building effective environmental policy

A Guide for Decision-makers

Network for Business Sustainability

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Good policy helps markets work for both the economy and society.

How can government and industry create efficient and effective environmental policy?

building effective environmental policy

A Guide for Decision-makers

This report is designed to help decision-makers in government and industry develop and advise on environmental policy. It will:

- help policy-makers working on environmental issues understand the range of policy instruments available to them and when each is most effective
- suggest how business can constructively feed into the process at various stages
- present a framework, based on years of research, for building more effective and efficient environmental policy

The report is an extension of the Network for Business Sustainability's **systematic review** of the body of research on building effective environmental policy, entitled *When Do Climate Policies Work? A Systematic Review of Experiences from Low-Carbon Technology Promotion and Water Management*, conducted by researchers at Carleton University. Synthesizing data from 204 studies, the review presents a comprehensive compilation of high-quality knowledge on this topic.

Further resources available at nbs.net

who should care and why

Environmental policies have sweeping implications for business, citizens and the environment. Building policy is a complex process and there are numerous opportunities for things to go well – or poorly. Regulators in Flanders, Belgium, for example, set an ambitious six percent renewable energy target for 2010. However, by not embedding this goal in a structured plan, the policy provided profits for incumbent energy producers and not new ones. It also focused investment on low-cost renewable options such as waste incineration, which provided few societal benefits.

Even policies generally viewed as successes involve trade-offs. Voluntary agreements, such as the UK Climate Change Agreements, provide flexibility to companies and industry sectors to pursue cost-effective means to achieve feasible targets. But these advantages can inhibit perceived accountability and effectiveness, posing challenges for policy-makers seeking to advance efficiency, accountability and effectiveness simultaneously.

This research analyzes and distils the learnings from more than 200 academic articles and government reports.

Given this complexity, policy-makers face critical questions. How effective are different environmental policy instruments in achieving their objectives? How efficient are these instruments? This research analyzes and distils the learnings from 204 academic articles and government reports to help policy-makers in government and industry create environmental policy that:

- achieves its environmental goals
- is cost effective
- is relevant to those affected by these policies
- demonstrates accountability to the public (where applicable)

This executive report begins by highlighting best practices in environmental policy. It then offers three key tools to help you create better policy:

1. **The Environmental Policy Framework –** reviews the range of factors that influence the policy process and highlights some considerations before you begin advocating for, or creating, new policy.
2. **Choosing the Best Suited Environmental Policy Instrument –** provides a decision-tree, including the questions you should ask at various stages of the policy process to ensure you identify the best policy instrument.
3. **What Instruments Work and When? –** describes key environmental policy instruments, detailing when each works best and providing real-world examples of where each has been used.

This Briefing

This guide is based on 165 research studies on policies for low-carbon technologies and 39 research studies on policies for water management in the context of climate change. Graeme Auld, Bozica Burlica, Alexandra Mallett, Francis Nolan–Poupart and Robert Slater, all from Carleton University, analyzed the range of strategies that have been applied to each issue and determined what has worked and failed to work in each context. While the research was global in scope, some regions are well represented (e.g. European countries) due to their demonstrated leadership on environmental policies.

The research stresses that government policy-makers should create integrated policy bundles using regulation, expenditure, and information provision instruments. Complementary policy measures should be undertaken by the private sector. Read the **full report** for a more detailed discussion of policy instruments and the policy-making process.

best practices in environmental policy

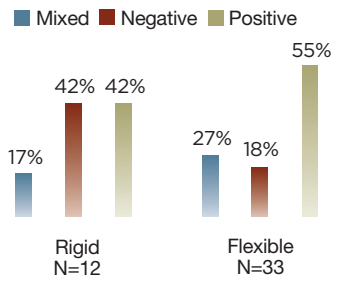
Hundreds of research studies have evaluated the effectiveness of environmental policies around the world. Here's what NBS researchers found:

- **Flexibility is more effective than rigidity.** Flexible policies give firms different avenues to achieve the same goal (e.g. installing energy-efficient technologies or purchasing carbon-offset credits). Flexibility can also imply changing the terms of the policy as circumstances evolve.

What the research shows: When policies have built-in flexibility, as compared to rigid policies, they are evaluated both as more efficient (55 percent vs. 42 percent success rate) and more likely to meet their goal (52 percent vs. 15 percent success rate). So including flexibility can help maximize the impacts of a policy while minimizing the cost of achieving targets. For instance, Tradable White Certificate Schemes (or Energy Efficiency Resource Standards) that set energy savings targets for utilities but include flexibility through market-based trading are considered successful.

Figure A

EFFICIENCY EVALUATIONS FOR POLICIES WITH AND WITHOUT FLEXIBILITY

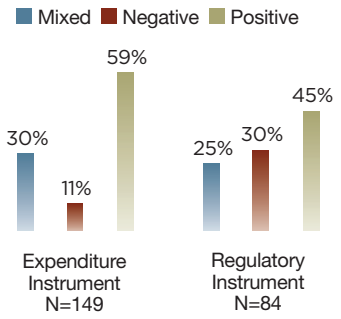


- **Money works well - possibly better than regulation.** Expenditure policy instruments use money as a stick (e.g. carbon taxes), a carrot (e.g. subsidies) or both (e.g. emissions trading). Regulations prohibit or require particular behaviours (e.g. U.S. Clean Air Act's Best Available Control Technology).

What the research shows: Expenditure instruments were seen as having achieved their desired impact in 59 percent of cases and failed in just 11 percent of cases. On the other hand, regulatory instruments worked 45 percent of the time and failed to deliver the anticipated impacts 30 percent When companies are required to use specific technologies, firms don't have an incentive to search for more effective or efficient solutions.

Figure B

IMPACT EVALUATIONS FOR EXPENDITURE VERSUS REGULATORY POLICY INSTRUMENTS

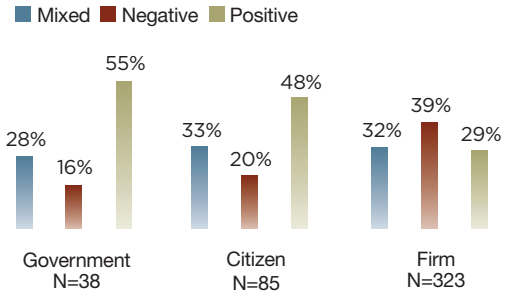


- **A policy's effectiveness can vary depending on its target.** While more than half of the studies in the review analyzed policies targeting companies, some policies also aimed to change the behaviour of governments or citizens. Targeting government or citizens proved more effective in some cases whereas targeting firms was more effective in others.

What the research shows: Of those policies targeting government, 55 percent were seen as effective, compared with just 29 percent of those targeting firms (48 percent of policies targeting citizens were seen as effective). But, there was a marked difference between evaluations of low-carbon policies and water management policies targeting government. In particular, low-carbon policies received a higher proportion of positive evaluations. See the **full report** for more.

Figure C

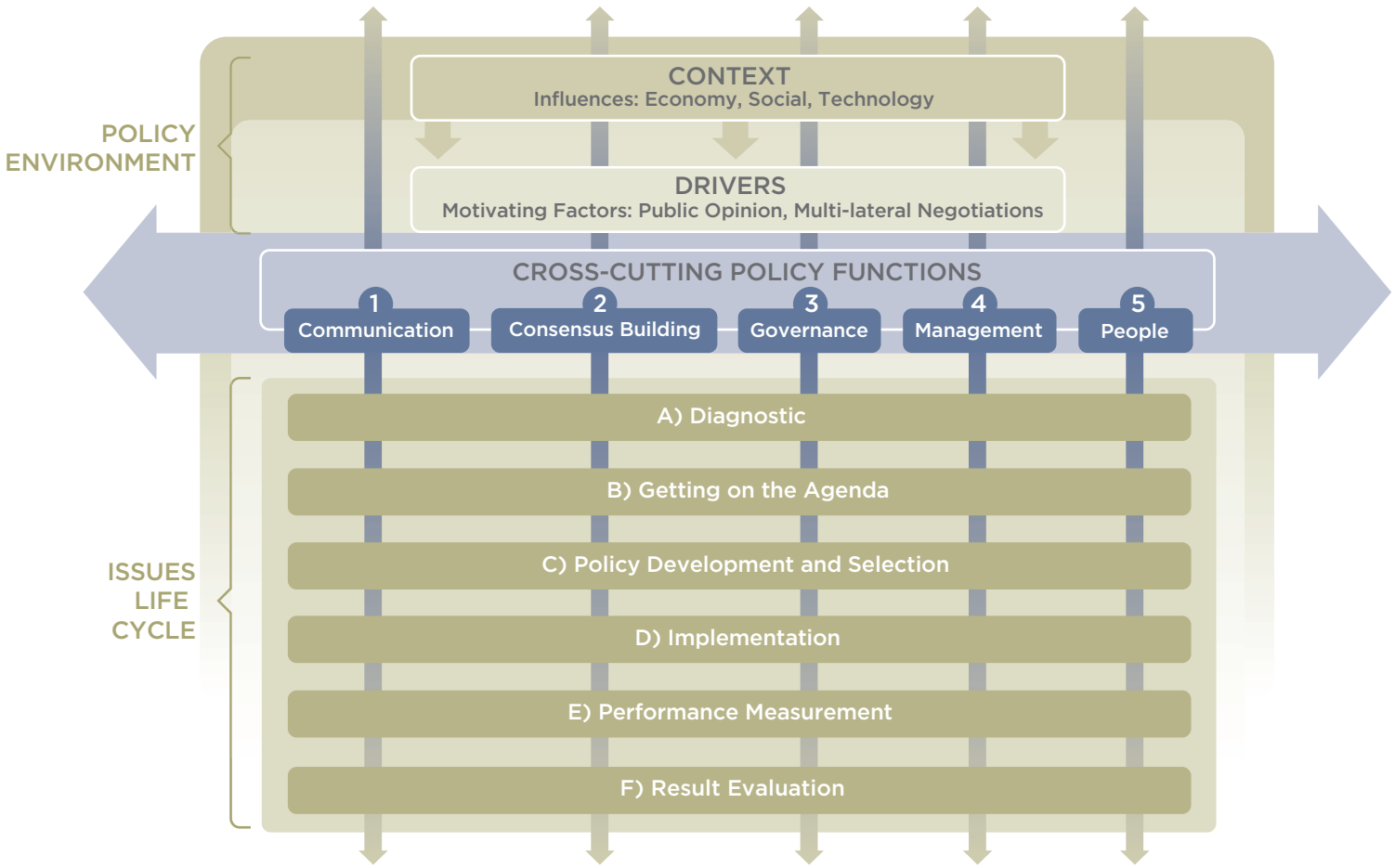
POLICY EVALUATIONS BY REGULATORY TARGET



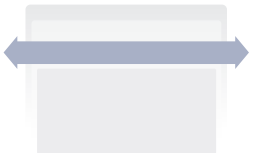
Understanding which policies have worked historically can help government and industry craft new policies that will meet environment objectives without compromising competitiveness or accountability. The frameworks presented in the rest of this report can help you incorporate these findings into the broader policy context.

1. the environmental policy framework

Building policy entails considering a range of factors. This figure outlines the key areas that should be considered in the development of any policy: the ***policy environment***, the ***cross-cutting policy functions*** that support the policy development and steps in the policy's ***issues life cycle***. Detailed explanations on each follow on page 9 to 10.



The **Policy Environment** provides the background needed to consider policy development in a particular area. Without an understanding of the environment, a policy is likely to fail. **Context** is important. Be mindful of the political, economic, social and technological factors that could influence policy, e.g. trade negotiations, competitiveness and productivity, and demographics. Context informs the **Drivers,** which identify the factors motivating policy on an issue, e.g. multilateral negotiations, domestic pressures for action, stakeholder interests and public opinion.



Cross-Cutting Policy Functions are the key structures and activities that support all stages of the policy development process.

1) ***Communication:*** Inform all parties of the issue, evidence, goals and status of activity. Get information to decision-makers when they need it and in the form they need it.
2) ***Consensus Building:*** Get key stakeholders to agree on objectives, process and evaluation. Consensus is a powerful tool that can help ensure buy-in later on.
3) ***Governance:*** Establish the organization and authority between governments, business and civil society organizations to achieve the agreed-upon results.
4) ***Management:*** Organize work, set priorities, obtain and allocate resources, and account for performance. Adaptive management is key given the pioneering nature of environmental issues.
5) ***People:*** Ensure people are skilled in core technical capacities, integrated thinking, adaptive management and strategic planning. They must pay attention to a wide range of details, work well under pressure and have a high tolerance for ambiguity.

The **Issues Life Cycle** describes the steps of the policy-making process for a particular environmental problem or objective. While each step is portrayed as sequential, there may be some iteration between steps in practice.

A) ***Diagnostic:*** Assemble evidence describing the nature and scope of the problem, causes, effects, significance and certainty by integrating economic, sociological and environmental information. Trends and the consequences of both action and inaction are important. Any scientific and technical information should be agreed upon by authoritative peers.

B) ***Getting on the Agenda:*** If applicable, get the issue on the agendas of the public, political parties, business interests and other key stakeholders. Governments have public trust and stewardship responsibilities on behalf of citizens to address environmental problems.

C) ***Policy Development and Selection:*** Identify one or a bundle of policies to address the issue. (See **page 12** for more guidance.) Key questions include who will lead, how the policy selection process will be carried out and who will implement regulatory measures.

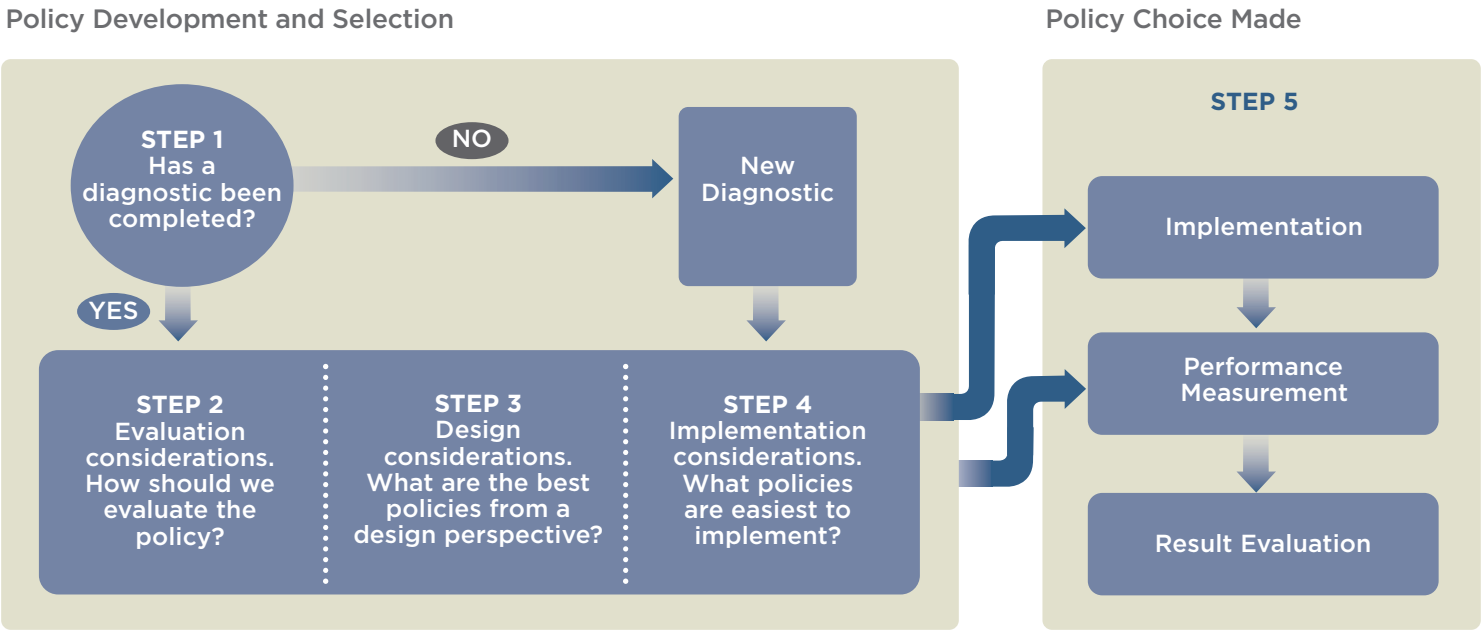
D) ***Implementation:*** Convert policy prescriptions into actions to achieve the agreed upon targets. Key factors enabling smooth implementation include low transaction costs and high efficiency, clarity and predictability, and appropriate management practices.

E) ***Performance Measurement:*** Verify the implementation of measures, targets and schedules, and prepare reports, evaluations and feedback. These measures will flow from a policy's objectives.

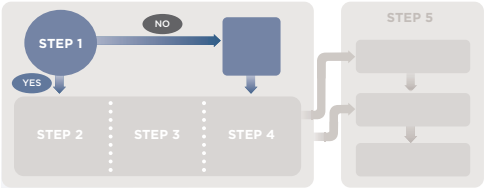
F) ***Result Evaluation:*** Determine whether societal goals are being achieved and whether there is a gap between policy objectives and results. Results should feed back into prior stages.

2. choosing the best suited environmental policy instrument

The following decision-tree will help policy-makers select an appropriate instrument for the issue at hand (during the policy development and selection of the Environmental Policy Framework). "Key success factors" directs your attention to areas of particular interest for environmental policy. We also flag specific areas where business can play a valuable role in the policy process. See the **full report** for additional examples from the studies examined.



Step 1: Has a sufficient diagnostic been completed?



Step 1: Has a sufficient diagnostic been completed?

Step 2: How should we evaluate the policy?

Step 3: How is the policy best designed?

Step 4: Which policy is easiest to implement?

Step 5: Selection, implementation, performance measurement and evaluation

If a diagnostic has not been done or is outdated, conduct a new one. Keep in mind the cross-cutting policy functions: Are the right ***people*** available to perform the diagnosis? Are there key parties to whom you need to ***communicate*** activities and outcomes? Is it necessary to ***build consensus*** around the process? And, what kinds of ***governance*** mechanisms and ***management*** practices are necessary to facilitate all of the above?

Key success factors for policy-makers:

1. Consider whether the issue is an end and/or a means to an end. For instance, low-carbon technology can be a tool for greenhouse gas (GHG) mitigation and/or a strategy for improving economic competitiveness. Different roles mean different drivers.
2. Understand the degree of any uncertainty around the issue. With environmental issues, there may be substantial uncertainty in either natural systems or the behaviour of market actors (e.g. businesses or citizens).

How business can contribute[1]:

- Understand timelines of upcoming policy development and contribute early to the process
- Invest in relationships to stay abreast of upcoming policy discussions
- Share expertise or research to lead to a robust understanding of the issues
- Identify critical questions or concerns on behalf of your organization/industry
- Conduct issue-based stakeholder dialogues and invite policy developers or share findings
- Conduct independent research where information gaps exist

[1] The "How business can contribute" section on pages 12-16 presents possible strategies for constructive business participation in the policy process. They weren't identified in the full systematic review and have not necessarily been supported by academic research.

Step 2: How should we evaluate the policy?

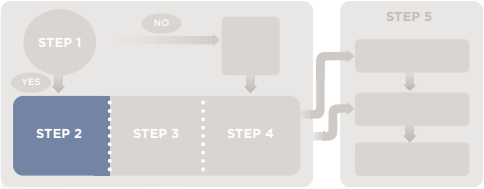
Performance measures are critical for assessing the effectiveness of the policy. For instance, policies might be evaluated based on their effects on competitiveness or productivity, or whether they effectively address the problem at hand (e.g. a target for GHG emissions reductions). Measures should flow directly from the diagnosis. Because of their ultimate importance, it may be worth seeking consensus on key policy goals and measures.

Key success factors for policy-makers:

1. Tailor the goal-setting process to the circumstances. For instance, voluntary agreements can result in "business as usual" standards when firms have a better understanding of incumbent technology than policy-makers. Measuring policy outcomes against goals is pointless if the goals set aren't appropriate.
2. Take a long-term vision. The nature of current environmental challenges demands continued and sustained attention by all parties, with a long-term view in mind. Ensure your measures are appropriate given the time horizon of the problem.

How business can contribute:

- Provide input on performance measures early in the process
- Identify unintended consequences of proposed measures
- Work with industry peers or associations to provide constructive feedback on proposed measures



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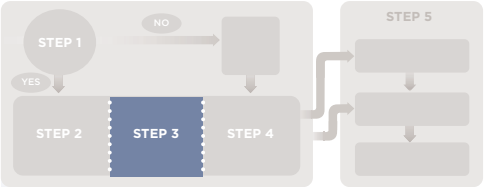
Step 3: How is the policy best designed?



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Coherence among different policies and programs is a key consideration. In Canada, for example, federal, provincial, territorial and Aboriginal governments share constitutional authority. A single human activity can be subject to concurrent legislation and intervention by multiple parties.

Be sure to ask: Are there other programs and/or policies in place that interact with the issue under consideration? If so, can they be altered easily to incorporate the issue? If they can be altered easily, aim to optimize the interplay to enhance horizontal coherence. If not, find ways to minimize the negative interactions.

Key success factors for policy-makers:

1. Fit policy within its context. For example, a policy seeking to support technology development will be designed differently depending on the maturity of the technology and the market in which it will be used.
2. Understand the target audience. One size does not fit all. The choice of specific instruments depends on the nature of the issue and the parties involved. Information should be tailored to the level of understanding of the audience.
3. Consider a policy bundle. Combinations of legislation-based (regulation, expenditure and information provision) and hybrid policy initiatives can provide the most effective and efficient conditions for progress.
4. Consider the importance of monitoring and enforcement. Policies that incorporate mandatory reporting requirements perform best. But monitoring can run counter to efficiency. Exploring novel solutions, like two-tiered agreements, can result in cost savings and higher effectiveness later.

How business can contribute:

- Identify possible impacts, conflicts or redundancies that will result from the proposed policy
- Identify potential trade-offs or alternative solutions that will maximize policy impact and minimize costs
- Highlight the incremental costs of compliance and reporting under different options so policy-makers understand the trade-offs

Step 4: Which policy is easiest to implement?

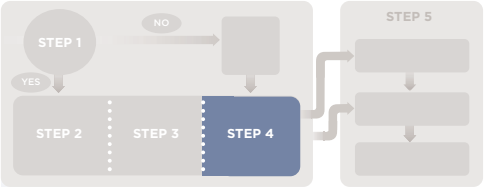
The best designed policy can fare poorly if decision-makers don't consider implementation. Ask questions about administrative burden, support from critical stakeholders and use of funds. Affordability is also critical when translating policy design into action.

Key success factors for policy-makers:

1. Know your target and how its attributes affect implementation. For instance, the degree of concentration of an industry can affect coordination or incentives to free-ride.
2. Leverage any existing history of communication between government and industry to facilitate implementation. Open communication and information transfer between parties provides an essential foundation throughout the life cycle of a problem.
3. Use appropriate incentives, such as marketing or reputation benefits in the case of voluntary programs, to improve program effectiveness.
4. Time your initiatives wisely. Targeting actors when you have their attention – such as launching an informational program when companies are switching technologies – can be a useful strategy. Providing long-term commitments (e.g. agreed-upon feed-in rates for 20 years) helps firms justify investments.

How business can contribute:

- Identify implementation barriers and suggest alternatives early in the process
- Identify how policy implementation timelines can be most easily integrated into business plans and cycles



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Step 5: Selection, implementation, performance measurement and evaluation

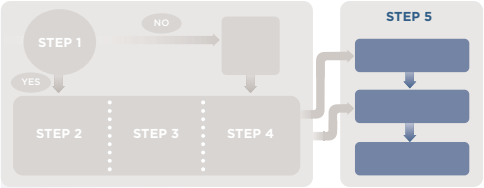
After considering these questions, you must ultimately select a policy or bundle of policies. Your decision should consider the outputs of the preceding steps. Having consensus on the appropriateness of the criteria will help ensure smoother implementation.

Key success factors for policy-makers:

1. Plan for ongoing measurement to improve policy implementation over time. You may find initial forecasts were optimistic or that target actors aren't responding as predicted. It's critical to have this information soon after implementation and collect it on a regular basis – particularly given the evolving nature of environmental policy issues.

How business can contribute:

- Provide evidence on the impact of the new policy and its implementation. There may be opportunities to improve the impact, delivery or evaluation of programs over time.
- Continue the open dialogue with government and industry peers on ways to improve the policy.



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3. what instruments work and when

The following tables present instrument-by-instrument guidance on the conditions for success for selected low-carbon and water management policies, along with real-world examples of each policy. See the **full systematic review** for a comprehensive evaluation of positive and negative characteristics, along with conditions for success and limiting factors, of each policy.

LOW-CARBON POLICIES

Policy	Examples	Pros and Conditions for Success
Emission Trading Schemes	E.U. Emission Trading Scheme Regional Greenhouse Gas Initiative	• Allowance auctions • Sufficiently tight cap to create a price for emissions • Coverage to ensure liquid market and prevent market power, while avoiding administrative costs of monitoring multitude of small emitters • Design features to smooth market over time and manage risk (e.g. emission banking, specific time lengths for future trading) • Quantity and monitoring of offsets to ensure innovations in unregulated parties and domestic emission reductions
Taxes or Levies	E.U. Emission Trading Scheme Regional	• Uniform tax burden • Tax revenue used to offset negative effects on competitiveness, income distribution • Tax adjustments over time to compensate for inflation, innovations or new emission sources • Energy mix where fuel switching cheap way to avoid tax burden
Voluntary Agreements	Canadian Voluntary Challenge and Registry	• Concentrated and organized industrial sector • Tradition of communication between sector and government • Non-economic mitigation barriers dominate (e.g. limited info about abatement options) • Positive and negative incentives for participation (e.g. market rewards, social licence or threat of future government regulation) • Credible but low-cost monitoring; detailed, quantified schedules and planned targets
Labelling Schemes	Energy Star Australian Greenhouse Friendly Labelling Program	• Government support and credibility (e.g. effective communication about label) • Bundling with financial incentives • Label-clarity (e.g. seal of approval or a letter-grade system) • Targeted product category that has low-cost room for improvement

Note: symbol denotes that businesses can implement without government involvement ( ).

Policy	Examples	Pros and Conditions for Success
Marketing or Advertising Campaigns	One Tonne Challenge Canadian Energy Efficiency Awards	• Targeted, avoid a moralizing tone, stress private benefits a program or action provides (such as reduce energy costs) and account for the level of environmental awareness in society • Integration of messaging across related programs at various levels of government • Bundling with financial incentives
Subsidies	Dutch Energy Premium Regulation	• Facility specific, tailored promotion of programs • Consultation with industry to ensure promoted technology feasible to use • Target technologies at an appropriate stage of market maturity • Time subsidies to fit with the life cycle of existing technology
Feed-in Tariffs	German Renewable Energy Sources Act (EEG)	• Tariffs providing long-term guarantees to sustain investor confidence • Decreasing tariff rates over time to avoid rapid installation of current technologies while still creating incentives for economic efficiency • Soft loans for technologies at an early stage of development
Renewable Portfolio Standards	State-level RPSs in 30 U.S. states U.K. Renewable Obligation Swedish Compulsory Green Electricity Quota Australian Mandatory Renewable Energy Target (MRET)	• Regulatory commitments consider pay-back and lead to long-term purchase obligations • Standards equally applied to all load-serving entities • Credible enforcement, backed by penalties • Regulated flexibility mechanisms (e.g. tradable certificates to be banked or borrowed) to create transparent and liquid market and manage out-of-region certificates • Bundling with favourable siting processes, production tax credits or requirement that electricity suppliers provide customers option to purchase green power • Policies supporting full range of renewable energy (e.g. banding or carving outs) by reducing barriers to entry must consider negative liquidity effects on certificate market • Policy design accounts for structure of electricity market (e.g. demand growth and utility ownership)
Energy Efficiency (Demand Side Management)	Household weatherization programs Refrigerator replacement programs	• Monitoring/verification activities include measures to help obligation holders comply • Incentives, free equipment installation and rebates enhance effectiveness; can contain costs by tying incentive payments to effectiveness of efficiency spending and capping • Clear methods for measuring and verifying calculations • Timely period for recovery of program costs • Single program portal with staff providing all relevant services (e.g. incentives, marketing, technical assistance, training) for range of customer end-use application

Note: symbol denotes opportunities for business to lead ( ).

WATER MANAGEMENT POLICIES

Policy	Examples	Pros and Conditions for Success
Soft Adaptation Techniques (use natural systems rather than built infrastructure to manage water flows)	Flood plain restoration on lower stretches of the River Danube	• Successful programs incorporate planning for long-term climate change impacts
Water Cap and Trade (caps on total water removals, provisions for trading among users)	Australia's Water Management Act (2000)	• In some regions (e.g. Queensland region) water sharing programs have provided adequate environmental water
Subsidies	Spanish subsidies for irrigation modernization (i.e. investment in more efficient irrigation infrastructure)	• No documented "pros"
Integrated and/or Adaptive Planning Schemes	Santa Clara Valley District's Integrated Water Resource Planning Climate information for South African Farmers (regional climate outlook forums) Dutch river flood protection	• Engagement with public stakeholders • Timing the integration of climate change adaptation with planned overhauls of existing approaches / policies (e.g. South Africa's attempt to address historical water injustices) • Uses quality, reliable information (e.g. integration of high-quality climate forecasts improve adaptive planning) • Integration of users, scientists and forecasters can result in raised awareness and provided an impetus for adaptation activities

about the research

This research was inspired by the NBS **Leadership Council**, which gathers annually to identify the **Priorities for Business Sustainability**. The research team, including Dr. Graeme Auld, Bozica Burlica, Dr. Alexandra Mallett, Francis Nolan-Poupart and Dr. Robert Slater, reviewed 204 relevant sources from approximately 15 years. Using this set of sources, the researchers conducted extensive, detailed analysis and synthesis of the materials to identify characteristics of successful policies, and develop a framework to enable policy-makers to create effective policy. The team analyzed policies based on the policy's source of authority (public or hybrid), the instrument type (regulation, expenditure, info provision), the target (government, business, citizens) and the stage of activity (siting, planning, acting, performance). The full systematic review is available **here**.

about NBS

A Canadian non-profit, the Network for Business Sustainability produces authoritative resources on important sustainability issues with the goal of changing management practice. We unite thousands of researchers and professionals worldwide who believe passionately in research-based practice and practice-based research.

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NBS Knowledge Centre

For additional resources visit the Knowledge Centre at **nbs.net/knowledge**.

NBS Leadership Council

NBS's Leadership Council is a group of Canadian sustainability leaders from diverse sectors. At an annual meeting, these leaders identify their top priorities in business sustainability – the issues on which their organizations need authoritative answers and reliable insights. Their sustainability priorities prompt NBS research projects.

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Network for
Business Sustainability
Business. Thinking. Ahead.

Network for Business Sustainability
c/o Richard Ivey School of Business
University of Western Ontario
1151 Richmond Street
London, Ontario, Canada N6A 3K7
519-661-2111, x80094

Réseau entreprise et
développement durable
Penser l'entreprise en visionnaire

Réseau entreprise et développement durable
École des Sciences de la gestion
Université du Québec à Montréal
1290, rue Saint-Denis, 6e étage, AB-6270
Montréal, Québec, Canada H2X 3J7
514-987-3000 x7898

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