Costs of Pollution in Canada

Measuring the impact on families, business and governments

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Why measure the costs of pollution?

- Canadians understand that a clean environment is key to their health and well-being
- There is too little information about pollution and its costs to make good decisions
- Our goal was to better equip Canadians and their leaders to balance the trade-offs between pollution's costs and the benefits of the activities that lead to its creation
- GDP does not reflect pollution's costs because so many of them are externalized and, therefore, not properly captured by market prices

How does pollution cost us?

Three ways:

1. It affects our health directly (e.g., asthma and heart attacks), which lowers our quality of life (economists can put values on these losses)

2. It costs us money out of our pockets (e.g., for medications, health services and clean up of contaminated sites)

3. It damages homes, bridges, buildings, forests and wetlands, lowering their values as assets

What we found overall

Pollution costs Canadians tens of billions of dollars every year, *at least*

The actual cost is difficult to estimate because of data gaps

This amounts to *at least* $4,300 for an average family of four

We believe the actual amount might be twice this high

A big question mark is the cost of “persistent organic pollutants”

POPs are things like pesticides, plastic additives and flame retardants that most of us are exposed to on a daily basis

Recent research suggests their cost alone may be tens of billions in Canada

We need to know more about this in order to take proper action

Detailed Findings

Urban Smog

- Of the pollutants we could put a value on, urban smog was the most costly
- Smog is made up of very fine air particles ($PM_{2.5}$) and ground-level ozone
- The latest figures from the World Health Organisation suggest that about 7,712 premature deaths occur in Canada each year due to urban smog
- The cost of this is estimated to be $36 billion

Contaminated sites

- Thousands of sites across the country are contaminated with pollutants from past activities:
  - Mines, industrial facilities, gas stations, military bases
  - These sites can end up as the government's responsibility when companies declare bankruptcy

- The federal government alone spends about $280 million annually to manage sites under its jurisdiction
  - This figure will rise as more sites undergo clean-up
  - The federal and provincial governments recognize total future liabilities of over $12 billion

- The Giant Mine in Yellowknife alone is expected to cost the federal government $1 billion to clean up

Extreme weather

- Climate change is wreaking havoc with weather systems, with enormous costs

- It's hard to attribute any individual event to climate change, but the trend is clear

- Canada saw six straight years of insurance losses exceeding $1 billion from 2009 to 2014
    - In contrast, insured losses averaged only $400 million annually between 1983 and 2008
        - Only two years saw losses exceeding $1 billion
    - Storms previously expected only once every 40 years are not expected every 6 years
    - Fort McMurray wildfire cost $3.58 billion; no word yet on this summer's fires in B.C.
    - Hurricane Harvey is said to have cost US$180 billion

Extreme weather

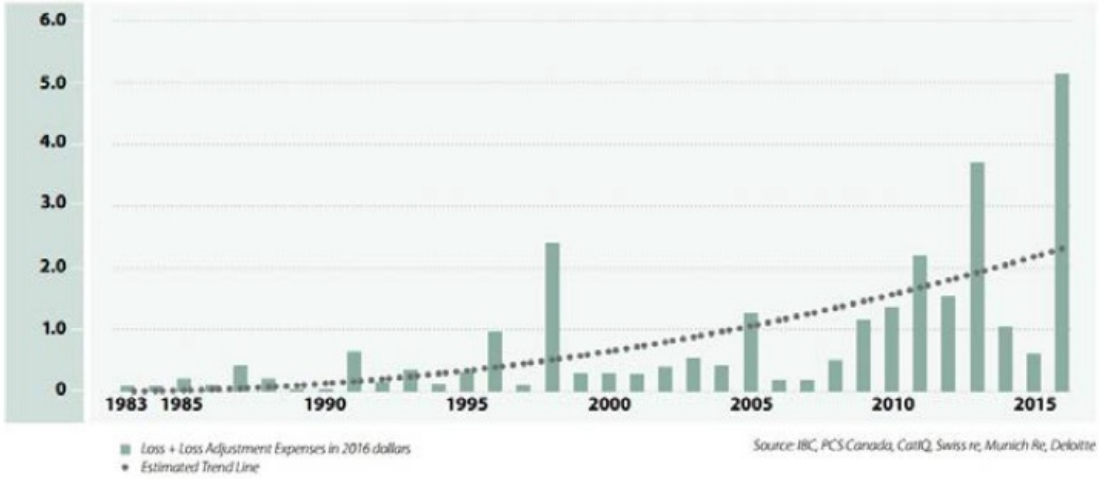

Figure 20. **Catastrophic insured losses from natural disasters, Canada, 1983–2016**

Source: Insurance Bureau of Canada, 2017.

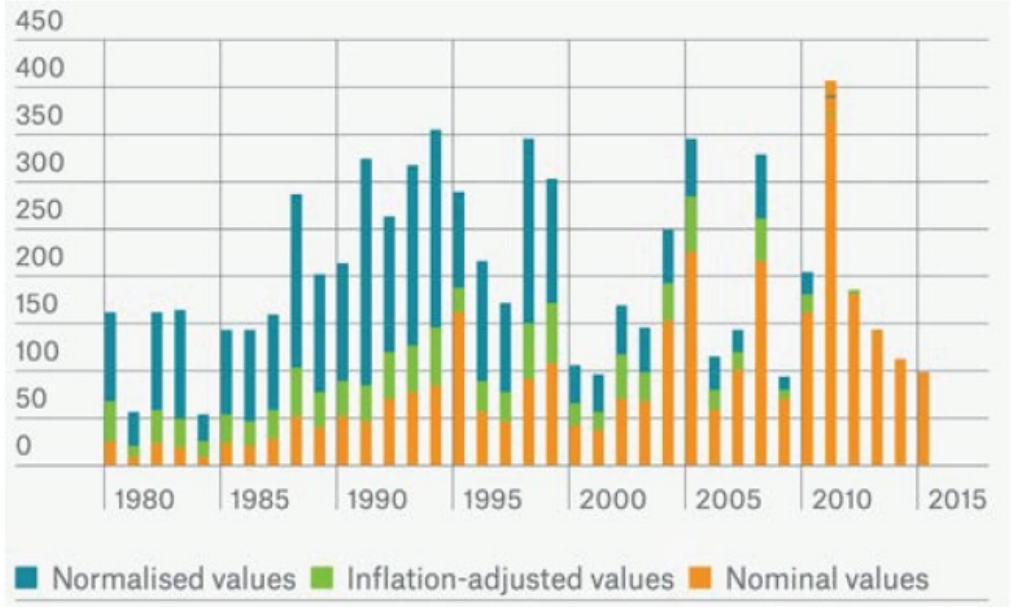

Figure 21. **Nominal, inflation-adjusted and normalized trends in global insured losses due to natural disasters, 1980–2015**

Source: Munich Re, 2016.

Freshwater pollution

- With the growth of urban developments and the expansion of agricultural production, there is increased pollutant run-off into freshwater bodies
- Example: Phosphorous is among these pollutants, primarily from fertilizers
    - As a nutrient, phosphorous can cause massive plant growth
    - When introduced into the environment and water bodies it can cause algae “blooms”
        - Potentially toxic to humans
    - Lake Erie and Lake Winnipeg are seriously impacted
    - Lake Erie’s value as an ecosystem asset has declined by over $9 billion as a result

Table 10. **Costs of Lake Erie Algal blooms, 2015**

Ecological good/service	Annual cost ($million)	Costs considered
Tourism	110	Reduced value added of the tourism industry due to lost business as a result of reduced numbers of visitors to the lake.
Non-users	94	Reduced utility due to reduced well-being associated with knowledge of the lake's condition.
Recreational users	21	Reduced utility due to reduced enjoyment from beach activities, fishing, boating, birdwatching and hunting.
Commercial fishing	5	Reduced value added due to reduced flows or quality of freshwater fish and/or increased costs to harvest fish.
Water users	4	Increased capital and operating costs due to reduced raw water quality for industries (principally municipal drinking water treatment plants) that use water from the lake.

Source: Midsummer Analytics and EnviroEconomics, 2015.

What we should be doing

Improve basic measurement of pollution flows

There are many pollutants that we simply don't measure well enough

Conduct more research on the costs of these pollutants

Knowing how much pollution released is one thing, but understanding the costs is quite another

Costs help us to assess where to invest scarce funds in pollution management

We need to know more about key pollutants and environmental factors including:

- POPs
- Heavy metals
- Acid rain
- Road salt
- Noise pollution
- Climate change

Thank you

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