

INTERNATIONAL BEST PRACTICE FACTSHEETS ON POLICY INSTRUMENTS THAT PROMOTE ENABLING ENVIRONMENTS FOR GREEN AND CIRCULAR BUSINESSES

# Plastic Innovation

CANADA\_



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## BEST PRACTICE FACTSHEET



One of the most problematic material streams in our society are plastics, not only because of (fossil) resource use but also environmental pollution. It is therefore essential to drastically reduce the production of plastics (particularly single-use), promote (reusable) alternatives and prevent litter.

Green and circular businesses can contribute to this mission, which requires innovative solutions. The Innovation and Skills Plan is a multi-year plan of the Canadian Government to establish the country as a leader in innovation and to prepare its society for the economy of the future. A part of this Plan is Innovative Solutions Canada, a program with a specific focus on plastic waste and the Plastics Innovation Challenge which aims to support Canadian SMEs with clean technological solutions to accomplish the vision of a zero plastic waste country.

## OBJECTIVES



**Innovative Solutions Canada** is a funding programme established by the Canadian Government to tackle the country's plastic waste and pollution issues. It aims to support innovators with investment for research and development (R&D) and through testing prototypes in real-life settings. To do so, this programme launched a diverse set of federal government challenges, some of which are specifically conceived to solve the problem of excessive plastic waste. Startups and small and medium business can engage in these challenges to access investments to run and grow their projects and to test innovative solutions that may later be purchased and used by the Canadian Government.

## BACKGROUND



In 2017, the Canadian Government announced the **Innovation and Skills Plan**, a plan with three main goals: to make Canada a world leader in innovation, to create well-paid jobs and to help strengthen the Canadian middle-class. Included in this Plan is "Innovative Solutions Canada", a government-run investment scheme that promotes the development of new technologies. In addition, the Canadian Government's 2018 **Zero Plastic Waste Strategy** states the need to take action on plastic waste and pollution, more specifically to: reduce plastic waste from food packaging, construction waste, marine vessels and fishing gear and also improving plastic recycling through artificial intelligence, and refining technologies for bioplastics. To operationalize the objectives in these documents, the Government launched the Innovation Solutions Canada programme.

## IMPLEMENTATION



Innovative Solutions Canada is a three-year competitive proposal-based funding programme managed by a governmental authority ([Innovation, Science and Economic Development Canada](#)) that provides government grants to Canadian innovators. Its budget is financed by mandatory contributions from 20 federal government departments and agencies (such as the Agriculture and Agri-Food Canada or the Employment and Social Development Canada) which are required to allocate at least one per cent of existing procurement and intramural research and development expenditures to the programme.

The programme has an annual budget of over \$100 million (CAD) and to date has launched 14 plastic challenges with a total investment of \$19 million to support start-ups and SMEs. The goal is to develop innovative solutions to the challenges proposed, to facilitate the early development, testing and validation of prototypes, and to prepare a pathway to commercialization. The innovators through each challenge can propose a technology to overcome the problem proposed. Ultimately, if the solution succeeds in solving a challenge, the Canadian Government retains the right to be the first buyer of the technology. In this way, the government only invests in solutions that truly solve its problems.

In 2020 the Minister of Environment and Climate Change also announced

the launch of six new Plastics Challenges and three Clean Technology Challenges through this programme. These nine new Challenges call on Canadian innovators to find sustainable alternatives to plastic packaging, reduce plastic waste from textiles, monitor microplastics in marine environments, recycle plastic into ceiling tiles and other solutions.

With this programme, the Government expects to reduce 1.8 million tonnes of carbon pollution, generate billions of dollars in revenue and create approximately 42,000 jobs.

## RESULTS



### PHASE 1

Phase 1 of this programme was held in 2018, and 111 projects won grants between \$30,000 and \$200,000 to develop a proof of concept of their proposals. Among the winners of the 44 available challenges that year were organisations that proposed solutions ranging from improving internet connectivity of Canadians in remote locations to enhancing pedestrian and cycling road safety. More specifically and regarding plastics, in this phase there were nine challenges focused on food packaging, construction waste, separation of mixed plastics, sustainable fishing and aquaculture gear or improvement of compostability of bioplastics.

### PHASE 2

In 2019, Phase 2 of the programme awarded 11 start-ups and SMEs with a prize range between \$300,000 and \$1 million. This phase particularly targeted solutions for plastic waste, according to four of the six challenges to the plastics issues addressed in Phase 1. In this call, three companies (Axipolymer, Green Mantra and MgO Systems) were each awarded \$1 million to develop prototypes of their technologies designed to address plastic waste from food packaging and construction.

[Axipolymer Inc.](#) is focused on creating a recyclable multi-layer film that can be used for food packaging. [Green Mantra Technologies](#) will transform polystyrene insulation waste into new insulation. [MgO Systems](#) will use PVC

waste from construction to produce new insulating materials. All the winners have two years to develop a prototype of a solution that addresses a need identified by the agency or department responsible for each challenge.

### PHASE 3

Phase 3 was launched in 2020 with nine plastics and clean technologies challenges targeting new problems such as textile and microfibers, diverting end-of-life vehicle plastics from landfills, recycling plastic ceiling tiles and others. The results from this call have not yet been announced.



Example of one of the winners of the latest challenge on plastics: PVC waste from construction transformed into new insulation materials ([MgO Systems](#))

## SUCCESS FACTORS



By providing funding, the government enables innovators and SMEs to develop innovative solutions to tackle the complex problems that society is facing. The winners of the challenge, in turn, are able to develop their projects to a mature phase. This approach thus addresses two of the key problems faced by new businesses, namely the lack of investment to pursue R&D and a market ready to test and purchase their solution.

Another success factor is the freedom given to the agencies and departments to set up the challenges according to their most important needs and priorities so that these innovators can effectively address real-life environmental problems.

Between Phase 1 and Phase 2, the financial capacity of the programme was scaled up to provide higher levels of financing to projects having a more mature business model and therefore closer to launching their solutions to the market.

## CONSIDERATIONS FOR THE MEDITERRANEAN



National governments may support green and circular businesses through investment schemes launched in the form of challenges. The advantage of a challenge is that it is a highly visible and accessible way to motivate and involve entrepreneurs in societal challenges, while promoting competition among start-ups. The down-side is that there can only be few winners (and therefore limited impact) while there may also be good initiatives among the other candidates. Another disadvantage is that without clear criteria, transparency and independent judges, the selection process may be prone to bias.

An innovation challenge does not necessarily require a lot of resources, but still there has to be sufficient funding available, whether from public or private sources (e.g. partnerships with private investors).

The government does not necessarily have to procure the winning circular products/services, as this may not be in line with public procurement rules, but they may still support the green and circular initiative in other ways, e.g. by removing regulatory barriers and matchmaking with other relevant partners.

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