

# Environmental Benefits of Improved Air Quality

Reducing air pollution provides numerous benefits for the Canadian environment and economy.

## Smog Externalities

### Agriculture

Ozone interferes with the growth of many agricultural crops including soy, wheat, and canola. Reduced productivity is costing Canadian farmers millions each year.

### Forests

Ozone exposure reduces tree growth and also increases the vulnerability of trees to pests and other stressors. Reduced forest productivity is costing Canadians millions each year.

### Visibility

Elevated PM episodes reduce our ability to see clearly and over distances, diminishing the well-being of Canadians.

### Other environmental issues

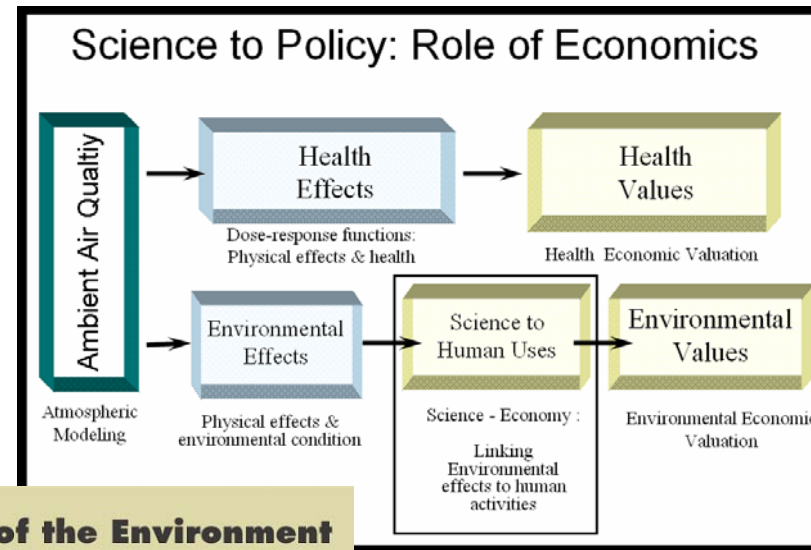
It is presently challenging to determine the long term damage smog is causing to the environment, and the ecological services it provides.

The effect of prolonged ozone exposure on plants and wildlife needs to be determined.

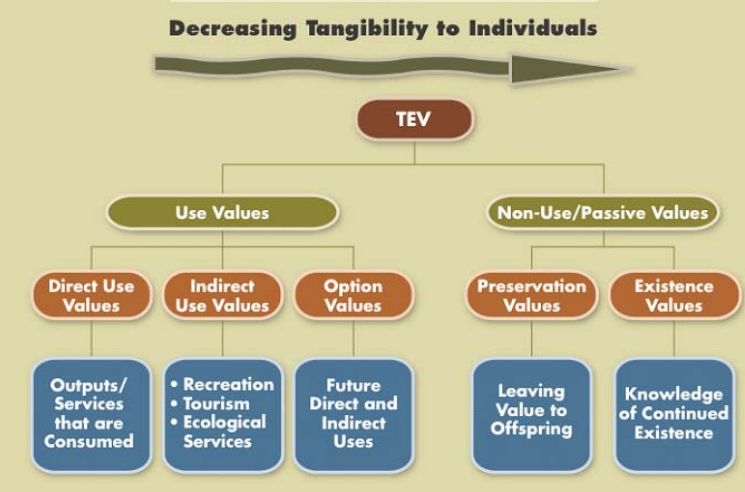
Developed by the Environmental Economics Branch, EC  
<http://www.ec.gc.ca/erad/>

## Valuing Impacts ...

To Estimate the value of physical damages, we need to link them with human activity.



## Total Economic Value of the Environment



## ... using TEV

Using the Total Economic Valuation framework (TEV) helps us account for all environmental impacts of air pollution.

## Capacity to value benefits of reducing air pollution

Pollutant	Impact	Dose response	Environment-Economy links	Economic Valuation
PM	Health	Well developed capacity	Well developed capacity	Well developed capacity
	Visibility	Some capacity	Some capacity	Some capacity
	Material Soiling	Little or no capacity	Little or no capacity	Little or no capacity
	Biodiversity	Little or no capacity	Little or no capacity	Little or no capacity
Ozone	Health	Well developed capacity	Well developed capacity	Well developed capacity
	Agriculture	Well developed capacity	Well developed capacity	Well developed capacity
	Forests (Timber)	Some capacity	Some capacity	Some capacity
	Forests (non timber)	Little or no capacity	Little or no capacity	Little or no capacity
	Wildlife	Well developed capacity	Well developed capacity	Well developed capacity
	Biodiversity	Little or no capacity	Little or no capacity	Little or no capacity
AR	Corrosion (modern)	Well developed capacity	Well developed capacity	Well developed capacity
	Corrosion (electricity)	Well developed capacity	Well developed capacity	Well developed capacity
	Corrosion (historic)	Some capacity	Some capacity	Some capacity
	Forests (Timber)	Well developed capacity	Well developed capacity	Well developed capacity
	Forests (non timber)	Little or no capacity	Little or no capacity	Little or no capacity
	Recreational fishing	Well developed capacity	Well developed capacity	Well developed capacity
	Commercial fishing	Little or no capacity	Little or no capacity	Little or no capacity
	Remediation (liming)	Some capacity	Some capacity	Some capacity
	Land & Water health	Well developed capacity	Well developed capacity	Well developed capacity
	Wildlife	Well developed capacity	Well developed capacity	Well developed capacity
Biodiversity	Little or no capacity	Little or no capacity	Little or no capacity	

Legend	
Well developed capacity	Green
Some capacity	Yellow
Little or no capacity	Red

## Acid Rain Externalities

Many of the pollutants that cause smog also cause acid rain which has a variety of harmful effects:

### Forests

Acid rain is currently responsible for reducing forest productivity by over 590,000 cubic meters/year in Atlantic Canada, reducing the value of our forests as a national asset.

### Buildings

Maintenance/repair costs for buildings and structures vulnerable to corrosion from acid rain, such as historic buildings & electrical towers, amounts to millions of dollars per year

### Fisheries

Acidification of lakes and rivers costs commercial fisheries millions in lost revenues annually and has resulted in the closure of some fisheries such as wild Atlantic Salmon.

Fish decline is also adversely affecting recreational fishing which is a 1.9 billion dollar a year industry in Canada.

### National environmental health

Acid rain, like smog, may be damaging the ecosystem in ways we don't yet understand with far ranging consequences.

For more information contact Michael Donohue,  
 Environmental Economics Branch, Environment Canada  
 (613) 789-1349 [Michael.Donohue@ec.gc.ca](mailto:Michael.Donohue@ec.gc.ca)