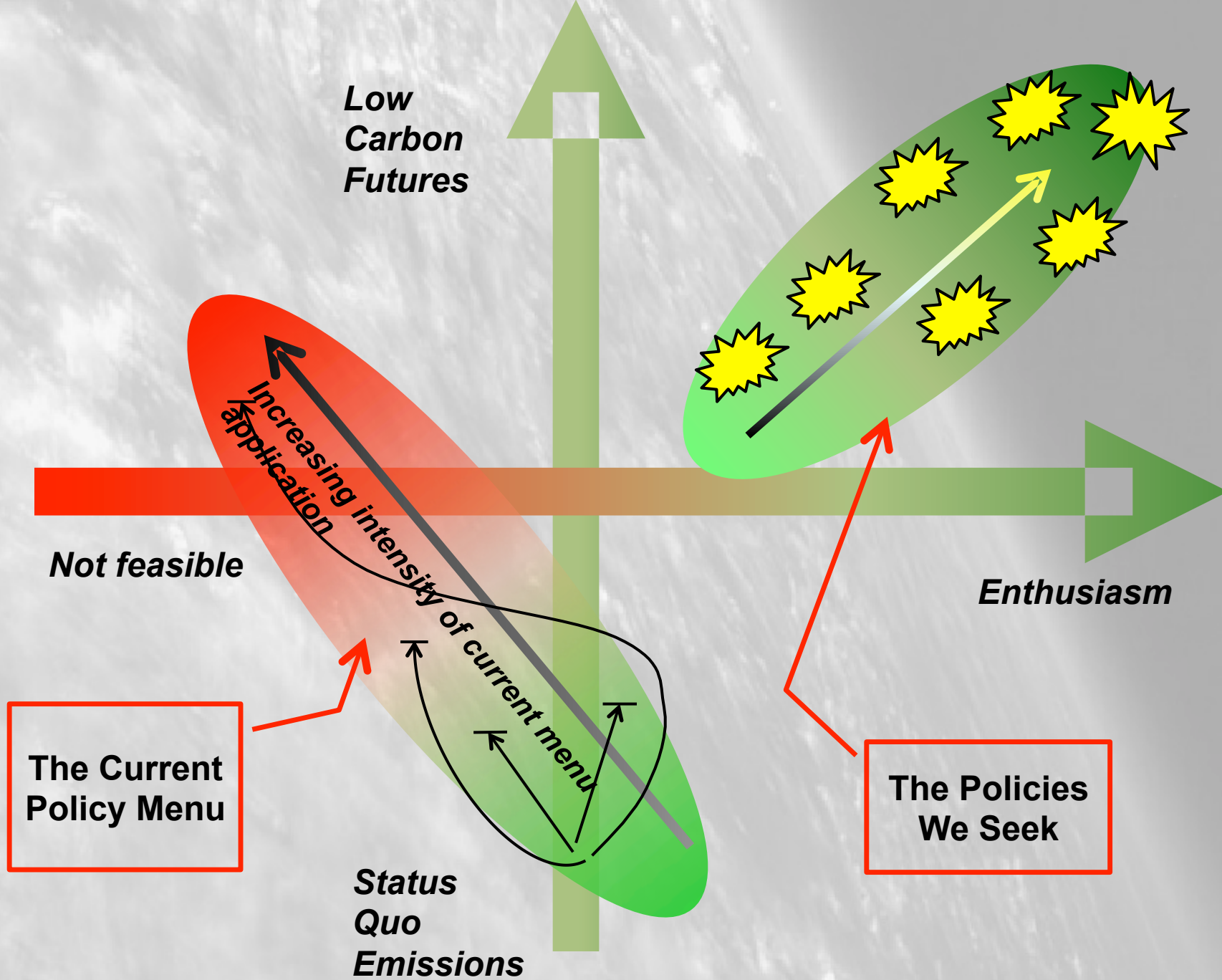
# Low Carbon Energy Futures – Essential Elements

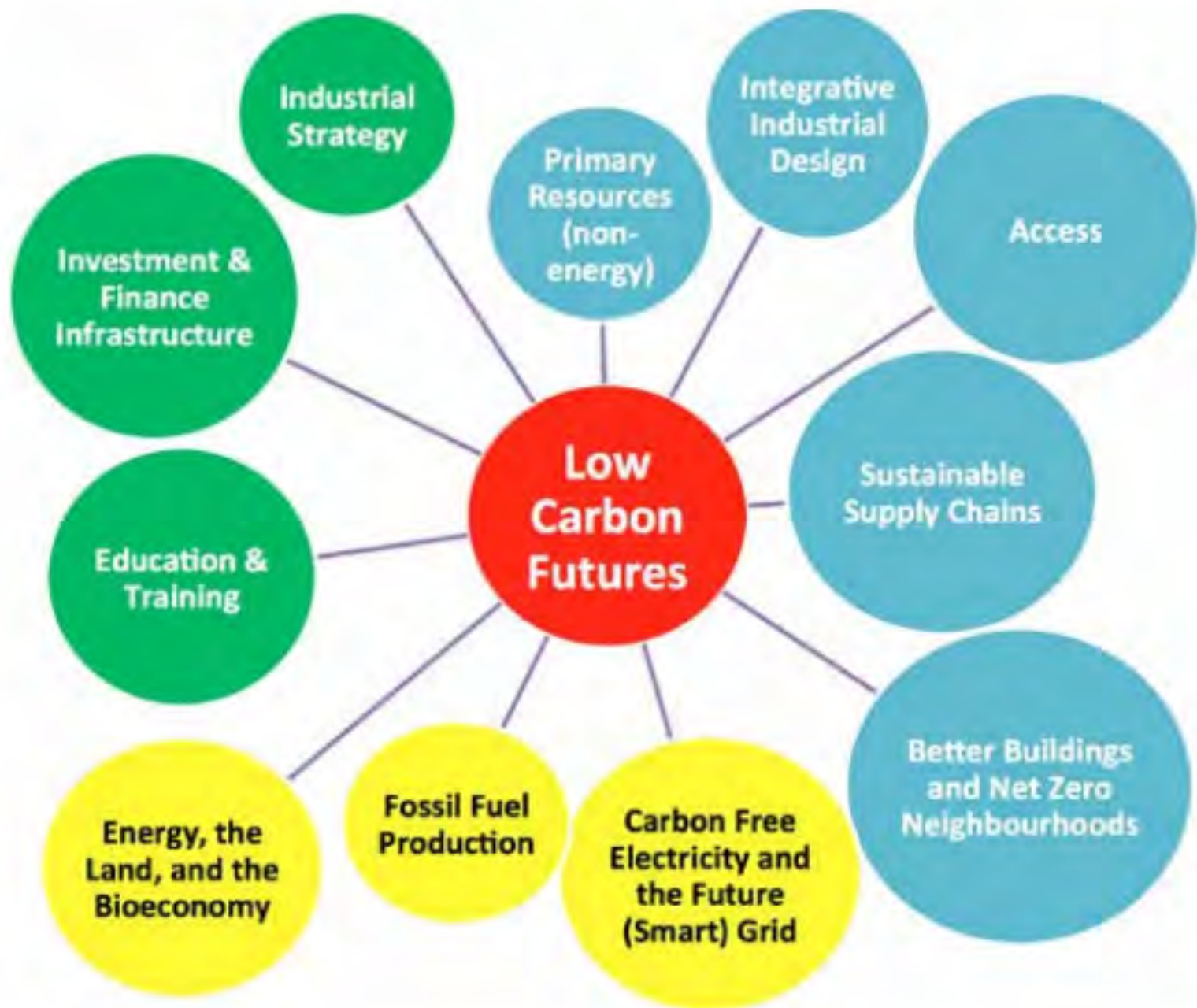
- **Efficiency, efficiency, and then more efficiency**
- **Electricity's role expands into transportation and, in some cases, heat**
- **Decarbonize the electricity supply**
- **Sustainable production of biofuels**
- ***Reduce the role of fuel and electricity in provision of human needs, amenities***



## Illustrative Low-Carbon Energy Transition for Canada...





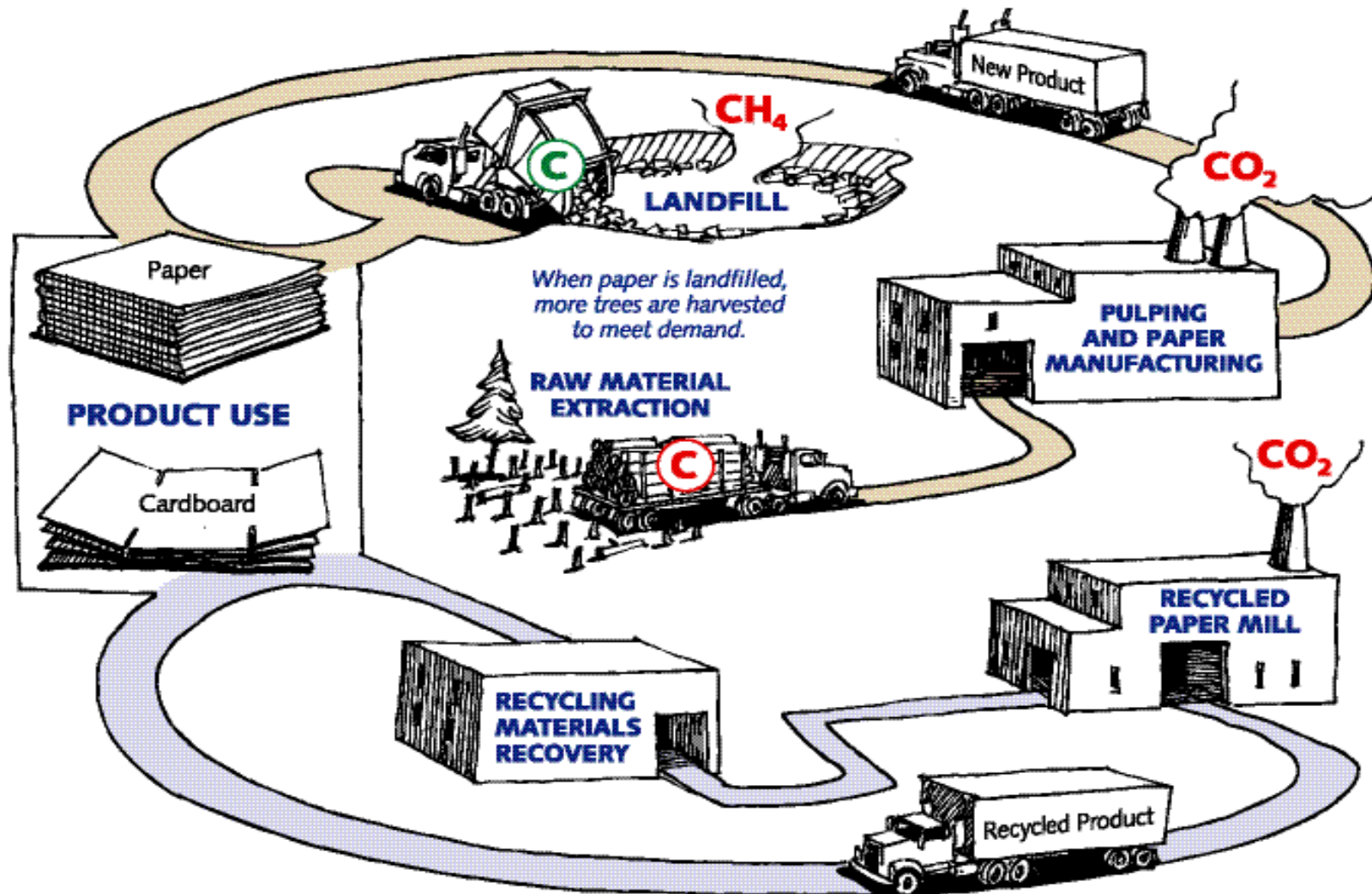




# Example Life-Cycle Analysis: Paper

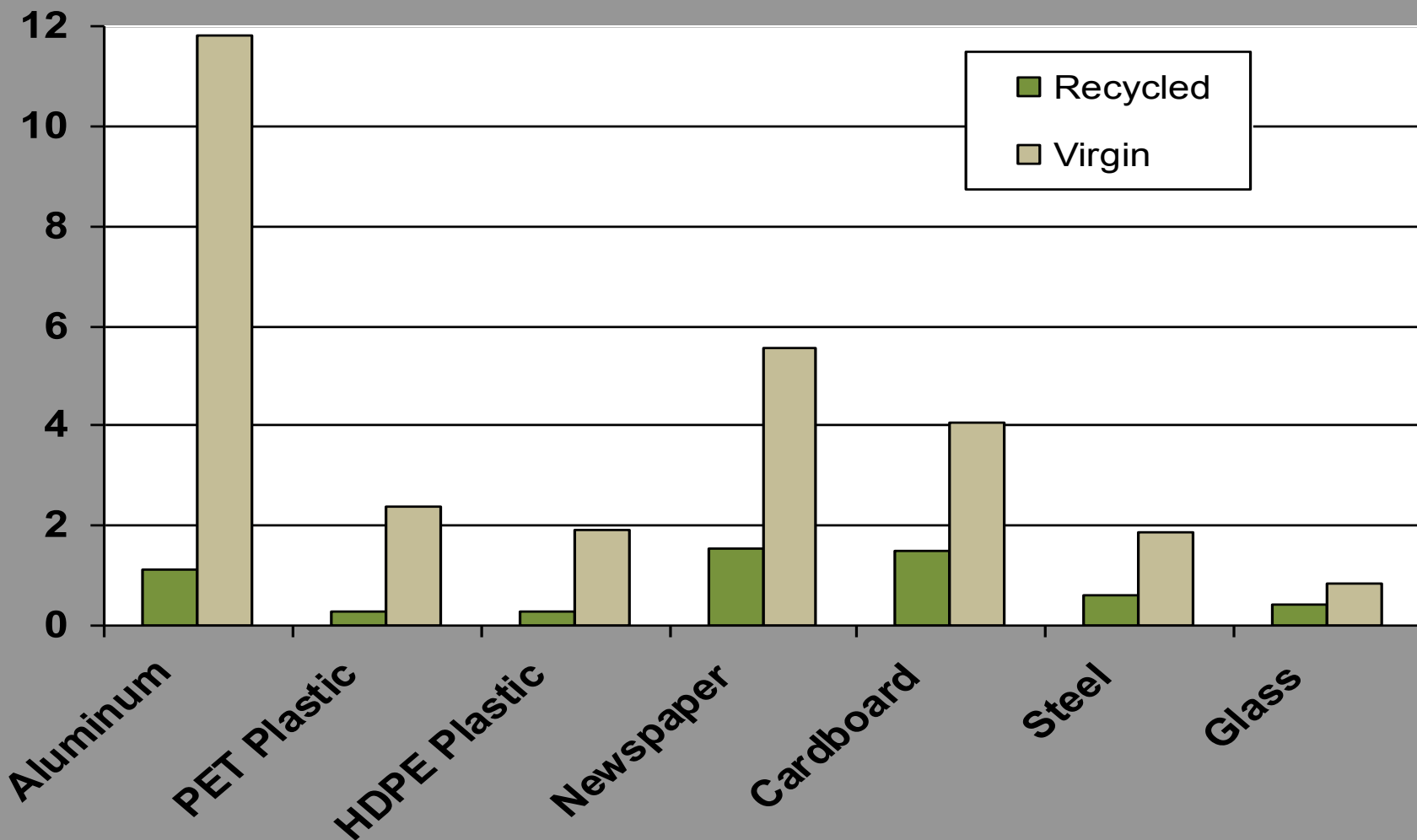
## GHG Emissions and Sinks for Paper

Life Cycles for Landfilling vs. Recycling





# CO<sub>2</sub> Emissions: Recycled & Virgin Content Products (kg eCO<sub>2</sub>/kg)



Source: Dr. Jeffrey Morris, Sound Resource Management

# QUANTIFICATION PROTOCOL FOR RECYCLING (MATERIAL SUBSTITUTION)

Version 1.6 (Draft)

June, 2014

Specified Gas Emitters Regulation

**Government  
of Alberta** 

*Alberta* 

## TECHNICAL SEED DOCUMENT FOR THE QUANTIFICATION PROTOCOL FOR RECYCLING (MATERIAL SUBSTITUTION) (VERSION 3.0)

Version: 3.0

Specified Gas Emitters Regulation

June, 2014

**Government  
of Alberta** 

*Alberta* 





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