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Feature Article:

Tax Reform in BC

Ecological Tax Reform: Estimated Environmental and Employment Effects in British Columbia,
by Amy Taylor

As a student in the School of Resource Environmental Management at Simon Fraser University, I completed a research project on ecological tax reform for British Columbia. This article presents a brief summary of the results of my study.

Ecological tax reform implies a two step process. First, it involves levying ecological taxes on activities or substances which cause or result in ecological damage. Second, it involves the application of the tax revenue generated from the several options available to the tax revenue. The ample, to finance debt reductions, a reduction in the income and capital taxes, reductions that paid the ecological the above. A revenue neutral budgetary position of government of the new tax. In such circumstances the overall tax burden on society remains the same.

Ecological tax reform is increasingly part of political initiatives in Europe. Sweden, Norway, Finland, Poland, Czech Republic and the Netherlands have all introduced various forms of ecological tax reform. In contrast to these governments, the Canadian government has yet to introduce such policies. The Canadian press and population at large are to a significant degree, unaware of the concept.

The purpose of my research therefore, the environmental and employment ecological tax reform policy for British Columbia, I simulated ecological taxes on water, solid waste and carbon dioxide. I simulated two scenarios of ecological tax reform and ambitious tax reform. The ambitious scenario had rates than the tentative. In both scenarios increases in employment were approximately 4% with the tentative and almost 9% with the ambitious taxes.

Increases in employment were approximately 4% with the tentative taxes and almost 9% with the ambitious taxes.
Changes in water consumption, solid waste and carbon dioxide emissions, and revenue generation resulting from the taxes, were simulated in five year intervals over twenty years. The tax revenue was recycled to the provincial economy as a decrease in payroll charges, specifically Worker's Compensation Payments but also Canada Pension Plan and Employment Insurance. Estimates from the literature, on the responsiveness of employment levels to lower payroll charges, were used to simulate changes in employment over the same twenty years.

Although there is uncertainty associated with the methods I employed, the simulations suggest the potential to combine environment and employment policy objectives. In response to the water tax, water consumption by each sector of the economy fell by between 15% and 35% from a business as usual scenario. Solid waste decreased by up to 50% and carbon dioxide emissions dropped by 8.5% and 15% in the tentative and ambitious tax scenarios respectively. The figure below illustrates estimated effects of the taxes on water consumption, solid waste and carbon dioxide emissions.

The tentative tax scenario generated annual revenue greater than $1 billion in 2020 while the ambitious scenario generated annual revenue greater than $2.5 billion. Increases in employment were approximately 4% with the tentative taxes and almost 9% with the ambitious taxes.

The uncertainty associated with the results was addressed through extensive sensitivity analyses and comparison of results with other studies. While the modest and gradual nature of the tax changes should minimize secondary effects (burden on particular industrial sectors or household income shifts), in my paper I present several strategies to further mitigate such impacts.

Mark Jaccard, Nancy Olewiler (a professor in the economics department of Simon Fraser University) and Amy Taylor have recently been appointed by Finance Minister Joy MacPhail to develop a research paper on shifting taxes away from productive activities, such as employment and investment, and towards those that waste natural resources or cause pollution. The paper will be presented to MacPhail in mid-July.

Amy’s master’s thesis can be downloaded from the School of Resource and Environmental Management’s website, http://www.rem.sfu.ca under publications.
National Climate

In December 1997, Canada, along with 160 other countries, agreed in Kyoto, Japan to a Protocol that called for reductions in greenhouse gas (GHG) emissions over the next 15 years. Canada made a commitment under the Kyoto Protocol to a GHG reduction of 6% below 1990 levels in the period 2008-2012.

Since Kyoto, First Ministers - the Prime Minister, provincial premiers and territorial leaders - met and directed Energy and Environment Ministers to establish a process in advance of Canada's ratification of the Kyoto Protocol to examine the consequences of the Protocol. They also agreed to provide for the full participation of the provincial and territorial governments with the federal government in any implementation and management of the Protocol.

Federal, provincial and territorial Energy and Environment Ministers met in April 1998 and approved a process to engage governments and stakeholders to examine the impact, the cost and the benefits of the Protocol's implementation and its management. The national process ensures that Canadians have the opportunity to take part in the development of Canada's national implementation strategy. Expert committees of limited size, called Issue Tables are the main path for this input. Issue Tables will provide expert and detailed input to the analysis, identification and assessment of GHG reduction opportunities. Each Issue Table will be responsible for research and analysis, and the development of reports on their specific sector or issue. They will identify the challenges and benefits of the various options open to Canada.

The following tables have been established:

- agriculture and agri-food
- analysis and modelling
- buildings
- credit for early action
- sinks (carbon sequestration)
- tradeable permits working group
- Kyoto mechanisms
- municipalities
- public education and outreach
- electricity
- technology
- forest sector
- industry
- transportation

The above information was taken from the NCCP website, http://climatechange.gc.ca, which also contains more details on the process.

... and the Energy Research Group

ERG has played a variety of roles with a number of Issue tables. ERG members have made presentations and played advisory roles for the industry, technology and municipalities tables.

From February to March 1999, ERG was contracted by the Forest Sector Table to investigate actions for reducing GHG emissions in the Canadian Pulp and Paper Industry. ERG used the ISTUM pulp and paper sub-model to:

1. Provide a comprehensive and integrated assessment of the range of technology and energy actions available to the pulp and paper industry for reducing future GHG emissions, and

2. Provide estimates of GHG reductions, costs and cost effectiveness (cost per tonne CO2-equivalent reduced) for each action by 2010.

ERG has undertaken research over the past five years in the area of community energy management - CEM - (or community energy planning) because of the growing recognition that the energy and carbon intensity of urban areas can vary significantly depending on land use planning and zoning, site and building design, transportation management and infrastructure, and support for alternative energy supply technologies. ERG researchers have recently completed an analysis for the Municipalities Table (MT) of ways to reduce GHG emissions in areas over which municipalities have indirect influence or control: land use, transportation and privately owned buildings. For the study, key reduction measures were identified, and then quantitatively evaluated in terms of GHG emission reduction potential and cost of achievement. In many areas, overlap exists between the mandate of the MT and that of the Buildings Table and the Transportation Table, requiring the methods and results
ISTUM Found Alive and Well in ERG Research Offices!

By John Nyboer

Contrary to a previous article published in ERGNews (February 1999), ISTUM (Intra-Sectoral Technology Use Model) was found very much operative in the research offices associated with the ERG team in Simon Fraser University. In fact, it forms the focus of a number of projects presently underway and is the foundation of several research proposals submitted by ERG.

But they said ISTUM was dead! A headline proclaimed the news! How could such a pronouncement have been made? Well, if you saw how it is changing and “becoming”, it would appear that ISTUM has ceased to exist. And indeed, as it once was, it is no more. A new face - or shall I say “interface” - exists, its data structure is being reorganised and its method of operation upgraded. But the heart and soul of the model remain unchanged.

ISTUM has been folded into a family of models, unified through a new interface that permits the user to operate ISTUM in the context of a more broad economic model, a community planning model and a set of supply models. This set of models is known as the Canadian Integrated Modelling System, CIMS, a modelling structure designed for a more comprehensive analysis of the Canadian energy system.

The interface allows the user to run all or part of the ISTUM subset of models independent of the rest of the family. This makes it possible to quickly run all industries and sectors for all regions, just one industry nation-wide, just one region with its all industries and sectors, or as it does now, one industry or sector in one region.

With the firm assurance of better things to come, look for further news concerning ISTUM’s renewal and restructuring in future editions of ERGNews.

Endnotes

Congratulations to Amy Taylor who completed her Master of Natural Resource Management in April, 1999! Amy is continuing as a research associate at ERG. Additionally, ERG welcomes two new graduate students, Alison Balzer and Kevin Washbrook.

Alison is proud to be a BC native among all the eastern folk at ERG. She completed her undergraduate degree at SFU (Biology Honours) with a focus on wildlife ecology. Noting the importance of economic factors in decision-making, she opted to explore this while working on her Masters at REM. Her current research focus on softlinking CIMS to the integrated assessment model of regional sustainability, QUEST, developed by the Sustainable Development Research Institute at UBC.