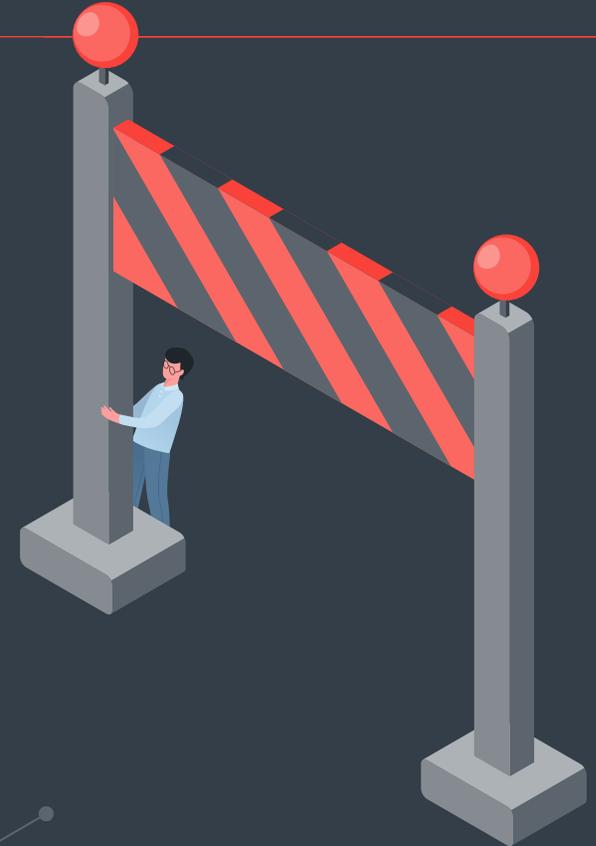


# The behaviour barrier



# Content overview

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In theory, it's easy to understand the old adage that "*prevention is the best medicine.*" But when prevention has an immediate price tag, people have a psychological tendency to defer action — even if it means paying much more later on. This is particularly true in complex and rapidly changing areas such as green infrastructure and smart technology. What are the behavioural barriers that deter us from implementing smart solutions today, and how can we **break down those barriers?**

The future cost of doing nothing to prepare for impending changes in climate, technology, society and resources could cost Canadians over \$500 billion per year by 2030 — that's \$25,000 per household, in addition to our existing costs. While that number seems quite sobering, it isn't set in stone — if we act now, there is much we can do to prevent the negative implications of these trends and their high costs. We can build greener, more resilient infrastructure, strategically retreat from expected flood areas, and make our built environment resilient in innovative ways. But we tend to

be notoriously short-sighted when it comes to making proactive and preventative investments.

It is well known, for example, that many people do not save adequately for retirement, if at all. It's for this reason there is an entire body of research, and even government departments tasked with, examining the behavioural nudges required to help people make better long-term decisions. To overcome this short-sightedness, we need to break through the behavioural barriers that lead us to defer investment until a crisis is already underway.





## What are the benefits?

The benefits of implementing the right preventive measures typically exceed the costs several-fold.

Flood protection measures like strategic retreat and restricting new homes and businesses to be located outside expected flood zones, for example, have been shown to provide societal benefits 13 times greater than their costs. The benefits of protecting forests using invasive species tracking apps and managing forests in the face of increasing heat have been estimated to provide benefits that are up to 38 times the costs.

On the smart side, sensors and other technologies in buildings have the potential to reduce unexpected failure by 50 per cent, improve building-management productivity by 20-30 per cent thanks to a reduced need for inspections, and improve the building's energy performance by 10 per cent over its lifetime.

Together, green infrastructure and smart technology can reduce the costs of preventive solutions, further enhancing the already impressive benefit-cost ratios.



## What's getting in the way?

Despite high benefit-cost ratios, preventive solutions don't dominate local, provincial and federal governments' plans. And you and I — regular citizens — are partly to blame.

Two American researchers found that voters favour the politicians who have helped communities out of a disaster, and "punish" those who invest preventively — even when these prevention measures have benefits 15 times greater than the costs.

Much of this is due to human nature — people tend to significantly discount future value. Research shows that people perceive the benefits that will transpire from an infrastructure investment one year from now as only half as valuable as they will be in reality. And every year further into the future, that value perception is halved again, or worse. Numerically, that means we may look at an economist's benefit-cost ratio of 15:1 and see one of less than 2:1. But don't feel too guilty; it's not just you and I. There's a whole system at work — including government policies, industry norms, and organizational structures — that creates barriers to proactive investment where impacts and results are difficult to quantify. Conversely, if we can make a few key changes, the whole system can be put to work for smarter, more resilient investments. But first, what are some of the barriers we need to overcome?

*There's a whole system at work — including government policies, industry norms, and organizational structures — that creates barriers to proactive investment where impacts and results are difficult to quantify.*

# Barriers and influences

There is a long list of barriers and influencing factors to consider.

Barriers to investing in green and smart infrastructure, for example, include:

- fear of the unknown
- lack of experience in constructing green infrastructure or smart projects
- decision-making structures that do not support multifaceted responsibilities or projects, obsession over growth (including a focus on short-term job creation and investment attraction; tight budgets and timelines)
- “strong stakeholders” who may lose in the short term (e.g., housing associations, investors, developers).
- lack of existing communications technology and physical infrastructure.

A long but non-exhaustive list of barriers is provided in the Appendix.

We can consider change on a broad social scale in terms of the five A's of market transformation, which include availability, accessibility, awareness, acceptance, and affordability. In this paper, we assume that the technologies and solutions are available and accessible, and therefore focus on:



## AWARENESS AND ACCEPTANCE

Does the market know about the technology or solution? Does the technology or solution meet social, environmental, and political expectations and requirements?



## AFFORDABILITY

Is the technology or solution affordable?

There is an entire system we can mobilize for our benefit, but each “body” must do its part:



**INDIVIDUAL**  
You. Me.



**ORGANIZATION**  
A private firm, municipality, or non-profit organization.



**INDUSTRY**  
An associated group of organizations that share a common interest. For example, the construction industry, or the engineering industry. Professional associations, universities and other education and research bodies also sit at this level.



**PROVINCIAL OR FEDERAL GOVERNMENT**  
Governing body that sets policy and framework within which the industry and organization works.

**The individual is critical;** when asked about specific examples of successfully overcoming barriers, our experts commonly pointed to the role of a strong, passionate advocate who could not only inspire people, but also show them steps to take to overcome the barrier. This takes a special type of person. We can create more of those special people by supporting them in the right ways.

# Overcoming barriers at each level

We consider that each of these bodies face barriers and can also, if they take responsibility for different aspects, enable more smart, resilient projects. Here's how each body would need to change in terms of its own perceived role, policies, incentives, structure and organization.



## CHANGE REQUIRED TO REMOVE **AWARENESS / ACCEPTANCE** BARRIERS



### REMOVE BARRIERS THROUGH:

- Sharing information about effectiveness of solutions, risks, and cost and other implications

#### INDIVIDUAL:

- **Perceives role** as being about championing positive change (including raising awareness)



#### ORGANIZATION:

- **Policies** promote raising awareness of the costs, risks and benefits of new solutions within the organization, industry, and community
- **Employee incentives** reward researching and raising awareness about effectiveness, risk, impacts and cost implications of new solutions
- Offers **training and development** opportunities to gain relevant technical and management skills



#### INDUSTRY:

- Professional bodies **see role** as raising awareness of the costs, risks and benefits of new solutions within the organization, industry, and community
- Professional bodies **instill a sense of responsibility** in members to raise awareness
- Professional bodies promote raising awareness as an **educational** component through universities and professional development
- Professional bodies take responsibility for promoting skills required, and **initiating training opportunities**, for new solutions



#### COUNTRY / PROVINCE:

- Provincial or national government takes **leadership role** in raising awareness of the costs, risks and benefits of new solutions within the organization, industry, and community
- Provide guidance and resources to facilitate processes, mitigate risks, and advance the state of preventive action



# Overcoming barriers at each level



## CHANGE REQUIRED TO REMOVE **AFFORDABILITY** BARRIERS



### REMOVE BARRIERS THROUGH:

- Undertaking benefit-cost analysis
- Identifying lifecycle stakeholders (both who benefits and who pays) for co-funding options
- Pilots to test costs and other impacts
- R&D to reduce costs

#### INDIVIDUAL:

- **Perceives role** as being about championing positive change
- **Champions** holistic cost beneficial solutions
- **Instigates** cross-organization collaboration
- **Instigates** cross-industry collaboration



#### ORGANIZATION:

- **Policies** promote exploring and testing holistic, whole-of-life benefit cost analysis of new solutions, and exploring options to co-fund with community, industry and government bodies
- **Structure** supports cross-disciplinary and whole-of-life change required
- **Organization** supports collaboration with community and industry bodies (can reduce costs to each stakeholder)
- **Employee incentives** reward contributing to practice updates, and leading cross-organization and cross-community or cross-industry change



#### INDUSTRY:

- Professional bodies **see role** as advancing practice
- Professional bodies **instill a sense of responsibility** in members to **promote questioning** of codes and promoting alternative solutions
- **Industry collaborates** to undertake and gather evidence from pilot studies and benefit cost analysis
- Professional bodies champion holistic benefit cost analysis and cross-industry contributions as an **educational** component through universities and professional development



#### COUNTRY / PROVINCE:

- Provincial or national government takes **leadership role in convening collaborations** for pilot studies, data collection, and benefit cost analysis
- Provincial and national **policies** promote and pilot studies, benefit cost analysis, region-wide data and evidence bases, and industry-wide collaboration
- Provincial and national **incentives** provided to undertake pilot studies, benefit cost analysis, contribute to region-wide data and evidence bases, and industry-wide collaboration
- Provincial and national funding for the whole-of-life of smart investments



# Integrated systems approach

**When each of the four levels of stakeholder works in complement by overcoming behavioural barriers with proactive measures, we can create a full systems approach to reducing and preventing high costs in the future — and identifying opportunities earlier for a smarter, greener world.**

By making several small, key changes across all four strata, we can make wise upfront investments that are both affordable and effective in preventing crisis events and uncontrolled reactive costs. These changes don't have to be expensive or disruptive — but they do require a shift in thinking. As we move toward an increasingly proactive, long-sighted approach, we will see the value of those decisions compound quickly in the years to come.



*WSP will be undertaking an industry-wide survey to understand more about barriers to smart, resilient solutions. The results will be shared with all participants and inform the publication of an industry report. The next stage of change will be an industry round table.*

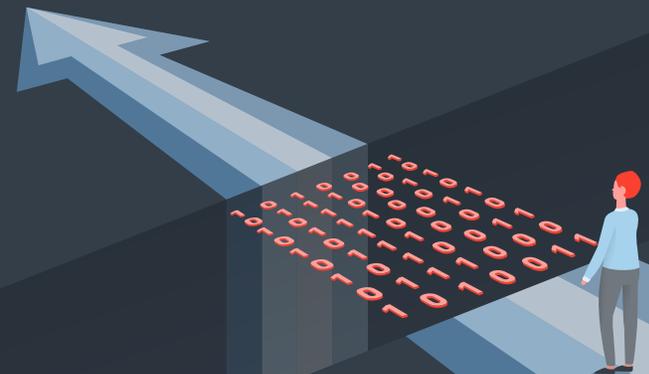
[Click here](#) to get a copy of our final report when it's available

#### ABOUT THE AUTHOR

Anna Robak leads WSP's Future Ready® research program. For more information on upcoming research and potential collaborations, please contact [anna.robak@wsp.com](mailto:anna.robak@wsp.com)



Discover the rest of our *Costing the Chasm* series on [wsp.com](http://wsp.com), and stay tuned for our WSP Smart™ campaign launching September 2020. In the meantime, follow the links to learn more about [Future Ready®](#) and [Resilience at WSP](#).



# Contributors

Claire Hicks, *Manager Future Ready®*

Jamie Summers, *Future Ready® Program Consultant*

Isabel Loewen, *Future Ready® Research Student*

Liz Bernier, *Editorial & Content Strategy Specialist*

# Appendix

## Selected barriers to smart, green, preventive investments

Nature of barrier	Barriers	Green	Preventive	Smart
Individual / behavioural	Fear of loss of control over data, fear of transparency / acceptance, fear of job loss, hesitance / uncertainty [1]			x
Infrastructure	Drivers: mature infrastructure, wide use of ICT, involvement of citizens in city development, and expansion of public-private partnership [2] [1]			x
	Dependency on other technologies that the agency doesn't have, difficulty of modifying existing infrastructure, Security [3]			x
Operational	Maintenance costs [4]	x		
	Inability to specify responsibilities for long-term maintenance [5]			
	Uncertainty about future conditions [6]		x	
	Uncertainty about how to implement; effectiveness of implementation; how to maintain [5]	x		
	Staff risk aversion [5] [3] and lack of in-house expertise [5]; Need for cultural modernisation [4]			x
	Disconnect between short-term actions and long-term goals (e.g., scientifically validated knowledge not available when policy windows are receptive to new ideas) [5]	x		
	Discontinuity between short-term actions and long-term plans [5]	x		
	Sectoral silos: multifaceted responsibilities or projects do not fit into existing decision-making structures [5]	x		
	"Strong stakeholders" who may lose in the short term (e.g., housing associations, investors, developers) [5] and other conflicts of interest [2]	x		x
	Growth obsession (focus on short-term job creation and investment attraction; tight budgets and timelines) [5, 2]	x		x
	Valuing response and recovery over risk reduction and preparedness [6]			x
	Uncertainty about data privacy, security and intellectual property [2]			x
	Wealth of municipality [2]			x
	Driver / enabler: knowledge sharing with other cities [2]			x
	Land shortage [2]			x
	Underestimate effort required to push innovation — then discontinue (underfund) [3]			x
	Lack of technical knowledge about applications, alternatives, and implementation [3] [1]			x
Lack of time [3]			x	
Keeping traditional roles/principles [3]			x	
No clear vision / strategy			x	
Resistance to cultural change/mistake culture [3]			x	
Cost [1]			x	

# Appendix

Nature of barrier	Barriers	Green	Preventive	Smart
Institutional	Complexities of green infrastructure [4]	x		
	Lack of experience in constructing green infrastructure projects [4]	x		
	A holistic understanding of risk and wellbeing [6]		x	
	Fear of the unknown (how to implement and effectiveness of implementation; how to maintain) [5]	x		
	Competing interests of citizens, private capital and political elite [2]			x
	“Strong stakeholders” who may lose in the short term (e.g., housing associations, investors, developers) [5]			
	Growth obsession (focus on short-term job creation and investment attraction; tight budgets and timelines) [5]	x		
	Unprepared to share information and collaborate [7]			x
	Long time required to investigate, collaborate and implement [7]			x
	Lack of trust in smaller stakeholders [7]			x
	Austerity policy and urban dynamics lead to land leases [2]			x
	Drivers / enablers: High tourism potential, modern infrastructure, broad implementation of ICT and mobile solutions, development of PPPs [2]			x
	Cost of labour [2]			x
Lack of standards [3]			x	
Policy	Lack of laws [3]			x
Public awareness	Valuing response and recovery over risk reduction and preparedness [6]		x	

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