

Tree Planting Opportunities

BY ROBIN COLLINS AND BILL BHANEJA

Do urban forests help cool us?

The Urban Tree Planting project is part of a larger climate crisis amelioration effort being investigated in a series of video discussions by the Canadian Pugwash Group. It focuses on responding to excess atmospheric carbon and adapting to climate change. Both carbon capture (sequestration) and eliminating production of additional carbon emissions are necessary to reach Canada's Paris Agreement levels – cutting 45% of CO₂ by 2030 with the goal of reaching net zero by 2050.

A 'carbon sink' is part of nature's breathing machinery – the forests absorb carbon dioxide from the atmosphere and release oxygen. During forest fires or natural decay, this process is reversed. A forest then starts lowering its carbon sink capacity, emitting a large amount of stored carbon, sending it billowing into the air.

PUBLIC OWNERSHIP

Some 40% of Canada's land base is covered by trees, which is about 9% of the earth's total canopy. Over 90% of Canada's forests are owned by the public (crown land and provincially) and only about .02% of our forests have been deforested (cleared), and that removal rate has been declining.

One idea for responding to excess carbon in the atmosphere is to grow a trillion or more trees worldwide. "Assisted migration", a related proposal, would deliberately move select tree species to locations that may climatically suit them in the future. Places to plant more trees however are not unlimited. Successful forestation requires programs deploying tried and true practices (site preparation,



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tree planting, seeding, tending, and forest management operations.)

In stark competition with remediation efforts such as this, the International Energy Association (IEA) says that in the last decade installed coal-fired power generation doubled because of population growth and industrialization in the developing world. And to put that more graphically: Coal accounts for 1/4 of global CO₂ emissions with China currently building 100 new coal plants.

While China is the worst culprit by far in terms of total national carbon production (almost 9,900 megatons, compared to 4,745 for the USA), Canada (at ~670) is not off the hook. In fact, our *per capita* carbon load is twice that of China's. A study of Canadian Greenhouse emissions by source shows (2017) the oil and gas and transportation sectors are the largest greenhouse gas (GHG) emitters. Together, they accounted for about half of our total.

Canada has committed itself to zero GHG emissions by 2050. That makes it urgent to work on all fronts to bring emissions down through reducing carbon from energy and non-energy sources, as well as seeking effective management of Canadian forests to increase their carbon storing capacities.

The Canadian government has a plan to plant two billion trees (a 40%

annual increase over and above current planting rates) over ten years. Currently Canada plants an estimated 137 million trees a year out of a total of 1.9 billion planted globally. According to the Canadian Forest Service estimate, those additional trees here could cut 12 megatons (Mt) of carbon dioxide annually – "the equivalent of taking over 2 million gasoline-powered cars off the road each year." Reaching net zero carbon by 2050 means eliminating ~670 Mt in under thirty years (that's approximately 37 *irreversible* Mt per year from 2022 to 2030.)

The Canadian Pugwash Group and Project Save the World, which is affiliated with *Peace Magazine*, are looking at four core projects, including planting urban, suburban, and accessible rural-road trees, and ensuring that they are maintained by municipalities and their citizens. The scale of the greenhouse gasses (GHG) problem, however, requires a global effort. Our project should be seen in that light as a very modest but useful contribution.

PROTECT GRASSLAND AND PEAT

If direct carbon capture is the priority, then according to a 2021 paper by Ronnie Drever, Susan Cook-Patten et al., "*Natural Climate Solutions for Canada*", avoiding conversion of grassland and peatland disturbance, adding cover

crops, together with improved forest management should be our focus in Canada. The authors looked at 24 pathways and costed them for likely results by 2030 and 2050. Preventing conversion of grassland to cropland represents the “single largest opportunity for Canada,” primarily through preservation of soil carbon. The scale of its impact is explained by the “large net area of planted and native grassland and pastures.”

The side benefits of trees in populated areas, beyond a marginal expectation for sequestration, are likely the primary contribution of urban tree planting programs. Aesthetics, fruit-growing and mental health benefits aside, urban woods are good for removing pollutants and smog, and a few well-placed trees can significantly reduce the power levels required for air conditioning (by way of shading), heating (by wind breaking) and temperature insulation (dead-spacing around buildings from shrubs and bushes).

PROTECT OLD GROWTH FORESTS

Tree planting is complex and no panacea. As retired tree scientist David Price points out, it can involve protection of old-growth forests “where they have a decent chance of survival”, targeted replacement of those stands that fail but before they rot, and a particular “focus on maximizing the [carbon] sink value of the harvested material.” This means using carbon-rich tree lumber for building construction and furniture manufacturing while minimizing waste at cull and tree-farm sites. These are not notable outputs of *urban* tree planting efforts, therefore.

There is an urgent need to raise public awareness of adverse impacts of climate change and how urban forests might play a role in the greening of neighbourhoods. Better coordination between municipal, federal, and provincial governments will be essential to streamline and help stimulate and fund effective measures as quickly as possible. ■

Robin Collins and Bill Bhaneja are members of Canadian Pugwash Group.

Ukraine and Cluster Munitions

BY EARL TURCOTTE

It has been reported that Ukraine has asked the United States to provide it with cluster bombs to help counter Russia’s horrific assault on its territory and people.

While I believe Ukraine should be provided with robust military assistance to defend itself until a negotiated settlement with Russia can be reached, the further use of cluster munitions would be a tragic mistake. I say ‘further’ because there have been credible reports, including by Human Rights Watch (HRW) that Russia has used at least six types of cluster munitions since its invasion, killing hundreds of civilians and damaging homes, hospitals and schools. HRW also reports that Ukraine itself has used cluster munitions at least once.

Cluster bombs can pose a lethal threat for decades

Cluster bombs typically contain hundreds of explosive sub-munitions designed to blanket a large area. They are among the most indiscriminate weapons ever conceived – indeed, the polar opposite of a precision weapon. Moreover, up to 40% of sub-munitions fail to detonate upon impact and can pose a lethal threat for decades.

Clearance is dangerous and painstakingly slow. Case in point, half a century after American forces saturated Laos with cluster bombs mainly to disrupt supply lines to the North Vietnamese, and despite heroic efforts by the Government and people of Laos with international support,

approximately one-third of the country remains contaminated. Innocent people continue to be killed or maimed on an all too regular basis.

The International Committee of the Red Cross reports that more than 95% of the cluster munition victims throughout the world have been civilians. Most are small farmers in developing countries forced by poverty to cultivate contaminated land, and children who are often drawn to the toy-like appearance of the sub-munitions.

For these reasons, 122 nations, including Canada, negotiated the *Convention on Cluster Munitions* that bans the use of cluster munitions under any circumstances, for all time.

In addition to the categorical prohibitions contained in the Convention, Article (21) imposes a legal obligation upon State Parties to universalize the treaty and discourage the use of cluster munitions by non-party states. It is incumbent upon Canada and all other State Parties, therefore, to do everything in their collective power to prevent the use of cluster munitions by Ukraine, or any other nation.

The point must be made clearly and forcefully that any military benefit cluster munitions might afford Ukraine at this time, would be nullified and far exceeded by their humanitarian impact on the Ukrainian population, now and for decades to come. ■

Earl Turcotte is a retired diplomat who led Canada’s delegation throughout negotiation of the Convention on Cluster Munitions in 2007-08)