

## **An Environmental Levy for Disposable Cups in NL: A Preliminary Investigation**

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Human ability to impact Planet Earth appears to know no bounds. Adherence to policies of managed resource extraction combined with unbridled consumption, have fostered a disposable culture contributing to mass production of garbage. Eco-taxation may provide the economic tools required to reduce the amount of waste generated. Keys to eco-tax success are vision, education, and flexibility. Success must be measured in societal gains, not simply in monetary terms. Public opinion is initially opposed to consumer charges. Education and viable personal options are crucial to overcome resistance. With one coffee shop dispensing over 800,000 disposable cups annually, an eco-tax is an attractive option to simultaneously raise revenue to waste management programs and reduce one sector of waste production.

Human ability to impact the Earth appears to know no bounds. Adherence to policies of managed resource extraction combined with unbridled consumption, have fostered a disposable culture contributing to mass production of garbage. Like most of the developed world, Newfoundland and Labrador (NL), subscribes to a policy of sustainable development. Aside from a decided focus on the exploitation of natural resources, namely through fisheries, mining, forestry and oil production, NL has many waste reduction and elimination challenges to meet before even approaching sustainability. With a recycling program sadly trailing behind other provinces, and remaining the only province to still employ conical incinerators as a major waste management strategy, applying an environmental fee on a major source of litter and waste generation would be a huge leap forward in environmental policy (Department of Environment and Conservation, n.d.). Specifically, NL has an opportunity to become a North American leader, following in the footsteps of some progressive environmental programs in Europe, by imposing an environmental fee on disposable food and beverage containers. This paper will examine eco-taxation and environmental fees in general, explore three specific examples of eco-taxation in practice, and serve as the background document for a proposal to charge an environmental fee on disposable beverage containers sold within NL.

### *Environmental taxes / Eco-taxation*

A tax can be classified as environmental when "the tax base is a physical unit (or a proxy for it) of something that has a proven specific negative impact on the environment, when used or released" (ATW Research, 1996). The Organization of Economic Development (OECD) report *Environmental Taxes and Green Tax Reform* (1997) further divides environmental taxes into emissions charges or product taxes. This report defines emission charges or taxes as direct payments made according to the amount and nature of the pollutant discharged, while "product taxes are applied to, and thus increase the relative prices of, products which create pollution when they are manufactured, consumed or disposed of" (OECD, 1997, p. 18). Emissions based charges, like those on nitrogen-oxide (NO<sub>x</sub>) emissions in Sweden, resulted in an emission reduction of 35% within the first 20 months (Barde & Smith, 1997). In fact Barde & Smith

(1997) noted several instances where reductions in emissions took place in the period between announcing the plan to tax emissions, and the implementation of the tax itself. This certainly suggests that the ability to reduce negative environmental impacts exists, but voluntary measures to actually reduce such impacts only come into being when economic penalties are imminent.

#### *Purpose of eco-taxes*

Eco-taxes provide an economic instrument capable of dealing with the paradox of industrial society. This paradox involves the visible, those internalized to the producer, and invisible, those externalized to society, costs of nearly all activities within that society. Robertson (1999) explains that eco-taxation was initially conceived as a “polluter pays” mechanism whereby the costs of environmental damage would be internalized to their source, rather than externalized for society as a whole to bear. According to Robertson this original conception of eco-taxation has since broadened in two ways. First, the notion has expanded to include the idea that people should pay for the use of commons, like water, energy production, and the environment’s pollution absorption capacity. Second, the revenue generated by eco-taxes can be used to reduce more regressive forms of taxation like those on employment and income.

#### *Tax shifting / Double dividend*

Tax shifting, reducing taxes on income and employment, and taxing environmentally destructive activities instead, is viewed by many economists as the best way to simultaneously lower income taxes and protect the environment. This is often referred to as the “double dividend” (Repetto, R., Dower, R. C., Jenkins, R. & Geoghegan, J., 1992). The income generated by a new eco-tax could simultaneously create jobs and funding for ecologically sound technologies (O’Riordan, 1997). As N. Gregory Mankiw, a professor of economics at Harvard University asserts:

Cutting income taxes while increasing gasoline taxes would lead to more rapid economic growth, less traffic congestion, safer roads, and reduced risk of global warming – all without jeopardizing long term fiscal solvency. This may be the closest thing to a free lunch that economics has to offer (Brown, 2006, p.55).

Critics, quite often related to industries that would be directly affected by such taxes, argue that eco-taxes are in fact the regressive form of taxation (Layman, 1999). The contention is that shifting taxes from income, where higher earners pay more taxes, to environmental taxes, applicable regardless of income level, act as a disproportionately burdensome tax on low earners, as more of their earnings must go to pay the tax (OECD, 1997). Analysis of the distributional impact of eco-taxes however point out that the differences may often be minimal, and mitigation or compensation measures can be undertaken when the taxes in question affect basic needs (OECD, 1997).

#### *Rationale*

Why should any government be concerned with something as insignificant as disposable cups? When one adds up some actual figures however the numbers become truly astonishing, and it becomes readily apparent that there is nothing insignificant about the amount of trash we are able to generate. It is estimated that Starbucks, a specialty coffee chain, sells 1.5 billion cups annually, cups which now boast 10% recycled paper, but are not recyclable themselves (Warner,

2004). Of much more relevance here in NL would be Tim Hortons. While the actual numbers of cups are not divulged by The TDL Group Corporation, the parent company and licensor for Tim Hortons franchises, some estimates have made their way into the media. The 16 Tim Hortons locations on Prince Edward Island serve up “millions of cups of coffee every year” (CBC News, 2002). The primary observation used for this paper prompted an estimate of over 800,000 cups generated annually by one NL Tim Hortons location. There are currently 56 Tim Hortons locations in NL. Compound this with all other fast food outlets in the province, including but certainly not limited to 17 McDonalds, 18 Subway restaurants, 16 KFC outlets, not to mention food courts and cafeterias, the amount of trash generated by disposable cups alone is staggering (Tim Hortons, 2006; FoodInc. 2007).

The goal of implementing a fee for disposable cups would be to shift consumer behaviour, away from using disposable beverage containers, and toward utilizing refillable containers as a means to avoid the levy. The added, and immediate, benefit would be a reduction in waste sent to already stretched landfill and incineration sites. Environmental fees of this nature are not without precedent in NL. Currently new tires within the province are subject to a recycling fee of \$3 or \$9, depending upon size (MMSB, n.d.). Recyclable beverage containers as well are subject to a deposit of 8¢ or 10¢, depending upon type, subject to a partial refund when containers are returned to one of the 38 provincial Green Depot sites (MMSB, n.d.).

The proposed fee for disposable beverage containers would be much more significant at 50 cents per container. The rationale of assigning a charge that amounts to anywhere from 25 to 50% of the average price of a coffee is in keeping with the specific goal of eliminating the behaviour, rather than becoming simply an income generating fund.

The idea of imposing a fee on disposable beverage containers is not new even in Canada. In fact, it has been dismissed at the proposal stage in Nova Scotia (NS) already, where it was proposed as a 5 cent litter tax to be added at point of sale (CBC News, 2003). The tax was recommended to combat the problem of cups and shopping bags littering towns and roadways, but was vetoed by the governing Conservatives as “next to impossible to administer” (Michel Samson, N.S. Liberal MLA, personal communication, February 13, 2007). The problem, according to then Minister of the Environment Ron Russell, would be in trying to keep track of every disposable cup sold in the province (CBC News, 2003). Since Nova Scotia, as well as NL currently monitor and collect deposits from every recyclable beverage container sold within their jurisdictions, this argument holds little weight. Samson went on to say that failing implementation of such a litter tax the NS government would apply some pressure for the use of recyclable cups. This pressure may have had some effect. Progressive Conservative Premier MacDonald has announced that it plans to introduce a 10 cent levy on disposable cups as part of its plan for a greener NS (CBC, 2007b).

When examining any environmental issue in terms of how to apply eco-taxation, there are a myriad of factors and possible solutions that need to be addressed. Even after identifying a specific problem to be tackled, the issue of how to apply that tax is remarkably problematic. Applying eco-taxes to industry directly, in the form of product charges, has largely been resisted through legal avenues. Consumers then are the next obvious point of application, since drop in consumer demand will have the desired effect on the producers. To date voluntary adoption of environmentally friendly technologies, have not been tremendously successful (Barde & Smith, 1997).

The technology already exists for fast food outlets to switch to completely recyclable or compostable packaging. An email communication from Tim Hortons stated that a full recycling test pilot program was being undertaken by a number of stores in Ontario (Operations Services Representative, The TDL Group Corp., personal communication, March 23, 2007). Interestingly, the same email stated that "(d)epending on the municipality, the coated paper board used in our hot beverage cups can be accepted for recycling or compost." A follow-up email to inquire where this was done has to date gone unanswered. As well, an extensive search of websites detailing municipal recycling programs has failed to find one facility that accepts waxed beverage containers for recycling.

Also far from novel is any affected industry's reaction to proposed environmental taxation plans. An article in a European chemical industry magazine likened eco-taxes to "a vampire rising from its coffin" and promoted voluntary agreements as the superior route to environmental targets (Layman, 1999). Opposition to London's congestion charge filled UK papers in 2003. The transport industry was particularly vocal about the effect the congestion charge would have on drivers and haulers, and lobbied, unsuccessfully, to have transport vehicles exempt from the levy (An expensive cure, 2003).

Income generation, as an end in itself, runs counter to the goals of minimizing or eliminating negative environmental impacts. Though, policy makers should note the vast potential for income generation, as several examples from around the globe illustrate.

### **Environmental Charges Around the World**

#### *The Irish bag tax*

In 2002 the Republic of Ireland instituted an environmental levy of 15 euro cents on every plastic shopping bag, known as the "Plastax" (BBC, 2002). The goal was to reduce the 1.2 billion shopping bags used annually. This initiative resulted in a 95% decrease in the amount of plastic bag litter, 75 million euros in revenue, and a per capita reduction in the number of bags used from 328 before the tax to a low of 21 bags per person annually (Reuters, 2007). The number of bags per person began to rise again in 2006, to 30 per person, and has prompted an announcement that the levy will rise to 22 euro cents on July 1, 2007 to "ensure that its impact is not diminished" according to Environment Minister Dick Roche (Reuters, 2007).

The success of the "Plastax" has prompted the adoption of similar policies around the globe. The three North American countries have been slow to jump on the bandwagon, despite the fact that Canada alone uses approximately 567 million bags per year, and these bags take an average of 400 years to degrade (Grant, 2002). San Francisco is poised to become the first U.S. city to ban shopping bags, after a voluntary plan by retailers to reduce the number of bags yielded little result (Gonzales, 2007).

Rather than impose environmental charges, several areas have instituted outright bans on the use of plastic shopping bags because of the associated destructive environmental impact. Mumbai, India banned plastic bags after devastating floods in 2005. Severe flooding in the region caused the deaths of more than 400 people, and was attributed in part to storm sewers clogged with plastic bag litter (CBC News, 2007a). Bangladesh, a low-lying and flood-prone country, banned plastic bags for similar reasons in 2002 (CBC News, 2007a). The honour of being the first North American municipality to ban single-use plastic bags however goes to Leaf Rapids,

Manitoba; an environmental-oriented mining town with a population of just 539 residents (Town of Leaf Rapids, n.d.; StatsCan, 2007). A representative of the Canadian Plastics Association has already charted the probable industry response by questioning whether the municipality has the legal right to institute a ban on products that are not prohibited provincially or federally (CBC, 2007a). The same representative of the Canadian Plastics Association cited plastic bag use for carrying lunches or pet owners stoop and scoop behaviour as examples of recycling already done with plastic bags. While clearly not an example of recycling, perhaps this was simply a slip of the tongue and “reuse” was the intended word. Still, the original “recycling” statement appears very similar, in tone and purpose, to Tim Hortons’ habitual deflection to their own anti-litter campaigns to avoid discussion of the actual garbage created.

*Kassel, Germany disposable packaging fee*

In 1992 Kassel, Germany, a town of 190,000, enacted a by-law imposing a fee of 0.5 Deutsche Marks (DM) (about 30 cents USD) on non-reusable packaging / cutlery used at special events, restaurants, and institutions (Platt, 2000; Kinzer, 1994). The goal of the tax was to reduce the amount of unnecessary waste generated by food service. In two years of operation the initiative garnered \$20,000 DM, but even more dramatically the annual waste collected proved to be 500 tons lower than in the year before the tax was implemented (Kinzer, 1994).

True to form, the fast food and packaging industries did not take the tax lying down. McDonalds, as well as two companies in the packaging industry challenged Kassel’s rights to impose such legislation in the first place. A spokesman for McDonalds, who insisted on remaining anonymous for a New York Times interview, claimed that McDonalds would have to consider closing some restaurants since the “(p)rice increases that are unavoidable in light of this tax will not be accepted by the market” (Kinzer, 1994). Expressing a similar opinion Pro-S-Pack, a packaging firm involved in the suit to end Kassel’s autonomous waste management decisions, launched its own educational campaign aimed at policy makers and the public to show how such taxes increase the prices consumers pay for packaged items (Blalock, 1995).

Initially the industry challenges were unsuccessful. The Federal Administrative Court, which addresses the scope and authority of local governments, ruled in 1994 that Kassel could enact such legislation, dismissing the argument put forth by McDonalds *et al* (Kinzer, 1994). The case was eventually heard by the German Supreme Court. In 1998 the taxes were suspended by a Supreme Court ruling on the premise that local and state regulations must be in keeping with federal policies (Platt, 2000). According to Platt, the taxes were repealed because the German government, at a federal level, has been more focused on cooperation with industry rather than on legislating behaviour (2000).

*London, England: Congestion charge*

Road congestion can be interpreted as simply a matter of supply and demand; in high traffic areas the demand for road far outstrips the supply. Political support for increasing the number of roads is generally not forthcoming, and in long established areas of cities can be a physical impossibility. Economic instruments can deal with problems of supply and demand, as relative prices increase demand decrease. In 2003 London mayor Ken Livingstone made a political gamble by enacting a congestion charge of £5 for vehicles driven within central London between 7:00 AM and 6:30 PM (Ken Livingstone’s Gamble, 2003). The charge was to deal with

the estimated 250,000 motorists using the eight square area of the city during the work week, and promote the increased use of bus service instead. Relying on cameras to photograph the rear license plates of vehicles, and a series of increasing charges for non-compliance the charge was implemented on February 17, 2003.

The gamble paid off. According to the BBC, by 2006 congestion levels inside the zone have been reduced by 26%, 65,000 fewer car movements per day have resulted, 29,000 more people make their morning rush hour commutes on hybrid fuelled buses, and the charge has resulted in £122 million revenue, £84 of which is slated to go straight back into the transit system (BBC, 2007). With the success of the congestion charge a new plan has emerged to use the existing program to charge vehicles by type to tax the heavier CO<sub>2</sub> emitters (Mayor Announces Plans, 2006). In practice this would mean SUV's would pay an additional £25 to drive within the expanding congestion zone.

### Methodology

#### *Study area*

Deer Lake, a small town in western Newfoundland and Labrador, and three smaller communities immediately surrounding the town were selected as the sites of observation and survey. The smaller communities, Reidville, Cormack and Howley, are all serviced by amenities in nearby Deer Lake, and together form the Deer Lake exchange in the local telephone directory. This choice was made primarily for two reasons. First of all typicality, with a total population of 6,236, occupying 2,333 households the site was considered to be fairly typical of other small town regions of western Newfoundland (StatsCan, 2007). Secondly the Deer Lake area was chosen as a matter of convenience. The site of observation was close enough for the researcher to carry out direct observation of a fast food outlet.

#### *Sample frame*

The sample frame is the set of people that have a chance of inclusion within the study (Fowler and Mangione, 1990). The sample frame in this case was the Deer Lake exchange in the 2006-2007 Western Newfoundland telephone directory. A random number table was used to select telephone listings on each page. If the number selected turned out to be a business the next residential listing on the page was chosen.

#### *Participants*

The survey group was composed of 167 adult residents (n= 167) of the towns of Deer Lake, Cormack, Reidville and Howley. There were 105 females and 62 males that completed the survey. Initially 180 households were contacted, with 13 declining to participate. All respondents voluntarily completed the survey.

#### *Materials*

Two methods of primary research were employed to develop this paper: (1) direct observation of a local coffee shop to determine the approximate number of disposable cups generated in one day, (2) a brief telephone survey to determine public opinion and attitudes toward imposing an environmental fee on disposable beverage containers.

*Survey*

The survey was designed to obtain public opinion on the issue of imposing a provincial environmental fee on disposable cups (see Appendix). Questions related to demographics encompassed gender and the number of people in the household. Participants were asked whether or not anyone in their households used disposable cups, and if yes to estimate how many per week. The proposal for an environmental levy was then outlined and respondents could indicate if they agreed, did not agree, or did not know. The final item was to elicit the respondent's probable action should an environmental levy on disposable cups come into effect. Possible answers to the question of whether the participant would request recyclable / compostable cups from the retailer if disposable cups were subject to an environmental levy included: definitely yes, probably yes, probably no and definitely no.

*Procedures*

Covert direct observation, in that the participants being observed were unaware of the observation, of customers at a Tim Hortons coffee shop was conducted on 28 separate occasions of one hour duration. The number of passengers in each vehicle was counted as they exited the drive-thru, with one cup assigned to each occupant since often the purchase was out of sight of the researcher. To corroborate the accuracy of allocating one cup per passenger the researcher conducted two observation sessions from inside the restaurant, where the order could be seen and the vehicle occupants counted. Walk in customers' purchases were counted as they exited the premises, while dine-in customers were observed at their tables. Observation was performed to cover each hour of a day, and each day of the week was allotted four observation sessions. The hours of 2:00 AM to 5:00 AM were omitted from observation, as independent corroboration stated that while there are occasionally busy periods during these hours, due to late airport or ferry traffic, generally customers are few on the late shift (personal communication, former Tim Hortons employee, February 4, 2007). The hours of 8:00 AM, 9:00 AM, 11:00 AM, 5:00 PM, 6:00 PM, 7:00 PM and 11:00 PM were each observed twice, with an average of each total included in the total cup estimate. The cup estimate is for Tim Hortons only.

The survey was administered by telephone at various times throughout day and evening to maximize variability of respondents. Each participant was asked all questions in the same order, and all received the same definitions for disposable containers as opposed to recyclable / reusable containers. While comments and questions were not solicited by the researcher, any comments offered by the subjects were duly recorded.

**Results**

Direct observation of Deer Lake Tim Hortons consumers yielded an estimate of 2,300 cups per day. Accounting for the fact that Tim Hortons is closed only on Christmas, and closes early for some other statutory holidays, this amounts to an annual cup count of approximately 830,000.

Based upon the final sample of 167 respondents, the confidence interval of this study is accurate within  $\pm 7.31$  percentage points nineteen times out of twenty.

The number of people per household averaged 2.6, with a range from 1 to 6. The most common household size, or mode value was 2, with 21.5% of respondents fitting this category.

## ENVIRONMENTAL LEVY

Self-reported estimates of the number of cups used per week ranged from 0 to 28. The median value was 2, the mean 3.04, mode 0 and a standard deviation of 3.955.

Responses to the remaining questions are outlined in the frequency tables below.

Table 1. Does any member of your household use disposable beverage containers?

Yes	No	Don't Know
102	58	7
61.1%	34.7%	4.2%

Table 2. A proposal is being made to introduce an environmental fee of 50¢ on disposable cups. This fee would not apply to refillable cups (e.g. travel mug) and recyclable / compostable cups should the retailer use them. Would you support such a proposal?

Yes	No	Don't Know
66	86	15
39.5%	51.5%	9%

Table 3. If approved would you ask the retailer to use recyclable / compostable cups?

Definitely Yes	Probably Yes	Probably No	Definitely No
37	67	57	6
22.2%	40.1%	34.1%	3.6%

A negative correlation exists between the responses to the questions "How many disposable cups would you estimate per week are used in your household?" and "If the environmental fee comes into effect would you ask the retailer directly to use recyclable / compostable cups?" with  $P < 0.05$ . A T-test of the two variables set the level of significance at  $P = 0.031$ .

A positive correlation was noted between the responses to "Would you support such a proposal?" and "If the environmental fee comes into effect would you ask the retailer directly to use recyclable / compostable cups?" with a Chi square result of  $P < 0.004$ .



### Discussion

Several limitations of both instances of research conducted must be addressed. While the hours of observation were varied and each day of the week was covered, more observation periods would determine the accuracy of the cup estimate. As well this approximation only applies to one disposable container distributor in the area. In addition to Tim Hortons, Deer Lake boasts several franchised fast-food outlets including KFC, Subway and an Irving Big Stop, along with locally owned and operated bars, restaurants and grocery stores, all of which distribute disposable cups. There is no way to extrapolate the data from Tim Hortons to approximate the number of disposable cups generated by the other outlets.

The survey responses may demonstrate the influence of social desirability bias, the tendency of subjects to provide socially acceptable responses (Weiten, 2001). The factors indicating this possibility include a very high participation rate, and higher than expected agreeability to implementation of an environmental fee (Bryman & Teevan, 2005; ATW-Research, 1996). Possible explanations for these are the fact that the researcher was known to a large portion of the participants, which might have made it more difficult for those contacted to refuse to participate. Recent widely publicized nation-wide polls suggest that the environment and environmental protection are the top concern for Canadians and Americans alike (Saad, 2007; CRIC, 2006). Without further study it is impossible to tell, based on this brief survey, just what factors influenced the high agreeability rate.

The sample size itself requires mention as well. Originally the target confidence interval was  $\pm 5\%$ . To achieve this based upon the number of households, the survey should have included 330 completed surveys (Creative Research Systems, 2003). Due to time and budget restrictions, the sample size in the end was 167 completed surveys, reducing the confidence interval to  $\pm 7.31\%$ .

The statistically significant correlations between variables suggest that those respondents in favour of a fee on disposable cups are more likely to state they would request a change in cups from the retailer. As well, confirming intuitive logic, those who estimated a higher number of cups used weekly were more likely to claim they would request the retailer change the type of cup they use.

The results of this limited study, while encouraging in terms of initial public opinion, and troubling in the amount of waste generated by one outlet, needs to be duplicated with a larger more comprehensive study to draw province wide conclusions.

### Conclusion

Admittedly there are political risks and challenges in trying to change public behaviour and beliefs through taxation. Eco-taxation promises to be the mechanism to do both. Illustrations of successful eco-taxation provide invaluable instruction in how to apply a broad concept to a specific problem. One needs only to look at the London Congestion Charge, Ireland's Plastax, or the many emissions and use taxes around the world. Perhaps even more instructive is the concerted effort corporations and entire industries employ to avoid such taxes. The power of consumers to influence corporate environmental practices is an underutilized force. While cups may seem to be only a drop in the bucket, with enough drops all buckets overflow.

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