

BUILDING A GREEN ECONOMIC STIMULUS PACKAGE FOR CANADA

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Executive Summary

The purpose of this paper is two-fold. First it outlines a framework to identify and assess the economic, environmental and implementation impacts of economic stimulus measures in Canada. Second, it applies this framework to categories of stimulus measures, and identifies those that offer the greatest economic *and* environmental returns.

The Problem. The global economy (including Canada's), is in a recession of unknown severity and duration. This recession is reducing employment, wealth, consumption and access to credit. It has also reduced consumer and business confidence. At the same time, Canada and the world are facing very serious environmental challenges. In particular, climate change poses an unprecedented environmental and economic threat. Long term estimates of the cost of climate change are that it could cut between 5 and 20% of the world's wealth by the end of the century. How can these trends be reversed?

The Solution. Governments around the world are taking individual and coordinated action to stimulate job creation, economic activity and access to credit. In this regard, the Canadian Government is developing a package of stimulus measures to include in Budget 2009, to be delivered on January 27th. Many Canadian business associations, think tanks and other not-for-profit organizations have identified their views on priority measures to be included in such a stimulus package.

The Question. A key question going forward is – "what kind of stimulus would be best for the economy and the environment now and over the long-run?" Many G-8 countries have announced the inclusion of green measures in their proposed packages, including the incoming Obama administration in the United States.

The Issue. This report makes the case that there are a number of compelling reasons for the economic stimulus package to be as green as possible:

- 1. **Green stimulus measures can provide strong short term economic benefits**, particularly job creation;
- 2. The economy of the future will reward companies that are energy efficient, low polluting and use natural capital wisely. Canada presently lags behind most OECD countries in these areas. This stimulus package offers an unparalleled opportunity to retool the economy with cleaner technology and infrastructure as other developed countries are doing to **position Canada to compete in the green economy of the future**;
- 3. **Harm to the environment carries a very real and significant economic price –** costing Canada billions each year. When this impact is factored into the analysis, environmentally positive stimulus measures can often provide greater value than their environmentally neutral or negative counterparts; and
- 4. **Failure to take advantage of the current opportunity** to make Canada's industries and infrastructure more sustainable would have adverse consequences. It would set Canada behind in relation to our major trading partners in the emerging global market for greener products and technologies, and exacerbate damage to our environment.

It is not enough, however, to simply state that green stimulus measures should be incorporated in the economic stimulus package. It is also important to determine which types of measures can provide both an effective economic stimulus *and* help to ensure our longer-term environmental and economic prosperity.

The Approach. This Report identifies nine criteria which can be used to evaluate any stimulus proposal, structured around three tests, as follows:

- 1. Economic Test: How much economic stimulus will the measure provide to the economy?
- 2. Environment Test: How much improvement will the measure provide to the environment?
- 3. **Policy Implementation Test:** How easily can the measure be implemented throughout the country and how equitable are its impacts?

The Criteria. For each of these three tests, three specific criteria have been developed, as set out in **Annex A** to the Executive Summary. Thus, a total of nine criteria have been applied to each potential measure.

The Application. A wide range green stimulus initiatives has been proposed by domestic and international organizations and governments. Instead, We have grouped the measures into 23 broader categories under three headings:

1. Direct Government Spending Measures

- I. Public infrastructure, asset and land investment
- II. Personal/households
- III. Direct support for industry and non-profits

2. Tax Measures

- I. Personal/households
- II. Corporate/non-profits

3. Regulatory measures

- I. Energy efficiency regulation
- II. Pollution abatement regulation
- III. Conservation/land protection regulation

In terms of weighting, the economic criteria were given the strongest weighting (\sim 50%), the environmental criteria were given a slightly lower but still significant weighting (\sim 40%), while the policy implementation criteria were weighed as a smaller factor (\sim 10%).

The Results: Based on this framework (see **Section 4.0, Table 2**), a complete ranking of green stimulus categories can be found as **Annex B** to the Executive Summary. The best measures are those that, in the short term, will create significant numbers of new green jobs across the country while also enhancing our long term economic and environmental prosperity. In that vein, four of the most promising types of measures are:

- 1. **Building Retrofits:** Support energy efficiency retrofits for a broad range of buildings including:
 - I. Homes (expanding rebates for retrofits and energy audits)
 - II. Federal buildings (directly by PWGSC)

III. Public buildings, such as school and low-income housing (via FCM and Provinces)

This policy could be supported with skills retraining, wage subsidies for firms to engage new employees, and extended Employment Insurance (EI).

- 2. **Green Infrastructure:** Make major investments in new green infrastructure such as sewage plants, water-works, and public transit particularly buses and light rail that are manufactured in Canada. This could be bolstered by a significant increase the current Federation of Canadian Municipalities (FCM) Green Municipal Fund (currently at \$550M), which supports local green projects across the country. Similarly, a major investment in reforestation could provide immediate jobs, especially in hard-hit northern communities. Such measures could be linked to other supports such as extended EI or wage subsidies.
- 3. **Clean-up of Toxic Sites:** Make significant new investments to address urban "Brownfields" and other toxic sites across the country. These cleaned-up sites would create significant new economic value, reduce a public health hazard and help to address ongoing liabilities for the government.
- 4. **Investments in Clean Energy:** Convert the existing Accelerated Capital Cost Allowance for renewable energy and energy-efficiency assets (section 43.2) into a refundable tax credit. This would create substantial new investment in clean energy technology without incurring significant new federal "tax expenditures". Other promising options to support green energy could include co-funding with the provinces to move toward a 'smart' national power grid, and the expansion of existing incentives to support the production of clean power.

There are also several options to help generate new funding for these measures. For example, introducing government guaranteed "green bonds" would enable Canadians to invest in clean development opportunities across the country. Another option would be a national carbon cap-and-trade system, with auctioning of emissions permits (as the U.S. is proposing). Such a system could be in place by 2010, and the capital generated through the auction could help to recover the costs associated with green stimulus measures, while providing an important signal to shift the economy in a low-carbon direction.

Our review indicates that at least \$15 billion in federal stimulus investments could be made in these types of measures, which would be expected to generate over 160,000 jobs in the coming year, particularly in hard hit sectors and communities. Such a Green Stimulus Package would generate immediate economic returns that compare favourably with other options, while also reducing environmental and health impacts.

Next Steps: Recognizing that the current recession may cut deeper and last longer than expected even a month ago, it is likely that there will be a continued proliferation of stimulus and green stimulus proposals offered to decision-makers. As a result, the green stimulus assessment framework in this report is offered to contribute to more structured thinking about the available options.

Annex A: A Framework for Assessing Green Economic Stimulus Proposals



Annex B: Summary of Grading for Categories of Stimulus Measure

Summary of Grading for Categories of Stimulus Measure

1.	New Investments in Public Transit	Α
2.	Wastewater Infrastructure Investment	А
3.	Energy Infrastructure – Clean Power	А
4.	Public Building Retrofits	A-
5.	Polluted Sites Reclamation	A-
6.	Grants/Loans for the Renewable Energy Sector	B+
7.	Refundable Capital Cost Allowance for Clean Energy	B+
8.	Reforestation Initiatives	B+
9.	Grants for Residential Home Retrofits	B+
10.	Energy Infrastructure - Smart Grid	B+
11.	Expanded Investment Tax Credit for Green Industries	В
12.	ICT Infrastructure Expansion	В
13.	Expanded Tax System Support for Green R&D	В
14.	Green Grants/Loans for the Automotive Sector	В-
15.	Freight Rail Expansion	В-
16.	Tax Credit for Home Retrofits	B-
17.	Energy Efficiency Regulations	C+
18.	Pollution Control Regulations	C+
19.	Energy Infrastructure – Natural Gas Pipelines	С
20.	New Ecosystem/Habitat Conservation	С
21.	Other Transportation Infrastructure Expansion (Roads, Bridges)	С-
22.	Shipping/Port Infrastructure Expansion	D
23.	Energy Infrastructure - Traditional Power Generation	D

Section 1: Introduction

Canada, along with the rest of the world, is currently undergoing a significant economic contraction. A global financial crisis precipitated in large part by the sub-prime mortgage crisis in the United States has rapidly spread to other countries leading to a global economic downturn. This economic turmoil has lead to declining demand for products and services and serious challenges for industries that need to access credit.

In response to this crisis, many countries have adopted, or are now considering adopting, **economic stimulus packages** to minimize the damage and duration of this economic downturn. The United States first enacted stimulus measures in January of 2008 in the form of significant tax cuts and is now proposing a second round of stimulus options, with president elect Barack Obama leading the push for a new round of stimulus. The European Commission has advocated that all EU countries should adopt a package of stimulus measures and many member nations have already taken steps to this end. Developing countries, too, are acting; for example, China introduced a massive \$568 billion dollar stimulus plan in November of 2008.

There is mounting pressure on the Canadian government to respond to a deepening domestic economic recession in a similar fashion. The lack of economic stimulus measures in the Economic Update of Fall 2008 was the catalyst for a dramatic push by opposition parties to dissolve the government and replace it with a coalition. This eventuality was avoided through the proroguing of Parliament until a new Federal budget is introduced at the end of January 2009. In the interim, many Canadian policy-makers, politicians, and economists are intensely focused on developing credible, effective, and appropriate ways to protect and revitalize the Canadian economy.

At the same time, we are also facing great environmental challenges. For example, climate change is already melting the polar ice cap, playing havoc with weather and decimating forests in BC. These challenges are more than just "environmental" in nature; they are costing Canadians jobs and they are handicapping our long term economic success. Air pollution kills thousands of people per year in Canada and costs the public health system over \$2 billion per year. And the costs of climate change will be far greater – more than the costs of both World Wars and the great depression combined, according to a study by Britain's chief economist.

While many view potential stimulus package options as tools to stem a growing global economic crisis, others see them as presenting a unique opportunity to re-orient our economy on a more efficient and sustainable footing. In particular, some leading economists and environmentalists have suggested that a component of the new spending through a stimulus package should focus on the creation of new green jobs and on building more energy efficient and environmentally friendly buildings, roads, transportation systems, industries and electrical grids. There are also calls to support new investment in environmental industries and technologies, and thereby position the Canadian economy to become a significant player in these critical emerging markets.

Given the range of different positions, measures, and arguments that are likely to be brought to bear in the debates surrounding potential economic stimulus measures, there is a clear need for a consistent framework through which to analyse and evaluate these measures in order to assess their short, medium and longer term economic and environmental impacts and how they might interface with existing policies and programs.

The purpose of this paper is two-fold. First it outlines a framework that could be used to identify and assess the economic, environmental and fiscal issues impacts of proposed measures in a Canadian economic stimulus package. Second, it applies this framework to categories of proposed stimulus measures, and identifies those that appear to offer the greatest economic and environmental returns.

It is important to be clear at the outset that the measures that are being put forward in this report are being put forward strictly in the context of the forthcoming economic stimulus package. Although some of these measures might also be appropriate in a different national and global economic context, this analysis is tailored to the economic reality of a severe recession and the political reality of the anticipated package.

1.1 The Context

Much has been written about the impact of the current global financial crisis on the Canadian economy. This paper will not spend a lot of time reviewing the discussion to-date which would require a paper in and of itself. Instead, the objective of this report is more forward-looking – to develop a framework for assessing the economic and environmental impact of measures that are being proposed as part of Canada's economic stimulus package and to identify some of the most promising green stimulus measures that could be included as part of this package.

In order to set the stage for the discussion which follows, however, it is useful to briefly review the current crisis and its impacts on Canada¹. Recent analysis by Finance Canada as part of its pre-budget consultations highlighted the challenges that Canada is facing, particularly in its export sectors²:



¹ Office of the Parliamentary Budget Officer, <u>Economic and Fiscal Assessment</u>, November 20,2008

² http://www.fin.gc.ca/n08/data/08-103_1-eng.asp

The global context for this economic crisis is equally grim. The IMF projects real global GDP growth of only 2.2% in 2009, down from 3.75% in 2008 and 5% in 2007. It describes an environment in which the growing financial crisis has weakened markets for commodities and in which economic prospects are exceptionally uncertain. It is unequivocal in its outlook on the steps that should be taken to address this crisis³:

"There is a clear need for additional macroeconomic policy stimulus relative to what has been announced thus far, to support growth and provide a context to restore health to financial sectors."

Regionally, Canada's largest trading partner, the U.S., is expected to endure a protracted period of economic weakness. In response, they are prepared to unveil an unprecedented \$900B stimulus package over the next two years. President-elect Obama has indicated that his stimulus package will have a significant green component:

"Obama has said that he would invest \$150 billion over 10 years in advanced energy technologies. He says he would double federal research funding and put money into training workers for clean technology jobs. He also suggested that by 2025, some 25 per cent of electricity consumed in the United States should be derived from renewable energy sources. He supports carbon capture and storage (CCS) to promote clean coal⁴."

The European Union is also proposing that its members invest 1.5% of their GDP in a fiscal stimulus package. The total value of this package would be approximately 200B Euros⁵ and it too would have a significant green component. China has also introduced a massive \$568 billion dollar stimulus plan in November of 2008, over a quarter of which is targeted at green technology and clean energy.

This report does not delve into the question of whether an economic stimulus package is a good idea⁶. Rather, it starts from the premise (shared by the IMF, by global leaders and by many nations and experts) that a well-designed stimulus package is likely to help reduce the length and severity of the current recession and accelerate recovery. Building from this premise, the report focuses primarily on how to design such a package to achieve maximum economic and environmental benefits.

In looking at potential stimulus options, the first of these two goals is often taken as a given – stimulus options must deliver the maximum economic benefit. The follow section of this report outlines three compelling reasons why it is important that a stimulus package should include a range of green stimulus measures. This is not to say that a stimulus package should only include measures that are environmentally beneficial, but rather that it is important to understand the environmental implications of any measure before it is implemented.

1.2 What is an "Economic Stimulus Package"?

At its core, an economic stimulus package is a set of measures designed to enhance aggregate demand within the economy or, put more simply, to increase economic activity. In order to understand the purpose of such a package, however, it is necessary first to understand why it is important to increase spending in the economy and to answer the question *why is there insufficient spending in the first place*?

³ Conference Board of Canada, A View from Washington: Climate Change Under Obama, Briefing, December 2008

⁴ http://ec.europa.eu/economy_finance/thematic_articles/article13502_en.htm

⁵ Organizations such as the IMF (cited above) have made persuasive arguments that stimulus packages are both useful and necessary to address the current global economic crisis

For households and individuals the reasons for the decrease in spending are clear:

 Fewer jobs – Many individuals and households are feeling the impact of layoffs and plant closures. Towns like Smith Falls, Ontario for instance currently face an economic environment in which 3 of their major employers who employ more than 20% of their population will have closed their doors in less than a year. Significant unemployment leads to significant decrease in consumer spending. Although the unemployment rate in Canada is still low, in November 2008 Canada posted its most significant job losses in the last 26 years losing more than 70 000⁷ jobs . Further significant losses are anticipated in 2009.

Canada is also affected by job losses in the United States. The United States accounts for nearly 80% of Canada's exports, particularly in sectors such as forestry, energy and mining. In November 2008, the United States lost more than 500 000 jobs, leading to a significant decline in aggregate consumer demand. This decrease in demand will only grow as employees who were laid off run through their severance and unemployment benefits.

- 2. Decline in Wealth The sub-prime mortgage crisis and the subsequent melt-down in the markets have left many Canadians with significantly lower levels of wealth. Many investment portfolios and retirement plans have lost upwards of 40% of their value in the past 4 months, with resulting impacts on people's spending. In particular, many seniors and other living on fixed incomes will have a significantly reduced income stream for the foreseeable future.
- 3. Uncertainty A final component affecting spending is the high level of uncertainty in the market. Consumers are unsure whether prices will continue to decline, whether they will still have a job in the new year and whether companies such as GM and the other large automobile manufacturers will still be in business over the medium and longer terms. In December 2008, consumer confidence in Canada was at its lowest level since 1981⁸. In an environment of deep uncertainty consumers are choosing to defer major purchasing decisions.

For businesses there are equally compelling challenges that have lead to decreased spending:

- 1. Lack of Demand Lower than normal demand in domestic and global markets means that many businesses are left with a higher than anticipated inventory of goods. This had lead to significant downturns in many global commodity markets. As an example, the retail price of a tonne of recycled paper has decreased from over \$100 in August of this year to under \$5 by November. In the face of this lower than anticipated demand businesses are laying off workers and choosing to defer new investments until demand recovers.
- 2. Constrained Access to Credit Even those companies that wish to make new investments are faced with a severely constrained global market for credit. Anecdotally, it is becoming extremely difficult, if not impossible, for companies, particularly innovative SMEs, to access the credit they need to bring new productive capacity on-line and to create new jobs in innovative fields to replace those jobs that are being lost in traditional occupations.

So an economic stimulus package is a package of measures designed to address these five challenges. At

⁷ http://www.thestar.com/Business/article/549430

⁸ http://www.financialpost.com/news/story.html?id=1104794

the level of the individual or household this is primarily accomplished through job creation. As new jobs begin to appear and unemployment levels are reduced there is a natural increase in demand in the economy leading to increased consumer confidence. At the level of businesses and corporations this is accomplished by:

- 1. Enhancing demand for goods and services in the economy; and
- 2. Encouraging new investment by enabling access to credit.

At the level of government this is accomplished by providing a stable fiscal environment through which to support the first two first two levels of activity.

There are differing perspectives on the appropriate magnitude of a stimulus plan. The Conservative government has talked about running a deficit as high as \$20-\$30B over the next four years to fund a stimulus package. This would represent approximately 1.5% of GDP. In the United States various think tanks have suggested that a more appropriate figure could be as high as 2.5 or 3%.

1.2.1 What makes an Economic Stimulus Measure "Green"?

A key question for Canada in looking to develop its stimulus package is as follows: to what extent should "green" stimulus measures be included in an economic stimulus package? While many G-8 countries have made the choice to include such measures in their packages, Canada has not yet decided. The remainder of this section examines this question, first by providing a definition of "green" stimulus measures and then by examining the arguments for their inclusion in an economic stimulus package.

If, at their core, stimulus packages are designed to create new jobs then "green" stimulus measures are those measures that lead to the creation of "green" jobs. Definitions of what makes a job "green" vary greatly between and within jurisdictions. Statistics Canada, for instance, uses the Environment Industry Survey, Business Sector (EIS) to estimate the number of firms and employees involved either in whole or in part in the production of environmental goods, the provision of environmental services and the undertaking of environment-related construction activities. This survey is based on the definition that the environment industry consists of firms whose main object is to produce goods and services to measure, prevent, limit or correct environmental damage. (Definitions from other global jurisdictions are included as **Annex I** to this report.)

The environment sector has been one of fastest growing sectors of the Canadian economy over the past decade, and is projected to continue expanding rapidly in coming years⁹. Therefore, investments in this sector offer attractive environmental and economic opportunities.

However, the Statistics Canada definition of the 'environment industry' is quite limited, particularly when applied to a broad policy instrument such as an economic stimulus package. In this context it is more appropriate to look at a broader definition of green jobs:

Green jobs, whether in an environment industry or a traditional sector, are those jobs that produce an environmental benefit.

⁹ Several sources: Industry Canada, (2005), Ontario's Environment Industry: An Overview; Industry Canada; (2008), Canada's Environmental Industry (http://www.ic.gc.ca/epic/site/ea-ae.nsf/en/ea02548e.html); Government of the UK, Department for Business, Enterprise & Regulatory Reform, (2002), Global Environmental Markets and the UK Environmental Industry Opportunities to 2010

This definition would encompass the conventional definition of "green" industries articulated above, but would also encompass a much wider range of employment opportunities in traditional sectors. For instance, if a stimulus package included a measure to support investments in home energy efficiency, many of the jobs that would be created would be in traditional trade occupations such as plumbing and carpentry. However, under this definition, these jobs would be considered "green" jobs as they are being created in service to a green outcome. The same would be true, for example, of new auto sector jobs focused on retooling to build more fuel efficient cars.

This definition of "green" jobs will be used throughout the remainder of the report and will form the basis of a framework through which to measure the economic, environmental and fiscal elements of proposed stimulus measures.

1.3 Why a "Green" Stimulus Package?

In setting out to build and assess potential "green" measures in a stimulus package it is important first to address a simple yet critical question – why is it important for a stimulus plan to include a "green" component? Indeed, the question can be asked, is it reasonable to even look at the environmental impacts of stimulus measures when their primary purpose, by definition, is to create jobs and to help move Canada's economy out of recession?

There are four core reasons why it is critically important that any stimulus plan that is brought forward is a "green" stimulus plan:

- 1. Green stimulus measures can **provide strong short-term economic returns** in terms of job creation;
- The economy of the future will reward companies that are energy efficient, low polluting and use natural capital wisely. [Canada presently lags behind most OECD countries in these areas.] This stimulus package offers an unparalleled opportunity to retool the economy with cleaner technology and infrastructure – as other developed countries are doing – to position Canada to compete in the green economy of the future;
- 3. Harm to the environment carries a very real and significant economic cost. When this impact is factored into the analysis, environmentally positive stimulus measures can often provide greater value than their environmentally neutral or negative counterparts; and
- 4. **Failure to take advantage of the current opportunity** to make Canada's industries and infrastructure more sustainable would have serious consequences, setting Canada behind in relation to our major trading partners in the emerging global market for green technologies and making it more difficult to prevent further damage to our environment.

The remainder of this section looks at each of these factors in more depth.

1.3.1 Strong Economic Performance

A growing body of analysis suggests that green stimulus measures can provide strong economic returns in terms of job creation¹⁰. In a recent report, the Institute for American Progress examined the impact of a \$100B stimulus in high priority green investments. Their economic analysis indicated that such an investment would (among other impacts) create 2 million new jobs nationwide over two years¹¹. A recent report by DWS Investments supports this analysis:

"The Apollo Alliance estimates that every \$1 million invested in the US in energy efficiency projects creates 21.5 new jobs, as compared to only 11.5 jobs for new natural gas generation. The University of California Berkeley's Renewable and Appropriate Energy Laboratory also finds that renewable energy technologies create more jobs per average megawatt of power generated and per dollar invested than coal or natural gas."

These findings are echoed in Canada by the *Pembina Institute for Appropriate Development* which suggests that investments in energy efficiency, public transit and renewable energy could create more then 50,000 new jobs over the next five years.

While the exact level of job creation will vary by the type and details of the proposed stimulus measure, these analyses indicate that many types of "green" stimulus measures compare favorably to other potential measures in terms of job creation.

1.3.2 Re-tooling for a Green and Prosperous Economy

Globally, there is a significant and growing market for low-carbon technologies. A recent report by the Worldwatch Institute, with the Cornell University Global Labor Institute, outlines the scale of the opportunity¹²:

"2.3 million people (globally) have, in recent years, found new jobs in the renewable energy sector alone, and the potential for job growth in the sector is huge. Employment in renewable energies may rise to 2.1 million in wind and 6.3 million in solar power by 2030. Projected investments in renewable energy of US \$630 billion by 2030 would translate into at least 20 million additional jobs in the renewable energy sector ... a worldwide transition to energy-efficient buildings would create millions of jobs, as well as "greening" existing employment for many of the estimated 111 million people already working in the construction sector. Investments in improved energy efficiency in buildings could generate an additional 2-3.5 million green jobs in Europe and the United States alone, with the potential much higher in developing countries."

The proposed scope of investment through an economic stimulus package provides a unique opportunity to help retool the Canadian economy to ensure our future competitiveness. Canada has the opportunity to begin to prepare for a low-carbon, low pollution economy in which we reduce our per capita consumption of resources while enhancing our resource productivity while increasing our standard of living. The importance of the transition to a low carbon economy is driven home by Achim Steiner, UN Under-Secretary

¹⁰ See for example, "The Climate For Change", http://www.nytimes.com/2008/11/09/opinion/09gore.html?_r=1 and recent reports by the Center for American Progress "Green Recovery" and the Deutsche Bank Group "Economic Stimulus: The Case for "Green" Infrastructure, Energy Security and "Green" Jobs, among others.

¹¹ http://www.americanprogress.org/issues/2008/09/green_recovery.html

¹² Excerpt from an analysis of the Worldwatch Institute Report by RenewableEnergyWorld.com http://www.renewableenergyworld.com/rea/news/ story?id=53686. The Worldwatch Institute Report can be found in its entirety at: http://www.ilo.org/global/What_we_do/Publications/Newreleases/lang--en/ docName--WCMS_098503/index.htm

General and Executive Director of the United Nations Environment Programme (UNEP) who has stated that¹³ :

"Economic growth in our modern times cannot be achieved with old consumption and production patterns - a point brought into sharp relief by our new Global Environment Outlook-4 which shows that collectively humans are overutilizing the Earth's nature-based resources at a rate that is outstripping nature's ability to renew and replenish them ... We need to provide a boost to resource-efficient growth and innovation. We need to break the links between economic growth and environmental degradation, and finding ways to achieve this "decoupling" is what the new resource panel is all about."

The economy of the future will reward companies that are energy efficient, low-polluting and use natural capital wisely. Canada presently lags behind most OECD countries in these areas¹⁴. The proposed economic stimulus package is a significant tool to enable us to make up ground on our trading partners and to help us to make the necessary transition to a low-carbon economy.

Currently, other countries are widening the gap in the transition to a low carbon economy. The proposed stimulus plan from incoming president Obama in the United States puts a heavy emphasis on "green" investments and opportunities¹⁵. This emphasis is echoed in the European Union and in China which has earmarked 25% of its stimulus package for "environmental protection" including investments in energy production and energy infrastructure¹⁶. As described by the Guardian Environment Network:

"For several years, the Chinese government has been sponsoring a shift from energy-intensive to knowledge-intensive jobs and economic activity. China's recently-announced \$586 billion stimulus package (Rmb4,000bn, £380bn) will transform its economy even faster, by promoting economic restructuring and essential green infrastructure."

1.3.3 The Cost of Pollution

A third reason to ensure that the stimulus package contains "green" elements is the economic costs associated with pollution. In looking at potential stimulus measures, the government must consider the total benefits of that measure against its costs – economic, social and environmental. Environmental harm imposes very real costs on our society and economy. Long term estimates of the cost of climate change are that it could cut between 5 and 20% of the world's wealth by the end of the century – more than the cost of both world wars and the depression combined¹⁷. Loss of biological diversity, mainly from habitat destruction, is projected to cause similar GDP reductions¹⁸.

In terms of more immediate impacts, recent studies by the Ontario Medical Association estimate that air pollution costs the province more than \$1B dollars in hospital costs alone¹⁹. Health Canada has estimated that air pollution is responsible for 5900 premature deaths annually in Canada's eight largest cities²⁰. When environmental costs are factored in, "green" economic stimulus measures make sound economic sense. By stimulating economic activities that lead to cleaner air and water, reduced greenhouse gases, and restored green spaces, the government will be providing real, lasting benefits to Canadians.

¹³ http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=521&ArticleID=5700&l=en

¹⁴ http://www.environmentalindicators.com/htdocs/execsum.htm

¹⁵ "High Hurdles for Obama's Green Stimulus", Business Week, 29 Dec, 2008

¹⁶ See "EU unveils €5bnm green car stimulus package", Business Green, 27 Nov 2008; http://www.chinaenvironmentallaw.com/2008/11/19/chinas-stimulus-package-energy-the-environment/; http://www.guardian.co.uk/environment/2008/nov/28/china-climate-change; and others.

¹⁷ http://www.newscientist.com/article/dn10405-top-economist-counts-future-cost-of-climate-change.html

¹⁸ Cite report : http://www.ecologic.de/modules.php?name=News&file=article&sid=2363

¹⁹ Cite report : http://www.ecologic.de/modules.php?name=News&file=article&sid=2363

²⁰ http://www.canada.com/topics/news/national/story.html?id=df5cf264-2a1c-4dff-894a-5f7e88e18715

It is also reasonable to expect that any economic stimulus package that involves public funds, should deliver both public and private benefits. An effectively structured green stimulus plan can achieve both of these ends by improving the business environment, creating jobs and raising consumer confidence while also delivering real, tangible environmental benefits for all Canadians.

1.3.4 The Risks of Missing the Opportunity

By making Canada's economy more environmentally sustainable, Canadian policymakers can simultaneously improve both the international competitiveness of Canadian industry and the quality of the Canadian environment. The failure to take advantage of this opportunity to shift Canada's economy onto a more sustainable footing, however, could have significant consequences for decades to come. This budget stimulus package will be one the largest injections of public funds into the economy in decades. The choices that policymakers make will shape Canada's growth for many years to come. In particular, there are three areas in which the policy decisions made today in the context of the economic crisis will impact on the long-term growth-path and sustainability of the Canadian economy.

- 1. **Infrastructure Investment:** Virtually all discussions of economic stimulus measures involve consideration of new public infrastructure projects and investment. Large infrastructure projects have long time horizons and can last for generations. In addition, some types of infrastructure, such as transportation infrastructure, have critical impacts on the overall pattern of economic development and energy-use in society. A significant renewal of public infrastructure could result in massive savings to the Canadian public in terms of both economic and environmental benefits; alternatively poorly considered investments could commit Canadians to years of continued inefficiency and waste. Canadian policy-makers considering massive new investments in public infrastructure must take into account the long-term environmental impacts and opportunities associated with them to make the right decisions for the future.
- 2. **Regulatory and Tax System Changes:** In addition to new spending, government responses to the current crisis are likely to include substantial changes in government regulatory systems and the tax code. Most immediately, the focus of these changes will be the financial and housing markets. However, the government may consider regulatory changes for other sectors as well, either to address underlying weaknesses or to provide additional stimulus. Policymakers may also enact either temporary or permanent changes in the tax codes to provide economic stimulus.

These types of regulatory and tax system changes are also long-lived, and once introduced, have substantial long-term impacts on economic development.

3. **Industry Support and Development.** Finally, Canadian governments will also be looking at creating new support mechanisms for industry in order to mitigate the effects of the economic downturn. The decisions they make about how to structure this support and which industries and areas to target will have long-term repercussions for the economy. For instance, how support is provided to Ontario's ailing auto manufacturing sector could significantly affect how aggressively automakers invest in retooling to build cleaner, more fuel efficient vehicles – a

key element of their future competitiveness. Assistance provided to the energy and forestry sectors could also either strengthen or weaken incentives to move towards cleaner production practices.

1.4 Overview of the Report

In order to make effective decisions on the types of measures that should be included as part of a stimulus package, it is important to understand the kinds of instruments that are available to governments. Section **2.0** provides an overview of the three primary types of policy instruments that are available to the government:

- 1. Direct Fiscal Measures
- 2. Tax System Measures
- 3. Regulatory Measures

Many beneficial impacts have been ascribed to the measures that are outlined in Section 2.0, often without any objective effort to compare or prioritize them on the basis of their outcomes. In order to make an effective comparison and evaluation, it is necessary to develop an evaluation framework that enables an applesto-apples comparison of the key components of the proposed measures. **Section 3.0** of this report outlines a proposed analytical framework for evaluating green stimulus measures and provides a tool to enable a simple and effective comparison between measures.

Section 4.0 builds from this framework to provide a preliminary analysis of key categories of proposed stimulus measures.

The report concludes in **Section 5.0** with a more in-depth look at potential "green" stimulus measures in the highest rated categories of measures, based on the analysis in the previous section.

Section 2: Economic Stimulus Measures

The following section outlines the range of options and strategies that are available to government to catalyse additional spending and thereby increase aggregate demand and employment in the economy.

In the context of a recession or depression, a strong preference for asset liquidity among economic actors (i.e. people save their money) leads to lower rates of consumption and investment, thereby deepening and perpetuating the downturn. Catalysing additional spending in the short-run with fiscal support is widely seen as a way of restoring momentum to the economy and increasing business and consumer confidence²¹.

2.1 Economic Stimulus Objectives and Options

Discretionary fiscal stimulus measures can be categorized by both their objective and by the type of instrument that is used to deliver the measure. In general, the objective of economic stimulus packages is typically defined as generating an increase in aggregate demand in the economy. As discussed earlier in this paper, there are compelling arguments that suggest that the most effective way to increase aggregate demand is by creating new jobs. A "green" stimulus measure should also have a second core objective, to enable the transition of the economy towards more efficient and less environmentally damaging technologies and practices.

In attempting to bolster aggregate economic demand, the government has three types of instruments at its disposal:

- 1. **Direct Fiscal Measures:** The government can spend directly (typically incurring deficits in the process), on expanding existing programs, services, etc.; or financing infrastructure and public works spending through the provinces and municipalities.
- 2. **Tax System Measures:** The government can use the tax system to create additional incentives for investment or consumption, or transfer financial resources to taxpayers.
- 3. **Regulatory Measures:** The government can also use regulatory measures to facilitate economic stimulus if applied with complementary stimulus measures, i.e. mandate and increase environmental performance and provide a tax incentive to achieve the target.

Each of these instruments, in turn, can focus on any or all of the following economic actors:

- 1. Government: Spending by government increases demand for goods and services directly²².
- 2. **Household/Individual:** Additional household consumption can be stimulated with fiscal transfers through government programs, tax measures (such as individual tax cuts or rebates), or new regulation.
- 3. **Business:** Increased business investment can also be stimulated through the tax system (in the case of corporate tax cuts, investment tax credits, or other allowances), fiscal transfers, or new regulation (such as energy efficiency standards or pollution control regulations).

²¹ As noted in section 1, this report starts from the premise (shared by most nations and experts) that a well-designed economic stimulus package can help with economic recovery.

²² Although in cases where fiscal programs transfer resources to individuals or households, such as employment insurance and social assistance programs, the intent is that these resources will be recycled into the economy through consumer spending

2.1.2 Examples of Proposed Stimulus Measures

Many different organizations, industry associations and experts have brought forward recommendations for economic stimulus measures. A list of the more prominent organizations and their key recommendations can be found in **Annex II** of this report.

From this broad range of recommendations, we created an aggregate list of stimulus measures (see **Figure 1** — over) that have emerged to-date. Note that the list is grouped by the key policy instruments outlined above – Direct Fiscal Measures, Tax Measures and Regulatory Measures.

The remainder of this section will look at each of the three policy instruments in more detail. **Section 3.0** of this report will provide a framework for comparing and evaluating categories of measures and the report will conclude in **Section 4.0** with a discussion of potential specific measures that perform favourably against this framework.



2.2 Direct Fiscal Measures

Both in Canada and in the United States there has been a significant focus on the most appropriate fiscal or spending measures that could be included as part of an economic stimulus package. There is an extremely broad range of measures and programs that fit under this instrument, as illustrated in Section 2.1 above. Given this broad range of proposals, it is particularly important to develop an effective framework to compare and prioritise different stimulus options.

Organizations such as the *Institute for America's Future* in the United States have articulated strong support for the inclusion of "green" direct fiscal measures as part of the US stimulus package. Their proposal outlines a program of almost \$900B in stimulus over the next two years with a focus on the following types of components:

- 1. Energy efficiency and renewable energy;
- 2. Modernizing infrastructure;
- 3. Supporting affordable education at the beginning (pre-kindergarten) and the end (post-secondary) of the education timelines;
- 4. Support for States and municipalities; and
- 5. Support for low-wage workers who are most vulnerable as a result of the economic slow-down.

Each of these five categories of expenditure has or could have a "green" component. Economist James Galbraith described the kinds of measures that should be included as part of a stimulus package as follows²³:

" Economic recovery in an existential crisis like this means actually building a new economy ... For that, we need investment -- to restore our ... rails, transit, broadband, and water systems, to build parks and museums and libraries, to protect the environment."

Similarly, on November 26, 2008 the European Union called on its members to adopt a stimulus package based on "smart" investment²⁴,

"Smart investment means investing in the right skills for tomorrow's needs; investing in energy efficiency to create jobs and save energy; investing in clean technologies to boost sectors like construction and automobiles in the low-carbon markets of the future; and investing in infrastructure and inter-connection to promote efficiency and innovation "

The EU plan has a similar focus to the IAF plan, investments in energy efficiency, clean and renewable energy generation, the conversion of key manufacturing from high to low-carbon production and investments in infrastructure and interconnection. It is interesting to note that the European plan also includes a strong social justice focus – helping to retrain those who have lost their jobs and targeting energy efficiency interventions to those on low income to improve their economic environment and enable them to increase their consumption thereby boosting demand.

In **Section 4.0** we will analyse a range of proposed direct fiscal measures to see how they perform based on a set of evaluation criteria.

²³ Institute for America's Future, Press Release – <u>The Main Street Recovery Program</u>, December 2008

²⁴ Commission of the European Communities, <u>A European Economic Recovery Plan</u>, November 26, 2008

2.3 Tax System Measures

This section looks at the scope of both existing and potential measures in the income and sales tax systems that could be used to deliver a green stimulus.

There are many examples of "tax expenditure" measures being used to help achieve economic development or social objectives. A catalogue of these measures is produced annually by Finance Canada²⁵. This section will briefly examine only a subset of these expenditures and focus on those which have a "green" policy objective.

2.3.1 Use of Tax Incentives

The sales and income tax systems can be used to impact aggregate demand and therefore provide the basis for an economic stimulus. Reductions in the statutory or effective rate of tax have often been used as a macro economic instrument. Selective tax measures can be used to stimulate specific types of investments within selected industries, population groups or even geographic regions.

There are many examples in Canada of sales or income tax policies being used as a catalyst to encourage economic activity, including environmentally beneficial investments. Investment tax credits or accelerated capital cost allowances have often been used within the corporate and personal income tax systems. Selective rate reductions, exemptions or holidays have also been used within federal and provincial sales and excise tax and GST/HST systems.

2.3.2 Advantages and Disadvantages of Tax Instruments

The primary attraction in using sales or income tax systems to deliver stimulus incentives is that tax systems changes can be very readily implemented, often through changes in the Income Tax Act Regulations.

One shortcoming with tax measures is that tax changes can be discovered (after the fact) to be less efficient since they may often finance activities that would have already taken place without the stimulus. In effect, the tax incentives are more likely to provide windfall gains than would occur with properly designed and monitored direct program grants. The latter are more readily adjusted to the economic circumstances of each economic agent, and so can be targeted where the need and impact is greatest, although this inevitably means the costs of administration will be higher.

In contrast, most tax systems are self assessing and use statutory criteria rather than discretionary bureaucratic tests. For this reason most investors/consumers tend to prefer tax incentives because the tax rules are more certain. There is no bureaucratic intervention except perhaps in the rare situations where the taxpayer goes to court. Tax incentives require far less information that what is the norm with most grant applications (which involve time and cost). This is partly because the tax system is at least in theory a self assessment system. The selling point for investors is that with tax incentives the eligibility criteria is described in law. In addition, the incentive is a demand-driven entitlement.

A further disadvantage with tax incentives is that they do not have much impact on the activities of companies that are currently in a non taxpaying situation. This is particularly true in the case of income tax incentives. Companies may be not currently be paying income taxes because they are entering into a growth phase and

²⁵ Department of Finance Annual Tax Expenditure Report see most recent version at http://www.fin.gc.ca/n08/09-002-eng.asp

are spending heavily. They may also be non taxpaying because of an economic downturn. Tax incentives that have to be carried forward for use in subsequent years will have a lower stimulus effect than initiatives that provide immediate benefits. In these situations the government may have to provide greater opportunities to "monetize" the tax incentive either by allowing the incentive to be carried back to reduce any tax paid in prior years or by providing a refundable tax credit. Another option is to provide a financing incentive so that new investors in the corporation are able to access the tax incentive that the corporation is currently unable to use. These options are discussed below in the context of the existing incentives for R&D and renewable energy.

2.3.3 Taxes: Stick or Carrot?

While almost all of the preceding discussion has been framed in terms of using tax incentives as a stimulus, there is, of course, the "stick" side of tax systems rather than the carrot. Taxes can be used to discourage certain types of activities (by taxing them) and as a consequence encourage other behaviours. The recent debate over carbon taxes during the federal election campaign is the most obvious example. The carbon tax proposal can be seen as an attempt to ensure that the full environmental impacts (i.e. negative externalities) of GHG emissions are captured in the price system. Its primary benefit is that it puts a price on the release of carbon dioxide. However, it does not set a specific limit on emissions in the same manner as a cap and trade system. The latter system allows the market to set the price. There are benefits and costs to either approach but this debate is beyond the scope of this paper. It suffices to point out that at the current time only BC has actually initiated a significant carbon tax. It is an initial step with modest rates of tax and legislated commitments to fully recycle revenues into low income tax credits and income tax reductions for individuals and businesses.

2.3.4 Existing "Green" Tax Measures

The major green stimuli currently delivered in the income tax system include the following:

- 1. Investment tax credits and immediate deductions for all capital and operating expenditures related to research and development in Canada (including research and development in greener products and processes). It can be argued that increased R&D is not inherently either bad or good for the environment. If it leads to the development of a new product or process that is either produced more efficiently or has fewer negative environmental externalities when used it will be positive. On the other hand new products may not always be green. The tax system does not distinguish between "green" and "brown" (environmentally harmful) research activity. Arguably, this is a task that regulations would be better suited to monitor so that the environmental implications of new products and processes need to be properly assessed before they are put into operation/production.
- 2. Accelerated capital cost allowances for various types of energy conservation, energy efficiency and renewable energy equipment which allows the costs of this equipment to be deducted more rapidly.
- Tax incentives which allow certain types of intangible expenses associated with energy conservation, energy efficiency and renewable energy equipment to be financed on more favourable terms²⁶. These financing incentives were introduced primarily to ensure that these expenses for renewable energy were afforded similar tax benefits as those available for exploration of non-renewable resources.

²⁶ Flow through share financing is available for certain categories of intangible costs. These expenses are defined as CRCE (Canadian Renewable and Conservation Expense) and these costs may be flowed through to new equity purchasers and deducted by these purchasers who may be better able to use the deductions than the issuing corporation.

There are a range of additional measures that also incent "green" behaviour; however, the three items described above are relatively more important to the companies who would have to be engaged in undertaking investment and delivering the jobs that would form the core of a stimulus package. The additional measures currently in place include:

- 1. GST rebates to new housing that are capped based on house prices.
- 2. GST rebates to municipalities, universities, schools and hospitals (MUSH) that are prescribed by formula.
- 3. Fuel taxes that can encourage and/or discourage the consumption of certain types of motive and non-motive fuels (leaded, unleaded, diesel, biofuels, exemptions for propane, farm and home heating fuels).
- 4. Excise and sales taxes (A/C, heavy vehicles, sales tax exemptions and rebates for energy efficient and/or green vehicles in many provinces).
- 5. Credits for Transit Passes for personal income tax purposes to encourage the use of public transit where such service is available.
- 6. Deductions for contributions to Specified Reclamation Trusts (contributions by companies to trusts to ensure future rehabilitation of sites such as currently operating mines).
- 7. Deductions for donations of ecologically sensitive land

2.3.5 Some Green Tax Based Programs to be examined further:

A number of specific Tax Measures have been proposed as part of the "green" element of a stimulus package including:

- 1. Allow the interest earned on bonds which are used by municipalities to finance green infrastructure projects to be exempt from income tax in the hands of the lenders. The US has this incentive and it appears to reduce the cost of borrowing for municipalities when they raise money from investors. There may need to be some thought as to how such a measure in Canada might mesh with the new federal TFSP (Tax Free Savings Plan) and whether it would be complementary since there may be efficiency and equity issues.
- 2. The conversion of the existing accelerated capital cost allowance (CCA) incentives for green investments (under Classes 43.1 and 43.2) into a refundable tax credit. (An accelerated allowance provides a benefit to companies that is spread over several years whereas a tax credit provides a benefit in the year the equipment is acquired and a tax credit can also be more readily made refundable and thus of direct the benefit to a corporation that is not currently paying tax). This measure could also be expanded to include more types of clean energy or pollution control equipment.
- 3. Reduce sales/excise taxes on specific types of "green" machinery, goods and equipment (e.g. highefficiency/green cars or energy efficient appliances at the consumer level, or energy saving/pollution reducing equipment at the industry sector level)

- 4. Introduce broad-based carbon taxes and use the revenues raised to provide tax incentives or grants to environmentally positive activities such as renewable energy, public transit, energy efficiency, energy conservation, carbon capture and storage, recycling etc
- 5. Convert existing fuel taxes into a carbon tax (using current rates of gas tax as the benchmark) and expand to other fuels (home heating for example) then use revenues raised to offset regressive impacts of the new taxes on home heating costs incurred by lower income households

2.4 Regulatory Measures

Regulation is one of the many instruments that governments can use to achieve policy objectives. Regulations have the force of law and usually set out rules that apply generally, rather than to specific persons or situations. They constrain behaviour by establishing standards or performance requirements that must be met. There are extensive exiting regulatory regimes in place in the economic, environmental, safety, health and other fields.

2.4.1 Categories of Environmental Regulation

In the environmental area there are many varieties of regulations to achieve an array of environmental purposes, such as clean air, clean water, forest management, wildlife protection, greenhouse gas reduction, etc. The most common are rules that prohibit or limit the discharge of pollutants into the air, water or land. At the federal level most of these discharge regulations fall under the *Canadian Environmental Protection Act* (CEPA) or the *Fisheries Act* (for water).

A somewhat less prescriptive category are regulations which establish minimum 'green' performance standards (e.g. minimum energy efficiency, maximum emissions limits) for equipment and structures. At the federal level in Canada, for example, minimum energy efficiency standards are imposed on most types of appliances (stoves, refrigerators, furnaces, air conditioners, etc.) through the *Energy Efficiency Act*. In the industrial sector, electric motors, boilers and generators are similarly regulated. Typically, the regulatory cycle for appliances (i.e. the period in which the standards are in place) in Canada is about 5 to 7 years designed to coincide with the cycle in the U.S.

The fuel efficiency of motor vehicles is also, in principle, subject to regulation. However, Canada has chosen, so far, to adopt the U.S. standards on a voluntary basis. The U.S. standards, known as Corporate Average Fuel Efficiency (CAFE), have not changed appreciably since the 1980s and do not cover light trucks and SUVs. In 2007, the Bush Administration committed to increasing the CAFÉ standards but has not yet done so. Canada has committed to a regulatory approach but is awaiting the U.S. decision before proceeding with its own fuel efficiency regulations.

Another major area subject to minimum standard regulation is buildings, both residential and commercial. Here the main regulatory agencies are the provinces and municipalities through their building codes. Although much of building regulation has to do with safety, increasingly minimum standards regarding insulation and the thermal shell are being introduced into the provincial and municipal codes.

Finally, there a number of new, innovative regulatory schemes such as cap and trade / tradable emissions permits which have been proposed to address the greenhouse gas issue (see the *Western Climate Initiative* and the proposed federal *Clean Air Regulatory Framework*). These schemes are an extension of the emission regulations, adding a market mechanism to allow the overall targets to be achieved in a more cost-effective manner. There has already been some demonstration of the efficacy of cap and trade such as the SO2 regulations in the U.S. in the late 1980s–early 1990s. Although not strictly a stimulus measure, cap and trade systems can reduce the costs of meeting GHG reductions targets – which benefits the economy. The current thinking of the Obama team is to also use cap and trade as a source of funds for green projects by auctioning off the permits.

2.4.2 The Role of Regulations in a Stimulus Package

It has been argued, by Porter among others, that aggressive minimum standards through regulation stimulate innovation by forcing technological development. The evidence on this link is, at best, mixed²⁷. Even given the existence of the relationship, however, it is doubtful that higher performance standards regulation can, by itself, contribute to the kind of short term economic stimulus package which is the subject of this paper. Meaningfully tighter regulations (for energy efficiency, maximum emissions) can impose costs on some segments of the domestic market leading to possible short-term unemployment as low-efficiency producers are forced to close plants or curtail product lines. Although such adjustments might be desirable for environmental or long-term development reasons, they would likely be politically unacceptable in the current economic climate.

More aggressive regulation might, however, facilitate a greening of the stimulus package if it is undertaken with complementary fiscal incentives. One classic example of such a combination would be higher fuel efficiency standards for new automobiles combined with an incentive program to dispose of older vehicles. Assuming a trickle-down effect, the incentive would, at least indirectly, increase the demand for new vehicles (in addition to accelerating the replacement of the vehicle fleet).

A second and somewhat grander suggestion for linking tighter regulation and a complementary incentive relates to the Clean Air Regulatory Framework (CARF) for industry announced by the government in April 2007 but only very slowly being developed by the federal government. CARF sets targets for emissions reductions (intensity targets for GHG emissions, absolute targets for criteria air contaminants) for large facilities in a number of manufacturing and resource industries. The regulations provide for some limited alternatives if the emissions targets cannot be achieved economically (e.g. contribution to a technology fund, offsets, as yet undefined domestic inter-firm trading). There is, however, no significant financial support for the facilities to achieve the targets. As part of a stimulus package, therefore, CARF could be complemented with an incentive (a tax credit for example), tied to facility modernization/process improvements to achieve the emissions targets.

²⁷ A somewhat dated but very complete survey of the evidence as of the mid-1990s is found in Adam Jaffe, Steven Peterson, Paul Portney, Robert Stavins, "Environmental Regulation and the Competitiveness of U.S. Manufacturing: What Does the Evidence Tell Us?" Journal of Economic Literature, vol. 33, March 1995

Section 3: Evaluating Stimulus Measures

This section of the report describes a decision-making framework for comparing the economic and environmental performance of stimulus measures. It is important to acknowledge the early stages of development of these kinds of frameworks. Therefore, while still preliminary and qualitative in nature (although based on the input of a range of economic and environmental experts) this framework is a start at a longer, more resource intensive exercise to develop quantitative methodologies.

3.1 A Decision-Making Framework for Assessing Economic Stimulus Options

One of the challenges with assessing economic stimulus proposals is that there are a huge number of potential measures that could be deployed to meet the objective of bolstering demand in the economy. In this context, where possible policy options range from large new public infrastructure projects, to support for private industries, to detailed changes in tax codes, there is a need to establish a set of basic or minimum criteria through which to evaluate proposed stimulus measures and identify the most effective options.

Many existing analyses of potential economic stimulus packages have set out basic criteria through which to measure the potential impacts of proposed measures. One set of widely-used core principles for stimulus intervention (used, for example, by the Commission of the European Communities) is:

- 1. **Timely** to support economic activity in a period of low demand, not once it has recovered;
- 2. Targeted towards the sources of the economic challenge (and not to special interests);
- 3. **Temporary** in order to ensure that the chosen measures do not lead to a long term structural deficit.

These core principles align closely with those set out by *Finance Canada* in its Budget Consultation document, and we incorporate the "long-term goals" principle below into our "temporary" criteria in the rest of this report.²⁸

- 1. Timely as above
- 2. Maximize Impact ensuring that programs and policies maximize the impact in Canada
- 3. Size and Duration scalable depending on the length and depth of the recession
- 4. Long Term Goals linking short term objectives to longer term goals and objectives.

There are various other sets of criteria for evaluating economic stimulus. In this Report we use a modified version of the 3Ts approach, adding Finance's principle of "linking short term objectives to longer term goals and objectives" as an important part of our "Temporary" category.

Building retrofits provide a good example of the importance of using the timing of an economic downturn to implement projects that are in our long-term interest. Over the past few years, labour resources for a major initiative to retrofit buildings and homes would not have been available and the effort would have lead to unmanageable bottlenecks and inflation. In the current environment, however, there is an opportunity to absorb a number of the construction workers who will become idle as a result of plunging housing starts and residential and commercial building permits in major building retrofits across the country.

²⁸ http://www.fin.gc.ca/n08/data/08-103_1-eng.asp

These criteria all focus primarily on the economic impacts of potential stimulus measures. It is also important, however, to consider the potential criteria that one would use to evaluate the environmental elements of a stimulus measure. In addition, there may be other key policy considerations that should be considered when looking at each measure. The remainder of this section will look at each of these sets of criteria in more detail. Note that the framework is designed so first question is about economic benefits. Given that this is an economic stimulus package, a measure must be able to show significant economic benefits before questions about its environmental benefits are considered.

Table 1 (below) lays out a set of evaluation criteria for proposed economic stimulus measures, standards through which to evaluate those criteria (generally expressed as questions or benchmarks against which the measure should be expected to achieve) and possible data sources for inferring the performance of those measures against the criteria and standards. The ratings outlined in the remainder of this section are based on a literature review and expert analysis undertaken by Sustainable Prosperity.

Criteria	MEASURES/STANDARDS	DATA SOURCES		
Есопоміс				
1. Timely	 Will the measure generate significant economic activity in twelve months? Twenty four months? What percentage of the measure's total economic impact will be felt within twelve months? Twenty four months? 	 Inferred from design based on factors such as: does the measure require creation of new or- ganizational/ administrative arrangements? Is the measure currently planned and vetted? Do government departments and agencies have the capacity to begin immediate imple- mentation? Macroeconomic models (especially for direct spending, tax and regulatory measures). 		
2. TARGETED	 Does the measure transfer money to individuals, groups, or businesses that are likely to immediately spend and/or invest that money in Canada? Does the measure provide critical short-term economic relief to hard-hit sectors, regions, or communities? How many such regions/sectors would benefit? How much money is transferred to targeted sectors, regions and communities and how many jobs are created? 	 Inferred from a design targeting recognized qualifying populations from economic stimulus analysis and experience (low-income group, business with the capacity to immediately escalate spending, production, or investment to create jobs). Inferred based on impacted regions, communities, industries in Canada (news coverage, Statscan, Industry Canada, Industry Association Reports, Macroeconomic Models with Industry/Region dimensions) 		
3. Temporary	 Will the initial investment help to achieve longer term macro-economic policy goals and/or help to create sustainable long term economic activity that will continue after the initial investment is sunsetted? Does the measure require ongoing fiscal or tax expenditures after 1 year? 3 years? 5 years? If so, does the measure (or associated measures) include a long-term plan to maintain fiscal sustainability and avoid future budget deficits? 	 Measure design (nature of planned/required expenditures). Budget projections (based on macroeconomic simulations of GDP growth, fiscal revenues, and expenditures, etc.) 		

Table 1: Evaluation Criteria for Economic Stimulus Measures

ENVIRONMENTAL Note: for each of t	he environmental measure impacts will be measure	ed in terms of impact: High, Medium,Low
1. REMIDIATE EX- ISTING DAMAGE	• Will the measure help to clean up existing environmental damage to land, water, climate, wildlife, etc?	 Design: Which existing environmental harms is the measure intended to alleviate? By how much? Expected Impact: Existing literature/studies on the impact of similar policy impacts.
2. REDUCE ONGO- ING HARM	• Will the measure reduce or control pollution or environmental harm that would otherwise occur, such as through emission control tech- nology or new practices?	 Design: What types of pollution or environmental harm is the measure intended to prevent or control or reduce? By how much? Expected Impact: Existing literature/studies of the impact of similar policy instruments. Modelling and other quantification studies.
3. Improve Natu- ral Resource Management	• Will the measure improve the efficiency and sustainability with which we use natural resources; by getting more for the material flows we use and by wasting less?	 Design: What sources of pollution or environmental damage is the measure intended to reduce? By how much? Expected Impact: Existing literature/studies of the impact of similar policy instruments. Modelling and other quantification studies.
POLICY IMPLEMENT	ATION	
1. Administrative Feasibility	 Does the measure rely wholly on existing institutions, organizations, procedures, and capacities within the executing agency or agencies? Does the measure require the coordination and cooperation of multiple executing agencies? If so, how many and is there an established potential to effectively work together? Does the executing agency have experience implementing similar measures? If the measure requires the creation of new organizations, procedures, or capacities: o How quickly can these be established? o How much will it cost to establish them? 	 Inferred based on design: Executing agency/or agencies. Demonstrated capacity. Demonstrated ability to work together, etc. Novelty and complexity of measure design
2. JURISDICTIONAL CLARITY	 Does the measure lie largely within a recognized area of federal jurisdiction (or Provincial jurisdiction, in the case of provincial budgets)? If the measure involves overlapping jurisdictions is there likely to be significant delay or uncertainty in agreeing on responsibilities and funding allocation? Are there existing protocols to streamline decisions? 	 Constitution, federal and provincial law, and legal precedent. Accepted convention/practice as expressed in published literature and agency activities and experience.
3. Equity	 Does the measure have significant unequal impacts on different communities, groups, or individuals? Do these unequal impacts require government measures to correct them? 	 Inferred from design: based on whether the measure uniquely affects specific communities, individuals, or regions. Rationale: does the measure clearly articulate the need for the unequal impacts or for offsetting initiatives to correct them?

3.2 Economic Impact

The fundamental question in relation to the economic sustainability is whether the measure will increase aggregate demand/consumption in the economy. In particular, will it create new jobs or support existing jobs, increase consumer confidence and/or enhance the level of investment in the private sector. The three key evaluation criteria that should be addressed in this regard are:

1. *Timely*: Will the measure have the desired impact within the proper timeframe? It will be critical for measures to take effect as quickly as possible in order to address the current recession. Measures that will take years to take effect will not have the necessary catalytic impact on the economy and should not be considered as part of the stimulus package (although they could form part of a complementary package of longer term measures).

In the medium term it is important to understand if the measure will help to position the Canadian economy to take advantage of new/emerging industries, sectors, or markets. Will it result in a significant boost to long-run economic growth?

2. **Targeted**: Does the proposed measure direct resources to those who will spend or invest them immediately, and those who are most affected by the economic downturn? Will it support domestic rather than foreign investment? Fundamentally, the question of targeting relates to the need to ensure that resources are allocated where they will do the most good and have the most impact. Potentially, there is also an issue of social efficiency in terms of the need to support workers who are displaced as part of the economic downturn.

Related to the issue of targeting is the issue of impact - what is the overall magnitude of the impact on consumption in the economy?

3. *Temporary* – Will the initial investment help to achieve longer term macro-economic policy goals and/or help to create sustainable long term economic activity that will continue after the initial investment is sunsetted?

Does the measure promote long term fiscal sustainability by ensuring that fiscal commitments do not extend in perpetuity? For instance, a measure that increases current aggregate demand by moving forward future fiscal commitments is superior to one that creates an ongoing fiscal commitment on the part of the federal government. Other significant issues that need to be examined include the short-run fiscal cost in comparison with the long-run fiscal cost/risk. It is important that measures that are implemented not lead to long term structural deficits. As such, they should be time limited and clearly delineated in order to contain their longer term financial implications.

3.3 Environmental Sustainability

A second key set of criteria for a "green" stimulus measure is that it improves the environmental sustainability of the economy. In looking at environmental impacts and benefits there are three basic criteria to consider:

1. *Remediate Existing Harm* – Will the measure help to clean up existing environmental damage to land, water, climate, wildlife, etc?

- 2. *Reduce Ongoing Harm* Will the measure reduce or avoid pollution or environmental harm that would otherwise occur, such as through emission control technology or new practices?
- 3. *Improve Natural Resource Management* Will the measure improve the efficiency and sustainability with which we use natural resources; by getting more for the material flows we use and by wasting less?

A simple visual comparison of the anticipated impact of a sampling of proposed stimulus measures is provided below. The shaded area represents the measures with strong environmental and economic benefits.

Figure 3: Mapping Economic Stimulus Measures

Please note these are selected examples only; for a complete list of potential measures and their analysis please see Section 4.1, Table 2



3.4 Other Significant Criteria

In addition to the potential economic and environmental impacts, the assessment could also consider other relevant criteria, such as:

- 1. *Administrative Simplicity* How complex is the measure to introduce and what is the administrative cost of implementation? For instance, although a targeted tax reduction for investments in energy efficiency and a new spending program on energy efficiency may have the same impact for consumers, the tax measure will be much simpler and more straightforward to introduce. It may also be more difficult to undo over the longer term, however.
- 2. *Jurisdiction* Does the measure fall in an area of clear federal jurisdiction? It will likely be easier for the federal government to take quick action in areas of clearer federal jurisdiction than it will be to implement measures in areas of shared or provincial jurisdiction, which may require negotiation and coordination.
- 3. *Equity* Does the measure produce any unintended equity effects for certain populations or regions? If so, can these be mitigated?

Section 4: An Assessment of Economic Stimulus Measures

The remainder of this section provides a qualitative evaluation of proposed stimulus measures. This qualitative analysis is based on a review the existing literature on the economic impact of stimulus measures and on the views of a number of economic and environmental experts. We would like to thank the reviewers who took the time to read and provide insightful comments on this framework.

Table 2 (over) provides a qualitative assessment of a range of categories of potential stimulus measures selected from proposals brought forward over the past two months by a number of Canadian and international organizations. This analysis put the strongest weighting on economic criteria (~50%), strong emphasis on environmental criteria (~40%) with recognition of other policy implementation outcomes (~10%). The grade that is assigned to each category of measure is an aggregate based on this weighting.

The assessment in relation to each criterion is made based on that category of measure's likely impact in relation to that criterion. Each criterion is scored on simple scale – High, Medium, Low, None or Negative.





PROPOSED MEASURE	I. ECONOMIC STIMU- LUS QUALITY	II. ENVIRONMENTAL BENEFITS	III. OTHER POLICY CRITERIA	GREEN STIMU- LUS GRADE
	A) TIMELY в) TARGETED с) TEMPORARY	 a) REMEDIATE b) REDUCE c) RESOURCE EF- FICIENCY 	a) ADMINISTRATIVE b) JURISDICTION c) EQUITY	
DIRECT SPENDING MEA	SURES – INVESTMENT IN	PUBLIC INFRASTRUCTU	RE, ASSETS, LAND	
1. New Infrastrcu- ture Investment in Public Transporation	 a) Medium-High b) Medium-Low c) Medium Timing challenges based on long project development and approval processes, and possibility of 	a) None b) High c) Meduim No remediation benefit. Possibly large positive impact on air pollution, fuel efficiency, sprawl and congestion and second-	a) Medium b) Medium-Low c) Medium Existing administrative capacity is adequate but potential for significant planning and coordina- tion issues	A
	tion issues. Some existing projects would be ready to go ahead more quickly. Targeting questionable unless being built in hard- hit areas. Not a one-off expenditure but has a de- fined time-horizon. High long-term benefits.	ary water/terrestrial pol- lution benefits. Also pos- sible opportunity for new, more efficient transport technologies	Challenges based on mixed jurisdiction with public transit funding; and ques- tions about equity (rural/ urban)	
2. Frieght Rail Expan- sion	a) Medium b) Medium-Low c) Medium	a) None b) Medium-High c) None	a) High b) Medium c) Medium-Low	В-
	Timeliness unclear, but could be implemented soon in some areas where plans/approvals in place. Targeting moderate de- pending on location of projects. Defined project but re- quires ongoing mainte- nance cost/support. High long term benefits.	No remediation benefits. Possibly substantial GHG (and other transportation related) pollution reduc- tion benefits. Reduced highway congestion. Lim- ited resource efficiency gains.	Administrative feasibil- ity is high for previously studied and vetted pro- posals; Jurisdiction ques- tions are generally minor; questions about equity dependent on project sit- ing.	
4. Other Transporta- tion Infrastructure Investment (roads,	a) Medium – High b) High c) Medium	a) None b) Negative c) None	a) Medium - High b) Medium - High c) Medium	C-
BRIDGES)	Possibly quick impacts with previously vetted/ planned projects; target- ing adjustable based on project siting; expendi- tures temporary on exist- ing infrastructure repair, medium for new infra- structure construction.	No significant environ- mental benefits; generally negative environmental impacts from new roads such as habitat loss, trans- portation-related air pol- lution and GHG emissions, and urban sprawl.	Administrative capacity is generally adequate; ju- risdictional issues minor to moderate, but can be addressed with existing arrangements; equity con- cerns possible, but vari- able depending on project siting.	

Table 2: A Framework for Evaluating Economic Stimulus Proposals

PROPOSED MEASURE	I. ECONOMIC STIMU- LUS QUALITY	II. ENVIRONMENTAL BENEFITS	III. OTHER POLICY CRITERIA	GREEN STIMU- LUS GRADE
	A) TIMELY в) TARGETED с) TEMPORARY	 a) REMEDIATE b) REDUCE c) RESOURCE EF- FICIENCY 	a) ADMINISTRATIVE b) JURISDICTION c) EQUITY	
5. Wastewater Infrastructure Investment	 a) Medium-High b) Medium c) Medium - High Possibly substantial economic impact in the short to medium term based on availability of planned/vetted projects. Targeting is moderate and semi-adjustable by project siting; 	 a) Low b) Medium - High c) None Minor remediation benefits if associated with larger water system restoration program; significant reduction in water pollution possible, depending on the level and quality of treatment; 	a) Medium - High b) Medium - High c) Medium No significant administra- tive capacity constraints with projects based on existing technologies; re- quires federal/provincial/ municipal cooperation; equity issues variable, but adjustable by siting.	A
6. Energy Infrastruc- ture – Smart Meter/ Grid Investment	a) Low - High b) Medium - High c) Medium - High Investments in new, more efficient, electricity distri- bution technologies; time- liness of impact depends on previous provincial planning in this area; po- tential to target particular areas; longer term savings opportunities created low-income households; expenditures time limited if sustained by provincial electricity providers.	a) None b) Medium - High c) High No remediation benefits; possibly significant reduc- tion in air pollution and GHGs, if displaces 'dirty' energy production; can greatly increase capacity for renewable energy sup- ply.	a) Medium – Low b) Low - Medium c) Medium - High Administrative capac- ity variable depending on provincial electricity providers and regulators; potential jurisdictional issues associated with Federal action in this area; equity issues minor depending on breadth of implementation.	В+
7. Energy Infrastruc- ture – Natural Gas Pipelines & Facilities	a) Low-Medium b) Medium - High c) Medium Timeliness poor, except where approvals in place (usually significant regu- latory and land-use is- sues); Targeting poten- tially benefits rural and northern areas; could be financially self-sustaining but requires substantial multi-year investment ini- tially.	a) None-Negative b) Medium c) None No impact on existing pol- luted sites; however, sig- nificant potential land-use impacts and terrestrial disturbance; substantial benefits possible in terms of GHG reductions from fuel switching (homes and electricity generation); re- source efficiency impacts negligible.	a) Low b) Low - Medium c) Medium Substantial challenges to administer and implement large pipeline projects; potential jurisdictional issues with communities and provinces; possible equity issues (re impacts), but mitigated by potential to target economic ben- efits.	C

PROPOSED MEASURE	I. ECONOMIC STIMU- LUS QUALITY	II. ENVIRONMENTAL BENEFITS	III. OTHER POLICY CRITERIA	GREEN STIMU- LUS GRADE
	A) TIMELY в) TARGETED с) TEMPORARY	a) REMEDIATE b) REDUCE c) RESOURCE EF- FICIENCY	a) ADMINISTRATIVE b) JURISDICTION c) EQUITY	
8. Energy Infrastruc- ture – Traditional Power Generation (coal, gas, nuclear)	a) Low-Medium b) Low - Medium c) Medium Timeliness generally poor, but planned projects could begin in the short to medium term (usu- ally must meet substan- tial regulatory burden); targeting dependent on project siting (easier for small plants) and; gen- eration facilities <i>should</i> be financially self-sustaining (ex. nuclear), but require significant up-front capi- tal investment.	a) None - Negative b) Negative c) Negative Negligible to negative im- pact on habitat; negative impact on existing pollu- tion streams (primarily GHGs – except for nuclear – but other air pollutants as well) and radioactive waste (nuclear); depends on inherently unsustain- able (finite) natural re- source extraction.	a) High b) Medium - High c) Medium - High Administrative capacity is generally adequate to im- plement new generation facilities; jurisdictional elements are minor (for provinces), greater for federal; equity issues vary, but not likely significant concern.	D
9. Energy Infrastruc- ture – Expenditures on Clean Generation Capacity	a) High - Medium b) High - Medium c) Medium - Low New projects (esp. small- scale wind, solar, and micro-hydro) can often begin construction fairly quickly (moderate regula- tory requirements); tar- geting potential is high; renewable facilities may require continued govern- ment support for medium term.	a) None b) Medium - High c) Medium - High Negligible impacts on ex- isting sites; Significant potential to reduce GHGs and air pollution by dis- placing fossil fuel electric- ity production; renew- able energy uses natural resources much more ef- ficiently than traditional power.	a) Medium - High b) Medium - High c) High - Medium No significant administra- tive issues (except usual funding issues); potential for significant jurisdic- tional issues as power generation is an area of provincial jurisdiction; eq- uity issues between power producers exist, but are defensible in terms of pol- lution reduction.	Α
10. PUBLIC BUILDING RETROFITS	a) Medium - High b) Medium - High c) High Building retrofits can be initiated relatively quickly compared to most new building projects; poten- tial for rural targeting limited, but sectorial tar- geting high (construction) ; large retrofit programs will require multi-year investment but have a defined time horizon. Provide future benefits (energy costs) ;many of the energy efficient build- ing products (windows, doors, etc) are also manu- factured in Canada lead- ing to further economic benefits	a) None b) Medium c) Medium No significant impacts on existing polluted ar- eas; moderate benefits in terms of avoided GHG emissions and other pol- lution from electricity generation, and improved resource efficiency, de- pendent on location and power source.	a) High b) Medium c) Medium - Low Administrative capacity is adequate to implement retrofit initiatives; how- ever would require some interdepartmental or cross-jurisdictional (for provincial buildings) co- ordination. Equity issues depend on distribution of funding.	A-

PROPOSED MEASURE	I. ECONOMIC STIMU- LUS QUALITY	II. ENVIRONMENTAL BENEFITS	III. OTHER POLICY CRITERIA	GREEN STIMU- LUS GRADE
	A) TIMELY в) TARGETED с) TEMPORARY	 a) REMEDIATE b) REDUCE c) RESOURCE EF- FICIENCY 	a) ADMINISTRATIVE b) JURISDICTION c) EQUITY	
11. INFORMATION AND C 0 m m u n i c a t i 0 n s Technology (ICT) In- frastructure Expan- sion (for example expansion of rural broadband)	a) High - Medium b) Medium c) Medium - High ICT infrastructure ex- pansion can be initiated relatively quickly using existing expansion plans; moderate targeting op- portunities, esp. for rural and affected areas; ICT expansion projects would entail multi-year commit- ments but have definite time-horizons and can be independently financially viable.	a) None b) None c) None No significant impacts on polluted land areas, pollu- tion flows, or natural re- source management.	a) High b) Medium - High c) Medium Administrative feasibil- ity for ICT expansion is good; minor jurisdiction and coordination issues in terms of inter-provincial infrastructure, but can be addressed within exist- ing institutions; possible equity issues, but offset by benefits to rural or af- fected communities.	В
12. Polluted Sites Reclamation/ Resto- ration	a) High b) Low - Medium c) Medium Timely where established plans and approvals in place; can have substan- tial local impact; targeting opportunities are limited; large reclamation and res- toration projects entail multi-year commitments; but can be done in defined stages.	a) High b) None - medium c) None - medium Explicitly targets and improves polluted sites, with high, localized, ben- efits; can reduce pollution (where run-off problems); urban reclamation can re- duce sprawl, improve land use.	a) Low b) Medium c) High Potential for significant administrative challenges with permitting; juris- dictional and/or inter- government cooperation requirements vary, but generally moderate; eq- uity issues defensible in light of environmental re- dress.	A-
13. Reforestation Ini- tiatives	a) High b) High c) High Existing reforestation op- erations can be scaled up in short to medium term; targeting potential is good given large number of communities and individ- uals dependent on the for- estry sector; reforestation initiatives can easily be scaled back or terminated without generally negat- ing achieved benefits.	a) Medium - High b) None c) High Involves restoration of forest ecosystems; can help restore atmos- phere through GHG ab- sorption; no significant impacts on pollution reduction; supports sus- tainable use of forest re- sources, and can enhance watershed values.	a) High b) Medium c) High - Medium Administrative barriers are minor; possible juris- dictional issues around federal role; equity con- cerns possible but can be addressed with targeting flexibility.	В+

PROPOSED MEASURE	I. ECONOMIC STIMU- LUS QUALITY A) TIMELY B) TARGETED C) TEMPORARY	 II. ENVIRONMENTAL BENEFITS a) REMEDIATE b) REDUCE c) RESOURCE EF- 	III. OTHER POLICY CRITERIA a) ADMINISTRATIVE b) JURISDICTION c) EQUITY	GREEN STIMU- LUS GRADE
14. New Ecosystem/ Habitat Conservation	a) Low b) Low c) Low Timing issues are sig- nificant, except for sites already identified for con- servation; will not gener- ate significant employ- ment; targeting options are limited, most remotely located; new conservation areas would require open- ended commitments by the responsible govern- ment agencies.	FICIENCY a) None - Medium b) None - Low c) Medium - High If new conservation ar- eas include degraded ar- eas, possibly significant restoration; minimal im- pacts on pollution (except where displaces resource extraction and process- ing; and strong contribute to natural resource sus- tainable by maintaining intact ecosystems.	a) Low - Medium b) Medium - Low c) High - Medium Administration challenges are low-moderate, exist- ing authorities exist; juris- dictional issues will vary depending on location, but could be significant (esp. for federal); equity issues will also vary, but are un- likely to be significant.	C
DIRECT SUPPORT FOR	NDIVIDUALS AND HOUSE	EHOLDS		
15. GRANTS FOR RESI- DENTIAL ENERGY EFFI- CIENCY RETROFITTING	a) Medium b) High c) High - Medium Time to implementation can be short; overall eco- nomic impact will depend on the level of household uptake (depends on in- centive amount); target- ing opportunities are high given the ability to focus support to particular ar- eas or populations; pro- gram design could ensure temporary expenditures although would likely re- quire at least two year commitment.	 a) NA b) Medium c) Medium Benefits in terms of avoided GHG emissions and air pollution from reduced energy demand depend on source and cleanliness of local power. Reduced demands on non-renewable fuels and improves resource efficiency. 	a) High - Medium b) High c) Medium - High Administrative capacity/ feasibility is moderate to good relying on existing government programs; no significant jurisdictional and equity issues variable depending on targeting and availability.	B+

PROPOSED MEASURE	I. ECONOMIC STIMU- LUS QUALITY	II. ENVIRONMENTAL BENEFITS	III. OTHER POLICY CRITERIA	GREEN STIMU- LUS GRADE
	A) TIMELY в) TARGETED с) TEMPORARY	 a) REMEDIATE b) REDUCE c) RESOURCE EF- FICIENCY 	a) ADMINISTRATIVE b) JURISDICTION c) EQUITY	
DIRECT SUPPORT FOR	INDUSTRY			
16. GRANTS/ LOANS FOR RENEWABLE ENERGY SECTOR	a) Medium b) Medium - Low Existing grant programs can be scaled up quickly and new programs cre- ated in the medium term, capacity of the sector to immediately invest sub- stantial new sums is vari- able but current subscrip- tion to the ecoENERGY program is high suggest- ing a significant latent pool of projects; targeting potential is moderate, and should focus on compa- nies with the capacity to immediately employ new capital; support can be designed to be temporary, but likely to require me- dium term government financial commitment.	a) Medium b) Medium - Low Existing grant programs can be scaled up quickly and new programs cre- ated in the medium term, capacity of the sector to immediately invest sub- stantial new sums is vari- able but current subscrip- tion to the ecoENERGY program is high suggest- ing a significant latent pool of projects; targeting potential is moderate, and should focus on compa- nies with the capacity to immediately employ new capital; support can be designed to be temporary, but likely to require me- dium term government financial commitment.	a) High b) High - Medium c) Medium Administrative capacity is high if existing programs/ organizations are used; cross-jurisdiction issues related to power genera- tion exist, but are not sig. barrier; equity concerns also exist but can be ad- dressed by selective tar- geting based on region.	В+
17. GRANTS/ LOANS FOR AFFECTED INDUSTRY SECTORS (AUTOMOTIVE, FORESTRY, MINING, ETC.) Conditional on green criteria, such as fuel ef- ficiency in the auto sec- tor	a) High - Medium b) High c) Medium - Low Would feed into existing productive infrastructure; presumably retooling of plants could begin quickly and reduce lay-offs/shut- downs; targeting is high as directly focused on hard-hit, at-risk sector; support may be tempo- rary, but unclear if some sectors that have been af- fected can return to finan- cial viability within the short - medium term.	a) NA b) Low-Medium c) Low-Medium Environmental benefits likely modest: for exam- ple, consumers are shift- ing to more fuel efficient cars (with lower GHG and air pollution) re- gardless of where they're manufactured – maybe some increased uptake if more are made in North America; in some sectors could have significant im- pacts on polluted areas or natural resource use. In some sectors could lead to increased resource productivity through in- vestments in new energy efficiency assets.	a) High - Medium b) High c) Medium Administrative capacity issues to deliver support are minor, though industry restructuring (if required) will take time; no signifi- cant. jurisdiction issues; and equity impacts are substantial but justifiable since targeted at affected towns / sectors.	В-

PROPOSED MEASURE	I. ECONOMIC STIMU- LUS QUALITY	II. ENVIRONMENTAL BENEFITS	III. OTHER POLICY CRITERIA	GREEN STIMU- LUS GRADE
	A) TIMELY в) TARGETED с) TEMPORARY	 a) REMEDIATE b) REDUCE c) RESOURCE EF- FICIENCY 	a) ADMINISTRATIVE b) JURISDICTION c) EQUITY	
TAX SYSTEM MEASURES	5			
18. Tax Credits for Home Energy Effi- ciency Retrofits	a) Medium b) Medium - High Timeliness dependent on degree of program up- take in the short-term, but questionable unless credit gives substantial incen- tive; will benefit affected sector (construction) but targeting is harder with tax than grants, especially for persons with little or no taxable income; could be temporary by design, which would encourage uptake in the short-term.	a) NA b) Medium c) NA Possible benefits in terms of avoided GHG emis- sions and air pollution from reduced energy use, dependent on source of electricity and heating displaced.	a) High b) High c) Low No significant administra- tive or jurisdiction chal- lenges; equity concerns apply, esp. since lower tax brackets don't significant- ly benefit from the incen- tive.	В-
19. Investment Tax Credits for Green Industries (tax cred- its for investments in new green infra- structure)	a) Medium - Low b) Low c) Medium - Low Can be implemented quickly, , unlikely to pro- duce substantial economy wide impact; targeting flexibility is limited; pos- sibly temporary by design but more likely to have a multi-year, or undefined, time horizon.	a) Medium - High b) Medium - High c) Medium - High Possible benefits in all ar- eas, depending on degree of uptake by different green industries.	a) High b) High c) Low - Medium No signficant administra- tive or jurisdictional chal- lenges; equity concerns arise based on special tax treatment for 'green' busi- nesses, and challenges in defining eligibility.	В+
20. Expanded Tax System Support for Green R&D	a) Medium b) Low c) Medium - Low Can be implemented quickly, but may not have significant effect on pro- ductive business invest- ment in the short-term although may lead to an increase in Research and Development, and not likely to have substantial economic impact; target- ing is limited to industries performing green R&D could be temporary, but efficacy questionable un- less multi-year time-line.	 a) Medium b) Medium c) Medium Likely environmental benefits in all three areas, dependent on nature of research undertaken. 	a) High b) High c) Low - Medium No significant. administra- tive or jurisdictional chal- lenges; equity concerns arise based on special tax treatment for 'green' R&D' and challenges in defining eligibility. The existing tax credits for all R&D are al- ready refundable under certain circumstances.	В

PROPOSED MEASURE	I. ECONOMIC STIMU- LUS QUALITY	II. ENVIRONMENTAL BENEFITS	III. OTHER POLICY CRITERIA	GREEN STIMU- LUS GRADE
	A) TIMELY B) TARGETED c) TEMPORARY	a) REMEDIATE b) REDUCE c) RESOURCE EF- FICIENCY	a) ADMINISTRATIVE b) JURISDICTION c) EQUITY	
21. Conversion of Accelerated Capital C o s t A l l o w a n c e (CCA) for Clean Energy Investments to Refundable Tax Credit	a) Medium - High b) Medium c) Medium - Low Expanded measure tar- gets currently unprofit- able businesses. Could be implemented quickly; likely moderate degree of business uptake in the short-term; possi- bly significant economy- wide impacts; targeting is moderate incentive for business investment but not tied to affected sec- tors; unlikely to be strictly temporary, although could be sunsetted. Long-term benefits from incenting green capital investment.	a) NA b) Medium c) Medium Potential significant ben- efits through increased use of clean energy tech- nology. Pollution and re- source efficiency benefits depend on source of en- ergy displaced (fossil fuel, nuclear or large hydro)	a) High b) High c) Medium - High No significant adminis- trative or jurisdictional challenges (existing pro- gram); equity issues are minor (favours sectors with greater green capital intensity).	В+
REGULATORY MEASURE Potentially included as	E S part of larger fiscal policy	v package.		
22. Energy Efficiency REGULATIONS (FOR HOME, INDUSTRY, OR TRANSPORTATION) Energy efficiency regu- lations could spur new investment in residen- tial and industrial ret- rofitting and energy- efficient construction, and more energy ef- ficient transportation technologies.	a) Low - Medium b) Medium c) Medium Timeliness of impact is low to moderate as regu- lations can be enacted in short to medium term (varies), but full economic effects will require years to manifest; net economic impact may be limited if not linked with incen- tives (just displace other spending); targeting de- pendent on the nature of regulation (sector); regulations not typically temporary, but should not require sig. ongoing fiscal expenditures.	a) NA b) Medium - High c) Low No significant benefits for existing polluted sites; avoided energy consumption could yield large pollution and natu- ral resource benefits de- pending on stringency of regulation and the energy sources displaced (fossil, nuclear, large hydro).	a) High - Medium b) Low - Medium c) Medium Administrative capac- ity is likely adequate, al- though new monitoring and enforcement may be required; jurisdictional challenges (limited feder- al role for home/business energy efficiency); equity concerns may arise de- pending on applicability of new standards.	C+

PROPOSED MEASURE	I. ECONOMIC STIMU- LUS QUALITY A) TIMELY B) TARGETED C) TEMPORARY	 II. ENVIRONMENTAL BENEFITS a) REMEDIATE b) REDUCE c) RESOURCE EF- FICIENCY 	III. OTHER POLICY CRITERIA a) ADMINISTRATIVE b) JURISDICTION c) EQUITY	GREEN STIMU- LUS GRADE
23. POLLUTION CON- TROL REGULATIONS (FOR AIR POLLUTION OR GHGS, WATER POLLU- TION, OR TOXIC CHEMI- CAL CONTROL) New regulations for pollution control may force or stimulate new investment in pollution abatement and control technologies.	a) Low - Medium b) Low c) Low Timeliness of impact is low to moderate as regu- lations can be enacted in short to medium term (varies), but full economic effects will require years to manifest; targeting dependent on the nature of regulation, but could negatively affect eco- nomically at-risk sectors; regulations not typically temporary, and may re- quire some ongoing fiscal expenditures (monitoring and enforcement).	a) NA b) High C) NA Potentially very large ben- efits in pollution avoid- ance and control; little im- pact on site remediation or natural resource man- agement (from pollution control regulations).	a) Medium b) Medium - Low c) Medium - Low Administrative barriers variable dependent on nature of regulation and monitoring and enforce- ment requirements; ju- risdictional issues can be significant (varies by type pollution); Equity impacts can also be sig. barrier de- pending on applicability of new regulations.	C+

4.1 Summary of Analysis by Category of Proposed Measure

The following is a summary of the categories of measures from most to least promising in terms of their likely economic, environmental and policy implementation impacts.

Summary of Grading for Categories of Stimulus Measure

1.	New Investments in Public Transit	А
2.	Wastewater Infrastructure Investment	Α
3.	Energy Infrastructure – Clean Power	Α
4.	Public Building Retrofits	A-
5.	Polluted Sites Reclamation	A-
6.	Grants/Loans for the Renewable Energy Sector	B+
7.	Refundable Capital Cost Allowance for Clean Energy	B+
8.	Reforestation Initiatives	B+
9.	Grants for Residential Home Retrofits	B+
10.	Energy Infrastructure - Smart Grid	B+
11.	Expanded Investment Tax Credit for Green Industries	В
12.	ICT Infrastructure Expansion	В
13.	Expanded Tax System Support for Green R&D	В
14.	Green Grants/Loans for the Automotive Sector	В-
15.	Freight Rail Expansion	B-
16.	Tax Credit for Home Retrofits	B-
17.	Energy Efficiency Regulations	C+
18.	Pollution Control Regulations	C+
19.	Energy Infrastructure – Natural Gas Pipelines	С
20.	New Ecosystem/Habitat Conservation	С
21.	Other Transportation Infrastructure Expansion (Roads, Bridges)	C-
22.	Shipping/Port Infrastructure Expansion	D
23.	Energy Infrastructure - Traditional Power Generation	D

4.1.1 Commentary on the Use of Regulatory Measures

None of the proposed regulatory measures were seen to be strong stimulus options in isolation, given the long lead time before they would have an impact on the economy. Regulatory measures, such as the implementation of a cap-and-trade system or the implementation of new energy efficiency standards, could provide a long term signal as to the future direction of the government combined with short term support to achieve those objectives, leading to new investment and innovation over time as producers move to comply with the new regulation. In the context of an economic stimulus package longer term regulations could be provided with short-term incentives for action to help shift the economy towards longer term sustainability.

For example, a cap-and-trade system, through the auctioning of permits as has been proposed by the Obama administration in the United States, could help to pay for current green economic stimulus measures. The

cap-and-trade system could not be in place by 2009, but it could be by 2010 and the revenues from the permit auction could be used to help recover the costs of current green stimulus measures. Of equal importance, it would also provide an important signal to the economy: "take advantage of this green economic stimulus support now to become more carbon efficient, because a cap is coming in the near future".

4.1.2 Commentary on Potential Funding Strategies

One important issue in relation to implementation of "green" stimulus measures is the potential need for new and/or innovative funding mechanisms. Two potential funding mechanisms that could be considered would be:

Green Bonds: Green bonds are a means to raise capital from the public to support Green Innovation – they can help to offset the cost of capital for other initiatives such as investments in Renewable Energy. On their own Green Bonds would not necessarily provide a stimulus for increased spending or job creation although they would help to provide available credit to finance green projects which would produce such benefits.

Auction of Permits (Cap and Trade: As outlined under Regulatory Measures (above), an auction for permits could serve as a future source of capital to fund current green stimulus measures.

Section 5: Conclusions

To conclude, this paper has focused on two primary objectives:

- First it outlined a framework to identify and assess the economic, environmental and implementation impacts of economic stimulus measures in Canada.
- Second, it applied this framework to categories of stimulus measures, and identified those that offer the greatest economic and environmental returns.

Ultimately, an economic stimulus package should enhance aggregate demand within the economy, increase spending by individuals (consumption) and businesses (investment), and spur job creation. Over the longer term, it should also help to set the stage for the transition of the Canadian economy to a competitive low-carbon future.

Building from the analysis in Section 4.0, we conclude by discussing four types of stimulus measures that stand out as having the potential, in the short term, to create significant numbers of new "green" jobs across the country while also enhancing our long term economic and environmental prosperity.

- 1. Building Retrofits: Support energy efficiency retrofits for a broad range of buildings including:
 - I. Homes (expanding rebates for retrofits and energy audits)
 - II. Federal buildings (directly by PWGSC)
 - III. Public buildings, such as school and low-income housing (via FCM and Provinces)

These improvements would reduce energy demand and generate long-term cost savings. Federal funds would leverage provincial and private money, and target hard-hit sectors that generate local spending and jobs. This type of measure could also be supported with skills retraining, wage subsidies for firms to engage new employees and extended Employment Insurance (EI).

2. **Green Infrastructure**: The choices that we make today in our infrastructure investments will help shape the kind of economy we live and work in for the next thirty years. Infrastructure spending is typically a very good stimulus measure. A major investment in new green infrastructure would generate immediate jobs across the country, create a cleaner environment, and lay the foundation for a more efficient, competitive future economy. For example, spending to expand and update public transit (particularly buses and light rail manufactured in Canada) would reduce air pollution and congestion. Overhauling outdated sewage systems could significantly reduce water pollution. This could be bolstered by a significant increase the current Federation of Canadian Municipalities (FCM) Green Municipal Fund (currently at \$550M), which supports local green projects across the country.

Similarly, a major investment in reforestation could provide immediate jobs, especially in hard-hit northern communities. There are more than 2 million hectares of forest land in Canada in need of reforestation – more than twice the total area logged annually. Federal funds would be leveraged by provincial and private ones. Plus, they would generate significant environmental benefits by absorbing GHGs and improving watersheds and wildlife habitat. Any infrastructure spending could also be linked to other supports such as extended EI or wage subsidies.

- 3. **Clean-up of Toxic Sites:** There are over 18,000 federal contaminated sites across Canada. Work on many of these sites can begin almost immediately, generating spending and jobs in urban and rural areas across Canada. These cleaned-up sites would, in many cases, restore economically valuable land, reduce a public health hazard, and help to address ongoing government liabilities.
- 4. **Investments in Clean Energy:** Renewable power and other clean energy sources will be the fastest growing parts of the global energy sector over the next two decades. One way to acclerate Canada's shift in this direction would be to convert the existing Accelerated Capital Cost Allowance for renewable energy and energy-efficiency assets (section 43.2) into a refundable tax credit. This would create substantial new investment in clean energy technology without incurring significant new federal "tax expenditures". The current section could also be expanded to cover a broader scope of clean tech equipment, including for pollution control, carbon capture, and greater resource efficiency.

The government could also expand existing incentives to support the production of clean power, such as the ecoENERGY renewable power program Another promising green energy measure would be co-funding with provinces to help move toward a 'smart' national power grid. The shift to more renewable energy and greater conservation will require a major modernization of the electrical grid. These changes will lay the foundation for transforming the way we use and produce energy in the next 20 years. An investment in this area will generate immediate jobs, which can be targeted to hard hit areas, and enable massive future private investment (in generation) and cost savings (from conservation).

In conclusion, our review indicates that at least \$15 billion in federal stimulus investments could be made in these types of measures, which would likely to generate over 160,000 jobs in the coming year, particularly in hard hit sectors and communities. Such a Green Stimulus Package would generate immediate economic returns that compare favourably with other options, while also reducing environmental and health impacts.

Annex I: Definitions of "Green" Jobs

Definitions of the environmental sector and environmental occupations or "Green Jobs" vary widely due to the diverse range of firms and employees that are either wholly or partially involved in the environment industry. In addition, it can be extremely difficult to identify "green' activities within traditional sectors (such as investments to improve the energy efficiency of a traditional industry or efforts to substitute a renewable resource for a non-renewable one). The absence of a standard classification for the "green" or environment industry and the occupations that are active in that sector makes accurately measuring the number of firms, total industry revenue and total number of environmental occupations and employees a difficult task. By extension, it is extremely difficult to quantify the "green" elements of a stimulus package.

Statistic Canada uses the Environment Industry Survey, Business Sector (EIS) to estimate the number of firms and employees involved either in whole or in part in the production of environmental goods, the provision of environmental services and the undertaking of environment-related construction activities. This survey is based on the definition that the environment industry consists of activities which produce goods and services to measure, prevent, limit, minimize or correct environmental damage to water, air and soil, as well as problems to waste, noise and eco-systems. The industry also includes cleaner technologies, products and services that reduce environmental risk and minimize pollution and resource use²⁹. In respect to defining environment industry employees, Statistic Canada defines environmental employees as those involved in the production/ provision of environmental goods and services.

This definition is a useful starting point; however, it is unlikely to capture the full range of activities and occupations that would be impacted by a "green" stimulus package³⁰.

A recent study conducted by the **International Labour Organization (ILO)** and the **United National Environmental Program (UNEP)** has attempted to establish an international definition of the term green jobs. The report defines green jobs as positions in agriculture, manufacturing, construction, installation, and maintenance, as well as scientific and technical, administrative, and service-related activities that contribute substantially to preserving or restoring environmental quality. Specifically, but not exclusively, this includes jobs that help to protect and restore ecosystems and biodiversity; reduce energy, materials, and water consumption through high-efficiency and avoidance strategies; de-carbonize the economy; and minimize or altogether avoid generation of all forms of waste and pollution. In addition, green jobs also need to be good jobs that meet longstanding demands and goals of the labour movement, i.e., adequate wages, safe working conditions, and worker rights, including the right to organize labour unions. A summative definition provided by the ILO and UNEP states that green jobs are those that contribute appreciably to maintaining or restoring environmental quality and avoiding future damage to the Earth's ecosystems³¹.

The OECD has developed a definition of the environmental goods and services industry (EGS) as follows:

"Environmental protection consists of activities to measure, prevent, limit, minimize or correct environmental damage to water, air and soil, as well as problems related to waste, noise and eco-systems. This includes cleaner technologies and products and services that reduce environmental risk and minimize pollution and resource use³³."

The UK has adopted the OECD/Eurostat definition of environment-related activities while adopting their own definitions for sub-sectors within the industry that includes:

- Air Pollution Control (APC),
- Water & Wastewater Treatment (WWT),

²⁹ Statistics Canada, Measuring Employment in the Environment Industry, pg. 1

³⁰ Statistics Canada, Environment Industry: Business Sector, pg. 5

³¹ http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_098503.pdf

³² http://www.oecd.org/dataoecd/13/44/31951962.pdf, pg. 6

- Waste Management (WM),
- Contaminated Land Remediation (CLR),
- Environmental Consulting Services (ECS),
- Environmental Monitoring and Instrumentation (EMI),
- Energy Management (EM),
- Renewable Energy (RE),
- Noise and Vibration Control (NVC),
- Cleaner Technologies and Processes (CTP), and
- Marine Pollution Control (MPC)³³.

Australia defines green jobs as those that are intentionally designed to reduce environmental impact and include jobs in earth repair, environmental survey, resource renewal, sustainable energy, sustainable settlements and clean, green food production³⁴. The simplest definition of a green job may be one which "reduces the negative impact made on the environment, relative to the status quo"³⁵.

The US has created a unique, community-based culture for green jobs programs based on the collaboration of several organizations including the Apollo Alliance, Green for All, Centre for American Progress, and the ICLEI – Local Governments for Sustainability. They define green jobs as those that are well paid, career track jobs that contribute directly to preserving or enhancing environmental quality³⁶.

The ICLEI – Local Governments for Sustainability represents over 800 cities internationally (over 400 in the US alone). The ICLEI defines Green Jobs as those that contribute directly to preserving or enhancing environmental quality; provide pathways to prosperity for all workers; offer competitive salaries and lead to a lasting career-track, thereby strengthening the US middle class; and emphasize community-based investments that cannot be outsourced³⁷.

³³ http://www.berr.gov.uk/files/file34694.pdf

³⁴ Annandale D, Morrison-Saunders A and Duxbury L (2004) 'Regional Sustainability Initiatives: the growth of green jobs in Australia' Local Environment 9(1): 81-87

³⁵ http://greenskills.green.net.au/greenjobs/greenjobs.pdf, pg. 11

³⁶ http://www.americanprogress.org/issues/2008/03/pdf/green_collar_jobs.pdf

³⁷ http://www.icleiusa.org/us-green-jobs-pledge

Annex II: A Summary of Key Economic Stimulus Recommendations To-date

This Annex contains a short overview of some of the key stimulus measures that have been brought forward by Not-For-Profits, Business Associations, Academics and Think-Tanks both in Canada and abroad. Given the fluid nature of the economic crisis and tight time constraints on the development and implementation of a stimulus package it is impossible to capture all proposals of note. Rather, the goal of this Annex is to provide a survey of key domestic and international recommendations across a range of sectors and actors in the economy.

A. Canada

1. Pembina Institute

"Recommendations for an Economic Stimulus" http://pubs.pembina.org/reports/green-stimulus-package.pdf

- I. Energy Efficiency
 - i. Energy Audits
 - ii. Low interest loans for retrofits
- II. Renewable Energy
 - i. Renew and expand EcoEnergy Program
 - ii. National Research Network
- III. Public Transit
 - i. Direct investment in bus and light rail
 - ii. Low interest loans for re-tooling of transit
- IV. Cap and Trade
 - i. Implement a national cap and trade system

2. Forestry Products Association of Canada

http://www.fpac.ca/documents/media_kits/dec-16_press_kit_en.pdf

- I. Ensure that forest manufacturers have access to reasonable credit
- II. Provide tax incentives for research and innovation
 - i. Making SR&ED tax credits refundable
 - ii. Extending the loss carry back from 3 to 5 years
 - iii. Extending the accelerated CCA for another 5 years
- III. Invest in R&D, market development and product promotion
 - i Industry funding to support marketing efforts
 - ii. Extending funding for FPInnovations Transformative Technologies Program

Building a Green Economic Stimulus Package for Canada

- IV. Help spur the transformation to bio-energy
 - i. Create a Forest Industry Bio-Economy Fund
- V. Extend the EI work-sharing program

3. Environmental Defense

I. No bailout for the Tar Sands

4. Green Budget Coalition

"Meeting the Challenge: Recommendations for Budget 2009" http://www.greenbudget.ca/pdf/GBC_2009.pdf

- I. Establish effective carbon pricing (of at least \$30/tonne)
- II. Safeguard Canada's waters and watersheds: Starting in the Great Lakes-St. Lawrence Basin
- III. Action on Nature: Conserving Canada's Treasured Oceans and Lands

Other priorities that are also identified:

- Energy Efficiency: Setting and Achieving Targets
- Renewable Energy: Towards a Comprehensive Strategy
- Preserving Minerals for the Future
- Extending Eco-gift Tax Incentives to Inventory Lands
- Conserving our Migratory Birds
- Better Indicators: Integrating Environmental Values into Policy

5. Canadian Centre for Policy Alternatives

"Leadership for Tough Times"

This plan would inject \$33B or 2% of Canada's GDP into the economy in $2009\mathchar`2010$

- I. Protect Canadians
 - i. El reform
 - ii. New provincial poverty reduction transfers
 - iii. Increase support to seniors
 - iv. Increase support to families with children
 - v. Increase support to working poor
 - vi. Increase purchasing power
 - vii. Affordable housing

- viii. Youth employment
- ix. Forestry sector (reforestation)
- II. Strengthen and build the base
 - i. Cities/Infrastructure
 - ii. Affordable housing
 - iii. Arts and culture
 - iv. Childcare
 - v. Post-secondary Education
 - vi. Aboriginal/First Nations Hard Infrastructure
 - vii. Rural communications
 - viii. Aboriginal/First Nations Soft Infrastructure
- III. Prepare for the future
 - i. Expand EI for worker retraining
 - ii. University research funding grant
 - iii. Create Green manufacturing R&D fund
 - iv. Invest in green energy (renewable energy job training and low-income housing retrofits)

6. Canadian Advanced Technology Alliance (Cata)

"Recommendations for Innovation Nation and Economic Stimulus" http://www.cata.ca/Media_and_Events/Press_Releases/cata_pr12210801.html

Calls for the creation of \$60B infrastructure fund with a focus on:

- I. The Service Sector with a focus on super-clusters and the creation of a "got to market" tax credit
- II. Communications Infrastructure with projects like pervasive and cheap high speed internet
- III. Green Technology with a focus on ICT enabled green technologies
- IV. Healthcare with a focus on prevention and e-records

7. Coalition Agreement (Proposed Economic Stimulus components of the Accord)

I. Accelerating existing infrastructure investments with significant new investments

- II. Housing construction and retrofitting
- III. Investing in key sectors like automotive, forestry and manufacturing
- IV. Facilitating skills training for the jobs of the future

8. Canadian Council of Chief Executives

"What Canada Needs Now to Respond to the Economic Crisis"

Central governments and banks must act to restore confidence and the paper recommends a stimulus package at 1% of GDP or roughly \$15B. A key challenge which is identified is access to credit for businesses.

- I. Accelerating public infrastructure
- II. Help the unemployed by expanding EI benefits

III. Enable business innovation by making the SR&ED tax credit fully refundable and further accelerate capital cost allowances on new machinery and equipment

IV. Encourage personal consumption through tax breaks or purchase incentives such as grants for first time homebuyers or for retrofits to make homes more energy efficient.

V. Support charities and communities by expanding grants and contributions to charities and increase the tax credit for charitable donations on a temporary basis

VI. Implement a long term plan that focuses on Taxation, Talent, Entrepreneurship, Innovation, Infrastructure, Regulation and Canada-United States relations.

9. PowerUP Canada

- I. Loans, to support
 - i. Building retrofits
 - ii. Renewable Energy (The Green Economy Action Fund)
- II. Direct Spending
 - i. Building retrofits
 - ii. ecoENERGY expansion
 - iii. Transit
- III. Cap and Trade

B. United States

1. Congressional Budget Office

"Economic Stimulus Options"

- I. Reducing personal tax
 - i. lump sum rebates
 - ii. temporary tax reductions

- iii. deferring or eliminating tax increases
- II. Incentives for business
 - i. cut in corporate tax rates
 - ii. incentives for new investment
 - iii. operating losses and carryback provisions
- III. Spending proposals
 - i. direct transfers to households
 - ii. aid to state and local governments
 - iii. public works projects

2. Center for American Progress

"Green Recovery"

- I. \$50 Billion in tax credits for home and business retrofits and investments in green energy
- II. \$46 Billion in direct government spending on public building retrofits, mass transit, freight rail, smart electricity and renewable energy
- III. \$4B in federal loan guarantees to underwrite private investment in retrofits and renewable energy

3. Institute for America's Future

"Main Street Economic Recovery Plan"

Key elements of the plan include:

- I. Energy efficiency and renewable energy
- II. Modernizing infrastructure
- III. Expanding pre-kindergarten and college affordability
- IV. The provision of assistance to low wage workers
- V. Significant middle class tax cuts

4. The Center for Climate Strategies

"Economic Stimulus, Recovery, and Climate Mitigation: Policy and Program Opportunities from the States"

This report takes a look at a broad range of policy options and rates them in terms of their timeliness, impact and other key measures. The summary of policy bundles that would be "fast" tom implement are as follows:

C. European Union

1. Commission to the European Council

"A European Economic Recovery Plan"

A plan with two key pillars, first, a major injection of purchasing power into the economy (1.5% of GDP) and second, direct short term action to reinforce future competitiveness

Sector	Name of State Climate Action/Policy	GHG Mitigation Potential	Cost Ef- fective- ness	Speed to Imple- ment	Lever- aging Potential	Job Creation Potential	Funding Class
RCI-1	Non-Utility Incentives and Funds To Promote Renewable Energy and Energy Efficiency In- cluding Demand-Side Management (DSM) En- ergy Efficiency Programs for Electricity, Natu- ral Gas, Propane, and Fuel Oil	М	М	F	Н	Н	grant, tax incentive
RCI-2	Energy Efficiency Improvement in Existing Buildings, with Emphasis on Building Opera- tions	М	Н	F	Н	Н	grant
TLU-15	Encourage Low Rolling Resistance Tires and Promote Proper Tire Inflation	L	Н	F	Н	М	grant, tax incentive
RCI-13	Lead-by-Example Government Buildings, Fa- cilities and Operations	М	Н	F	L	М	grant
TLU-17	Heavy-Duty Vehicle Emissions Standards and Retrofit Incentives	L	Н	F	М	Н	grant, tax incentive
RCI-8	High GWP Reductions from Stationary Sources	М	Н	F	М	Н	grant
RCI-14	Market Transformation and Technology Devel- opment Programs	М	Н	F	М	Н	fiscal instru- ment, grant
RCI-15	Residential, Commercial, and Industrial Energy and Emissions Technical Assistance and Training and Education for Building Design, Construction, and Operation	М	Н	F	М	Н	grant
TLU-20	Idle Reduction/Elimination Policies	М	Н	F	М	Н	grant
CC-3	Developing emission inventories	NQ	NQ	F	М	Н	grant
CC-4	Local Climate Action Plans	NQ	NQ	F	М	Н	grant
AFW-3	Urban Forestry Programs	М	Н	F	М	М	grant
AFW-9	Improved Agricultural Management Practices	М	Н	F	М	М	grant
TLU-16	Driver and Consumer Education	NQ	NQ	F	М	М	grant

H=High potential; M=Moderate potential; L=Low potential; NQ=Not Quantified; F=Fast; M=Moderate; S=Slow Sectors: RCI=Residential, Commercial and Industrial buildings; TLU=Transportation and Land Use; AFW=Agriculture, Forestry and Waste Management: CC=Cross Cutting (policies that cut across many sectors) [Note: the policy numbers derive from those recommended in state climate action plans.]

- I. Launch a major European employment support initiative
- II. Create demand for labour
- III. Enhance access to financing for business
- IV. Reduce administrative burdens and promote entrepreneurship
- V. Step up investments to modernize Europe's infrastructure (including a focus on energy efficiency and climate change mitigation)
- VI. Improve energy efficiency in buildings
- VII. Promote rapid take up of "green products"
- VIII. Increase investment in R&D, Innovation and Education
- IX. Develop clean technologies for cars and construction
- X. High speed internet for all

D. Other International Reports (U.N., and other)

1. International Monetary Fund

'World Economic Outlook"

I. There is a clear need for additional macroeconomic policy stimulus relative to what has been announced thus far, to support growth and provide a context to restore health to financial sectors.

2. United Nations

"World Economic Situation and Prospects 2009"

This report highlights the need for macroeconomic stimulus and strongly advocates for a coordinated global response.

"In a strongly integrated world economy, fiscal stimulus in one country tends to be less effective because of high import leakage effects. By coordinating fiscal stimulus internationally, the positive multiplier effects can be amplified through international economic linkages, thereby providing greater stimuli to both the global economy and the economies of individual countries."



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