



#InvestEUresearch



Horizon 2020 Work Programme for Research & Innovation 2018-2020

Horizon 2020 Canada - International Cooperation Flagships Work Programme 2018-20

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Delegation of the European Union to Canada

Research and
Innovation



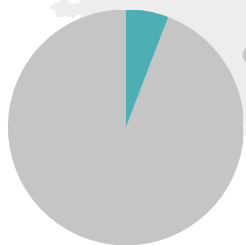
Overview

- 1 Horizon 2020 – Open to the World
- 2 Opportunities for Canadian researchers and entities in Horizon 2020
- 3 Individual researchers
- 4 Collaborative research
- 5 Some statistics
- 6 Work Programme 2018-20

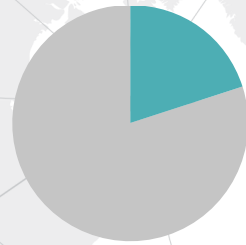
1. Horizon 2020 – Open to the World



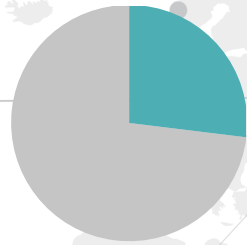
Did you know? The European Union: 500 million people – 28 countries - one single market



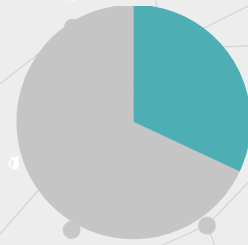
6% of the
World's
population



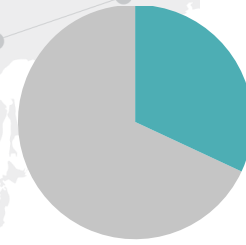
20% of
world
expenditure
on research



27% of
world
scientific
publications



32% of
high-impact
publications



32% of
patent
applications

Some of the best
universities in the world

Some of the most innovative
companies in the world

What is Horizon 2020?

- **Horizon 2020** is the EU Framework Programme for **Research & Innovation** and the **biggest multinational** programme of its kind with a budget of almost € 80 billion
- **Horizon 2020** is focused on 3 pillars: **Excellent Science, Industrial Leadership** and **Societal Challenges**

Horizon 2020 is Open to the World!

- **Researchers & institutions**, public or private, **from all over the world**, regardless of nationality or residence, **can take part in Horizon 2020**
- **Horizon 2020** is extremely **popular across the globe**: so far, 7750 applications from **152 countries**

Horizon 2020

A comprehensive programme

- **Coupling research with innovation:** 'from lab to market'
- **Focus on societal challenges:** health, clean energy, transport, etc.
- **Open to participation:** companies, universities, institutes in EU and beyond

Horizon 2020 covers three priority areas:

1 Excellent science

Researcher driven:
The foundation of
tomorrow's technologies,
jobs and wellbeing

Industrial
leadership

2

Industry driven:
Strategic investments
in key technologies

3 Societal challenges

Society driven:
Tackling the great
challenges of our time of
citizens and society



Excellent science

- ***European Research Council (ERC)***

Supporting top researchers from anywhere in the world to work in Europe – frontier research

- ***Future and Emerging Technologies***

Supporting visionary thinking through collaborations between science and engineering

- ***Marie Skłodowska-Curie actions (MSCA)***

Providing opportunities for training and career development of individual researchers

- ***Research infrastructures- including e-infrastructure***

Ensuring access to world-class facilities



Industrial leadership

- ***Leadership in enabling and industrial technologies***
Emphasising key technologies in areas such as advanced manufacturing, microelectronics, nanotechnology, biotechnology, ICT and space





Societal challenges

- **Health, demographic change and wellbeing**
- **Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy**
- **Secure, clean and efficient energy**
- **Smart, green and integrated transport**
- **Climate action, environment, resource efficiency and raw materials**
- **Inclusive, innovative and reflective societies**
- **Secure societies**

2. Opportunities for Canadian researchers and entities in Horizon 2020



How can you participate in Horizon 2020?

There are two ways to participate:

- **There is funding for individual researchers**

Researchers of all nationalities are welcome to participate

- **There is funding for collaborative research**

Together with at least 3 entities from 3 different countries of the EU or from Countries Associated to Horizon 2020



3. Funding for individual researchers in Horizon 2020



1. Where in Horizon 2020 can you find funds for individual research?

- **The European Research Council (ERC)**
=excellent research
- **Marie Skłodowska-Curie Actions (MSCA)**
= mobility of researchers and technical staff



European Research Council



Excellent
Science

These opportunities are for researchers who want to work in Europe.



a) What does the European Research Council (ERC) offer?

- For **excellent researchers** wishing to conduct their groundbreaking research in **Europe**
- No thematic priorities → bottom-up approach
- Investigator-driven

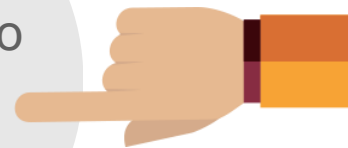
• **ERC Principles:**

- 1 Principal Investigator and team
- 1 Host institution in the EU/country associated to Horizon 2020
- 1 Selection criterion: EXCELLENCE
- At least 50% research has to be done in Europe
- Project duration: Up to 5 years



European Research Council

More than
500 grants to
non-EU/AC
Principal
Investigators



a) Four ERC main funding lines

Starting Grant:

Early career top researchers, 2-7 years after PhD | €1.5 mio.

Consolidator Grant:

Top researchers, 7-12 years researchers after PhD | €2 mio.

Advanced Grant:

Senior researchers with significant research achievements
€2.5 mio.

Synergy Grant:

2-4 excellent researchers and their teams, researchers with complementary skills, knowledge and resources, project duration max. 6 years | €10 mio.



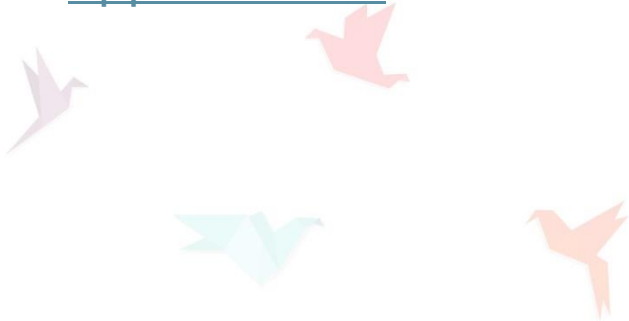
European Research Council

a) Researchers can join running ERC projects as a team member

- Canadian researchers can apply to join existing ERC teams in Europe
- ERC principal investigators expressed interest in hosting researchers from Canada
- More information about Implementing Agreements can be found: <https://erc.europa.eu/funding/additional-opportunities>




European Research Council



b) What do Marie Skłodowska-Curie actions (MSCA) offer?

- Opportunities for training and career development
- **Mobility of researchers is mandatory**

An illustration of a hand with a brown sleeve and a dark red cuff, pointing its index finger towards a light gray circle. The circle contains the text "Excellent Science".

Excellent
Science

MSCA principles:

- Open to all career stages and nationalities
- Bottom-up approach
- International, intersectoral and interdisciplinary career and knowledge-exchange

b) Three MSCA main funding lines

Individual Fellowships (IF):

- Supporting experienced international researchers to do research in Europe for 12-24 months
- Host institutions: from academia or industry

Innovative Training Networks (ITN):

- Networks of organisations offering research and training to early-stage researchers

Research and Innovation Staff Exchange (RISE):

- International and inter-sectoral cooperation



4. Funding for collaborative research in Horizon 2020!



How to participate in a collaborative project?

- As an entity from Canada you can take part in collaborative projects of Horizon 2020
- You can't receive funding – only in exceptional cases
- You can coordinate a project
- Remember! All proposals must meet certain minimum conditions:
 - 3 participants from different EU member states or associated countries
 - You as an international partner must come in addition to this minimum



International participation is targeted in numerous topics

- Specific topics in calls for proposals may:
 - indicate that **participation of international partners is encouraged**
 - indicate that **participation of partners from a certain country or region is encouraged or even mandatory**
- Coordinated calls exist, used for specific actions e.g. call SC1-BHC-05-2018 International flagship collaboration with Canada for human data storage



**Targeted
Opening**

Where to find collaborative calls?

1 Excellent science

- Marie Skłodowska Curie Actions
- FET open
- Research Infrastructures

In Leadership in enabling and industrial technologies (LEIT)

Industrial leadership

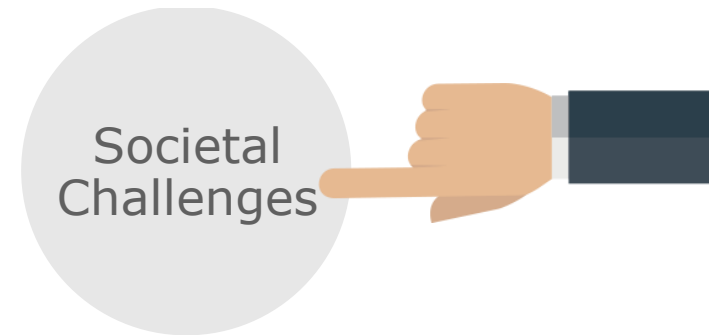
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3 Societal challenges

In all seven societal challenges

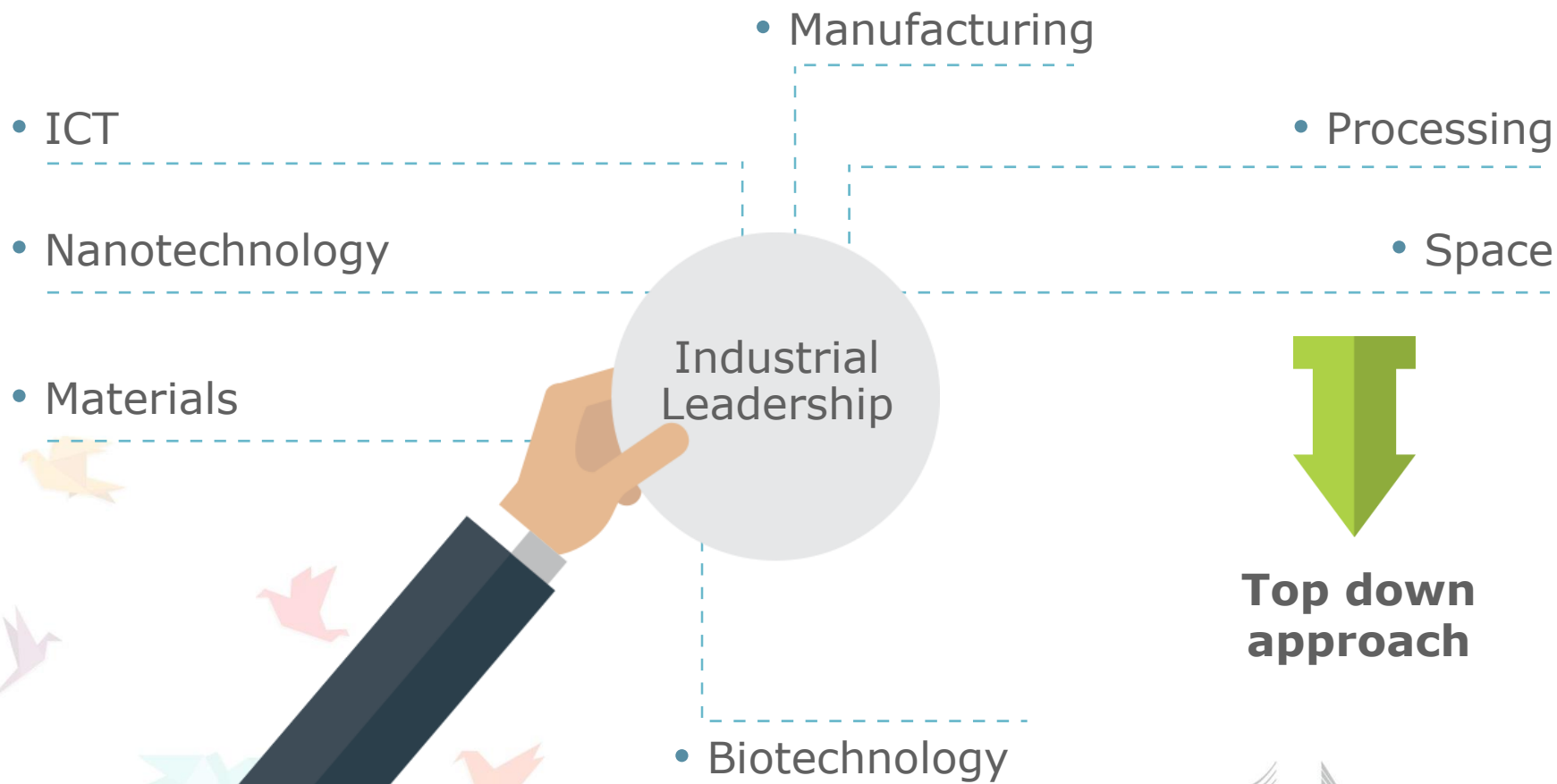
Societal Challenges

- **Health**, demographic change and wellbeing
- **Food** security, sustainable agriculture and forestry, marine and maritime and inland water research and the bio-economy
- Secure, clean and efficient **energy**
- Smart, green and integrated **transport**
- **Climate** action, environment, resource efficiency and raw materials
- Europe in a changing world: Inclusive, innovative and reflective **societies**
- **Secure societies** – Protecting freedom and security of Europe and its citizens



**Top down
approach**

Leadership in enabling and industrial technologies (LEIT)



Future Emerging Technologies (FET)

- Collaborative research for **radically new lines of technology**
- Supports frontier research: alternative ideas, concepts or paradigms of risky or non-conventional nature (similar to ERC)



- 3 main pillars:

**Open, Proactive,
Flagships**



**Top down
approach**



**Bottom-up
approach**

Specific topics targeting cooperation with Canada



Health

Flagship call now open!



Transport

Flagship call now open!



Marine and Arctic

Flagship call now open!



**Nanosafety
and technologies
for global healthcare**

Flagship call now open!



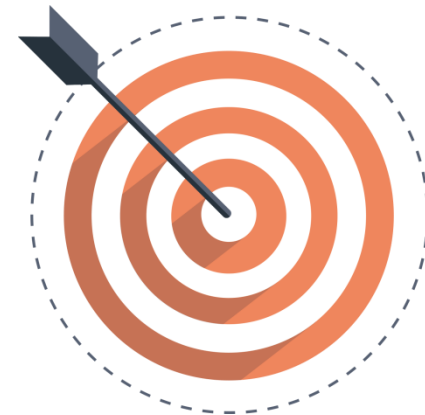
Energy

Flagship call now open!



Migration

Flagship call now open!



**Targeted
Opening**

Eligibility for Funding – General Rules

Automatically funded:

- Member States
- Associated Countries
- **Countries listed in Annex 1 of the Work Programme**

Other Partner Countries are funded when:

- Agreement exists between 2 funding bodies
- Provision made in the call text
- Commission deems participation essential



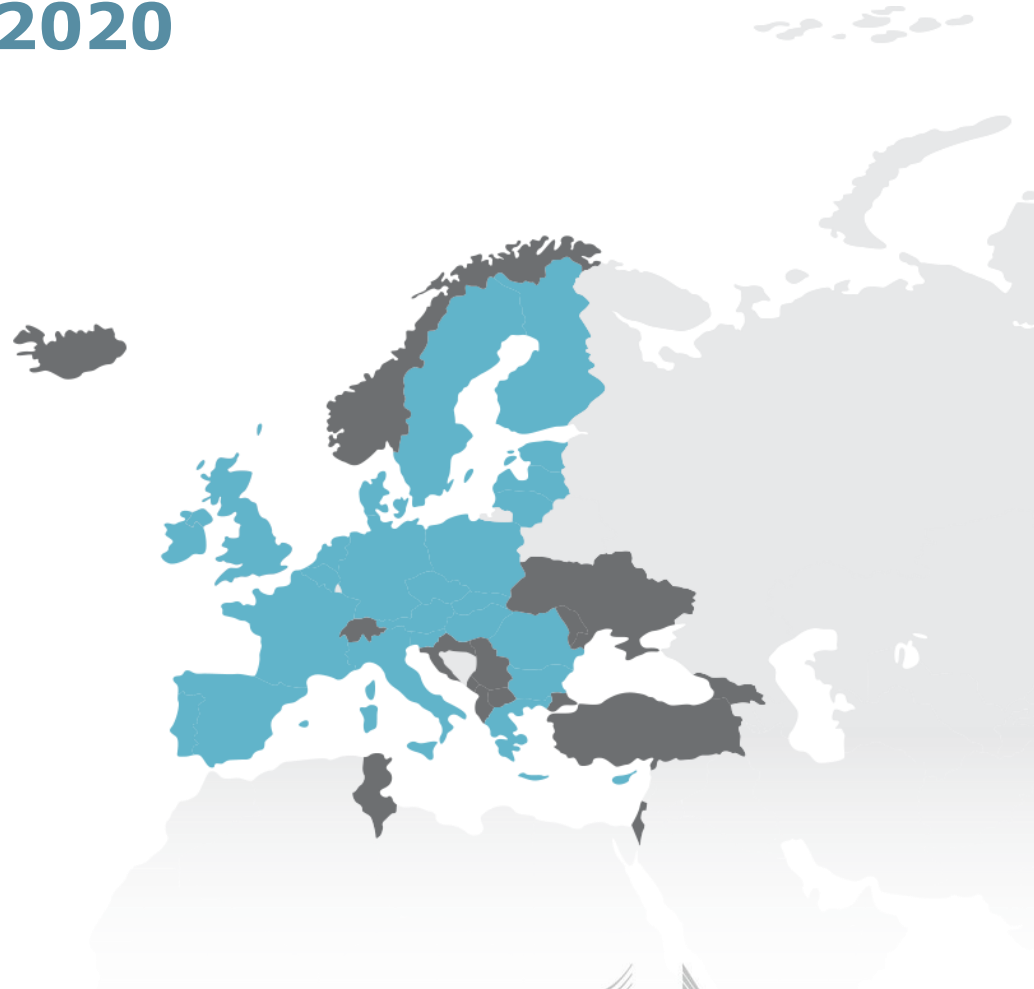
Canada

European Union Member States and Countries Associated to Horizon 2020

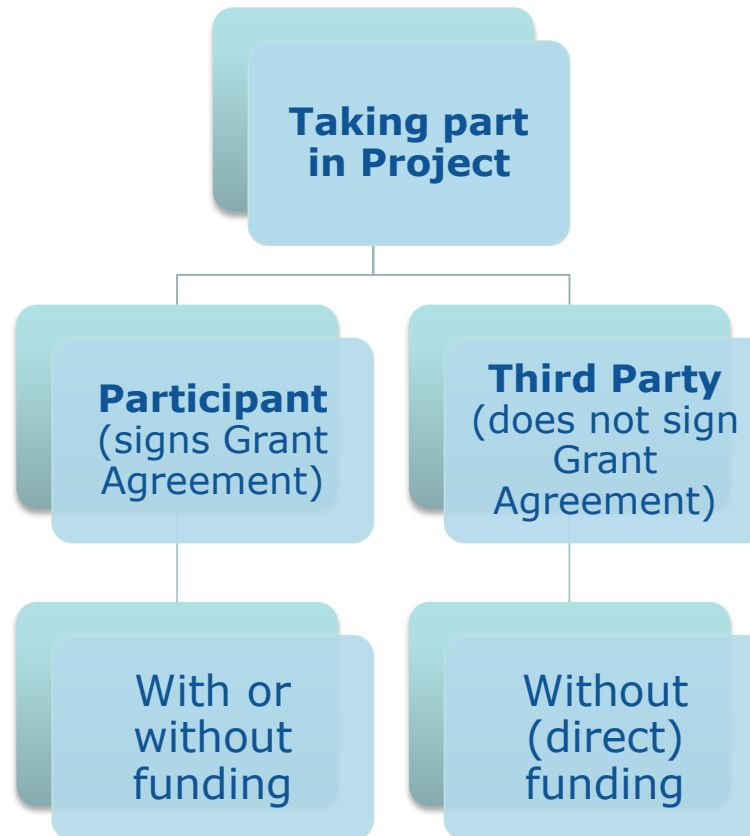
 **EU Member States (28)**

 **Associated Countries (16)**

- Albania
- Armenia
- Bosnia & Herzegovina
- Faroe Islands
- Georgia
- Iceland
- Israel
- Macedonia (FYR)
- Republic of Moldova
- Montenegro
- Norway
- Serbia
- Tunisia
- Turkey
- Ukraine
- Switzerland



Options for taking part



"Third Party" Option



Does not sign Grant Agreement but a private Agreement with one or more of the full participants (pre-existing relation)

The participant for which the third party carries out work must ensure that it is possible to exercise its IPR rights (e.g. Access)



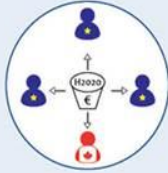

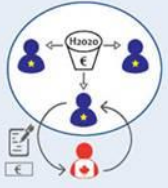
The work to be carried out by the third party shall be identified in the grant agreement

Eligibility for funding? Similar conditions as if signing the Grant Agreement*



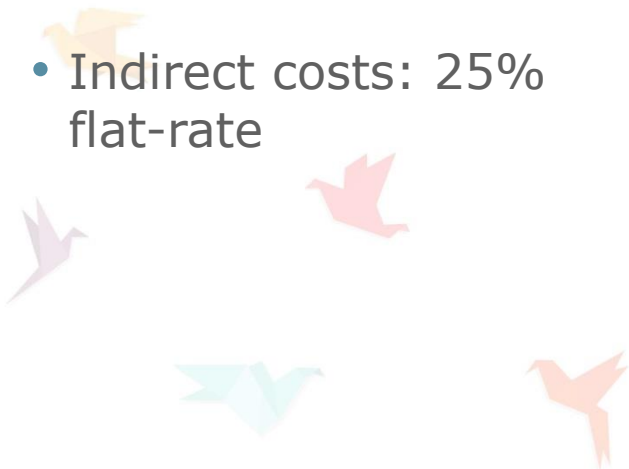
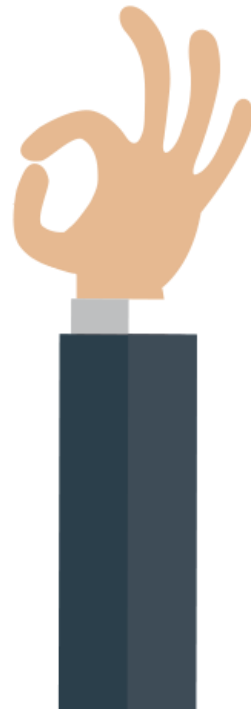
"International Third Party" Option

3 ways for Canadian researchers to participate in Horizon 2020

	I. Standard Horizon 2020 Terms	II. Article 14a "International Partners"	III. Regular 3 rd party (e.g. subcontract or legal link, EU definition)
	 <p>Horizon 2020 project</p>	 <p>Horizon 2020 project</p>	 <p>Horizon 2020 project</p>
Considered as:	Beneficiary	Canada as International Partner – Specific third party linked to one (or more) beneficiaries	Third Party (linked to beneficiary either via subcontract (Art. 13) or legal link (Art. 14))
Form of funding:	EU funding from Horizon 2020 in exceptional cases possible	EU partner funded via H2020 Canadian partner brings own funding	Payment for service (subcontract) or funding for task possible (legal link) from linked beneficiary
Agreement with funding organisations:	H2020 Grant Agreement	No legal obligation to sign an agreement, but Canadian partner must be named in Grant Agreement	EU Partner: Grant Agreement Canadian Partner: Subcontract or legal link with beneficiary
Agreement in consortium:	Consortium Agreement in accordance with H2020 regulations All parties share complete workload	Can sign MoU or alternative agreement Canadian partner has responsibility for specific task	Specific service/task (subcontract) or task (legal link 3rd party) defined in contract between H2020 partner and Canadian entity; no further information on project data than that regarding assigned service or task is provided
Form of Reporting:	In accordance with H2020 regulations (and via Participant Portal)	EU partner in accordance with H2020 regulations and can report about Canadian international partner Canada: in accordance with Canadian funding organization but reports to EU partner	Subcontractor is paid via invoice to linked beneficiary EU beneficiary receives money from H2020

Horizon 2020 funding rates and evaluation

- Basic funding rates:
 - 100% for Research and Innovation
 - 70% for Innovation/close-to-market
- Indirect costs: 25% flat-rate
- Three evaluation criteria:
 - Excellence
 - Impact
 - Implementation

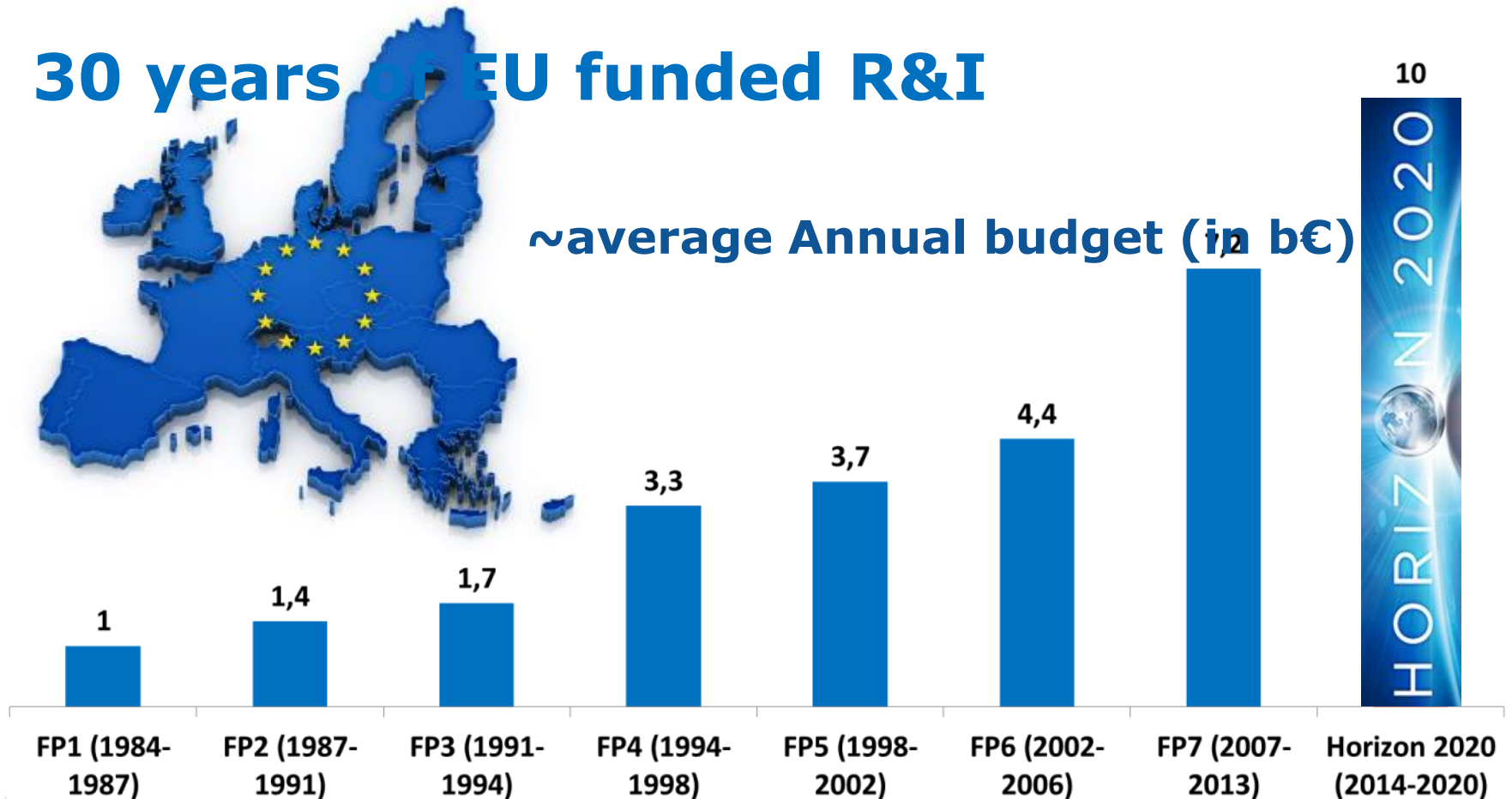


5. Some statistics



30 years of EU funded R&I

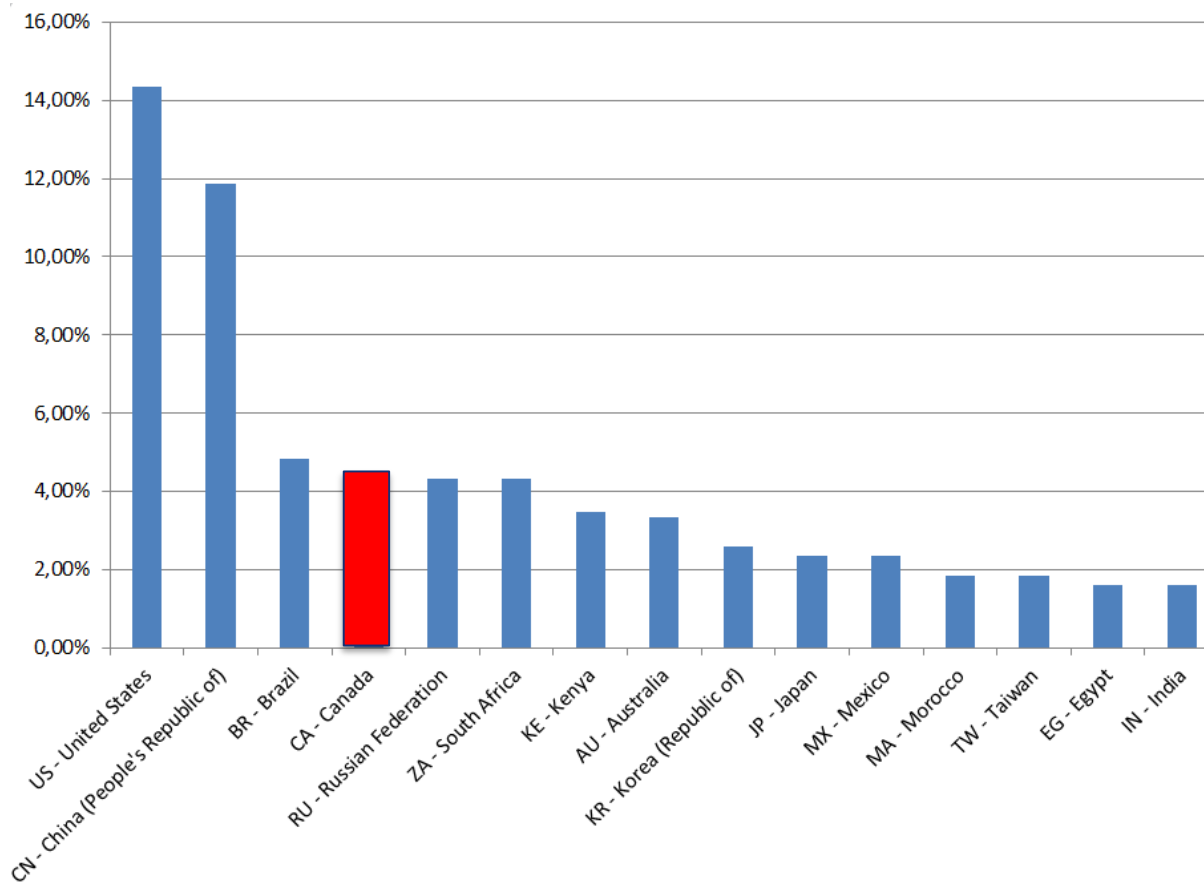
~average Annual budget (in b€)



EU-Canada S&T Agreement in 1996



Horizon 2020 – Participation % of all 3rd countries



Horizon 2020 - Outlook 2018-2020

After nearly 4 years of implementation

Interim Assessment

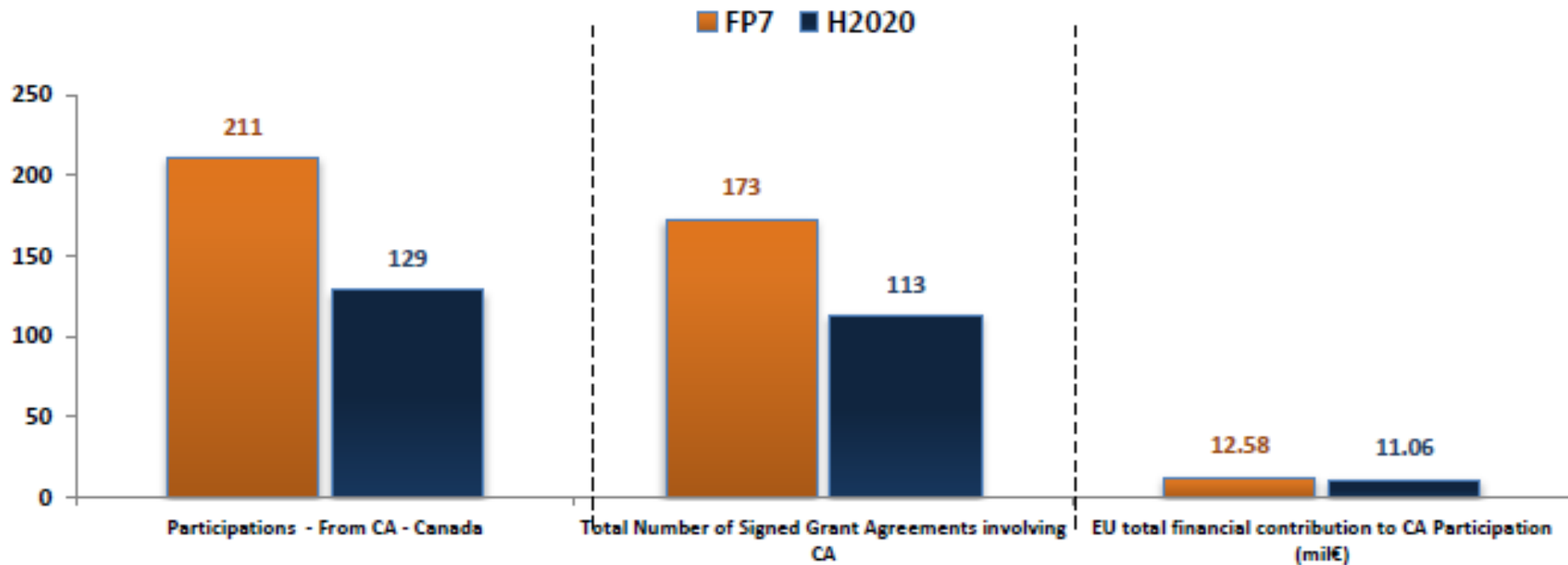
- ✓ **An attractive, simplified and well-performing € 77 billion programme**, but **underfunded** (14 % success rate)
- ✓ On track to deliver **value for money** and **to meet its knowledge-creating objectives**
- ✓ Strong **EU Added Value** through unique opportunities, competition & access to new knowledge.

Participation (Oct. 2017)

- ✓ 15,000 grant agreements
- ✓ with € 27 billion EU contribution
- ✓ 65,000 participations

Canada Participation (2007-2017) last 10 years of collaboration

Key figures for FP7 and H2020



7 years of FP7 – 3 years of Horizon 2020



10 years European Research Council (ERC) and Canada

ERC evaluated proposals by researchers of Canadian nationality, by call and domain

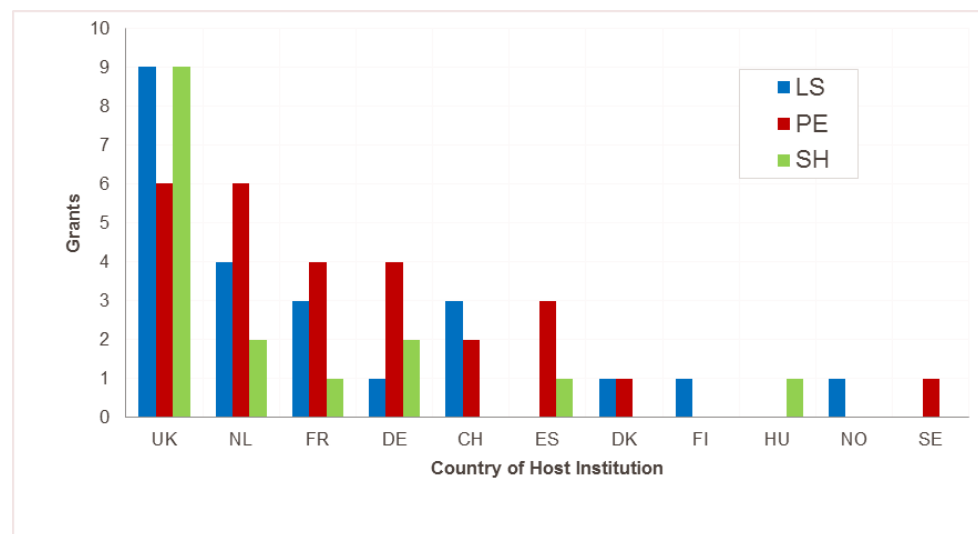
	Life Sciences	Physical Sciences & Engineering	Social Sciences and Humanities	TOT
StG	93	99	69	261
CoG	23	25	24	72
AdG	20	33	31	84
TOT	136	157	124	417

EC-Canada Implementing Arrangement
(Signed on 27 October 2016 with Canadian Tri-agency Institutional Program Secretariat -TIPS)

Results:
353 ERC PIs expressed interest in hosting researchers from Canada.
N. of scientists of Canadian nationality planning to visit ERC projects = not known yet.

ERC grants to Canadian nationals, by call and country of host institution

Call	LS	PE	SH	Total
StG	14	16	8	38
CoG	7	5	6	18
AdG	2	6	2	10
Total	23	27	16	66



ERC 2007-2016 calls + 2017 StG call, as of August 2017



Canada Participation (H2020) MSCA – (individual researchers)

H2020 Key facts and figures (2014-2020)

Number of CA researchers funded by MSCA: **127**
 EU budget awarded to CA organisations (EUR million): **N/A**
 Number of CA organisations in MSCA: **46**

In detail, the number of the organisation participations and the budget awarded to them, as well as the number of researcher mobilities involving these organisations:

Action	Number of Participations of CA organisations*		EU contribution (in EUR million) to CA organisations	Number Of Projects	CA researchers involved	Researchers going to CA organisations
COFUND	9	(9)	N/A	6	10	0
IF	35	(35)	N/A	35	64	35
ITN	23	(23)	N/A	21	38	0
RISE	33	(33)	N/A	26	15	75
Total:	100	(100)**	N/A	88	127	110

* Number of Participations is the number of participations by organisations i.e. the total number of times that organisations in this country have participated in each action.

**In brackets - partner organisations (included in the total number).

6. Work Programme 2018-20



Implementation in the work programme 2018-20



International cooperation is a **cross-cutting** priority

- ✓ **General opening** of all topics for any 3rd country
- ✓ **Targeted opening (Flagships)**
 - International partners mandatory
 - International partners encouraged
 - Joint or coordinated call
 - Project twinning
 - ...



Collaborative projects

CANADA Not automatically eligible for EU funding

Except if:

- Provision in the work programme (*NO*)
- Provision under a bilateral S&T agreement (*NO*)
- Commission deems participation essential for carrying out the action for example because it provides:

- outstanding competence/expertise or access to research infrastructure

- access to particular geographical environments

- access to data

- Other....

As of 2019, there is Canadian co-funding!

- Announcement at the EU-Canada Summit on July 17th: Canada will allocate up to **C\$50 million over the next five years to support Canadian participation in Horizon 2020 and Horizon Europe**
- The funding will be made available to Canadian researchers through the New Frontiers in Research Fund's (NFRF) International stream, which includes two mechanisms:
 - joint funding calls with international agencies on topics of international relevance; and
 - a dedicated fund to support participation of Canadian researchers within international teams in projects seeking funding from major global platforms.
- Through the second mechanism, up to \$10 million per year for five years will be allocated specifically to support Canadian participation in international teams applying for funding through Horizon 2020 and Horizon Europe.
- Further information will be shortly available on the [NFRF website](#) in the coming months. The stream's first calls for proposals, including details on eligibility and conditions of funding, should be announced in November.



Examples of areas inviting Canada cooperation (Flagships) Work Programme 2018-2020

Marine Arctic

- Atlantic Alliance / G7 Future of Seas
- Cryosphere and risks

Health

- Human data – Flagship
- Digit. transformation health & care

Transport

- Aviation – green and safe

Migration

- Refugee protection

Nano Safety

- Regulations
- Safe Design





Marine international co-operation

- All Atlantic Ocean Research Alliance Flagship (BG-08-2018-19)

64 M€ in 2018-19

- Co-ordinating Atlantic R&I **CSA - 4 M€**
- Ecosystems assessment **RIA - 9 m€ (x 3-4)**
- Aquaculture value chains **RIA - 8 m€ (x 3-4)**



- The Future of Seas and Oceans (BG-07-2019-20)

18 M€ in 2019

- Blue Cloud **IA, 6 M €**
- Observations and forecasting **IA, 12 M €**
- Technologies **(tbc 2020)**





Opportunities for EU-Canada cooperation on Polar/Arctic research in H2020 SC5

Areas:

- Climate Action and polar research
- Earth Observation

Topics proposed for the SC5 WP 2018-2020:

- **2018: Knowledge Gaps**

Climate processes, Tipping points, Ice-core drilling in East Antarctica

- **2019: Cryosphere**

Sea-level changes, Arctic biodiversity, Sustainable opportunities in the changing Arctic, Arctic standards

Health international co-operation



SC1-BHC-05-2018: International flagship collaboration with Canada for human data storage, integration and sharing to enable personalised medicine approaches (40 € million)

Scope:

- Build a collaboration of stakeholders in Europe and Canada in the domain of repositories storing and sharing human "omics" data.
- Enhance and standardise data deposition, curation and exchange procedures to ensure better data reuse.
- Build on the data quality metrics, standards and access policies, and existing research infrastructures such as -omics repositories, biobanks and registries developed by major international initiatives (e.g., IHEC, ICGC, IHMC, MME).

The **proposals shall include at least one participant from Canada**

RIA, EU contribution EUR 4-6 million

Deadline 18 April 2018



Aviation international co-operation

MULTILATERAL FLAGSHIP (more scale, more impact)

"Safer and Greener Aviation in a smaller world"



- Co-participation by several international partners
- Co-funding = each-side-pays-its-participants
- Co-evaluation in Brussels, peer review from all sides

Canada is explicitly encouraged in two major topics of the flagship:

- Topic MG-2-5-2018: SAFER (16 M€): **Icing and certification**
- Topic LC-MG-1-7-2019: GREENER (15 M€): **Hybrid-Electric aircraft**

Participation also possible in the other topic even if not explicit yet e.g.

- Topic (tbd) MG-3-05-2020: FASTER (tbc M€): **High-speed aviation demo**

All work-programme topics open, some encouraged internationally at large e.g.:

- Topic MG-2-1-2018: **Human factors** in Transport Safety (e.g. piloting).



Migration international co-operation

RIA

(3 x 3 mio EUR)

Impact:

- Evaluation of process, discourses and outcomes of the planned compact on refugees
- Strategies for implementing global refugee compact identified
- Process of EU common asylum system strengthened

MIGRATION-07-2019: International protection of refugees in a comparative perspective

- Emerging international protection system
- EU arrangements with refugees' origin and transit countries
- Comparative assessment of existing legal responses to protection needs
- Protection of vulnerable groups from abuse and exploitation, violence and discrimination
- International cooperation in particular with Canada, Brazil, South Africa and Jordan
- Inclusion of relevant international organisations



Nano-safety international co-operation



"Global" Nano-Safety:

**Call in 2018
28 million € funding**

EU-Canada Collaboration is strongly encouraged and all projects are expected to collaborate also with similar projects under the Communities of Research of the US National Nanotechnology Initiative



EU-Canada Task Force Programme Level cooperation



Task Force **what it is:**

- ... a "regular assembly" of Canadian research funders interested in Horizon 2020
- ... a group moderated by the EU DG Research & Innovation and Global Affairs Canada
- ... an input source to the EU-Canada JSTCC meetings
- ... an activity animated via a service contract of the European Commission DG Research and Innovation



EU-Canada Task Force Programme Level cooperation



Task Force **objectives:**

... to advance research Programme level cooperation between the EU and Canada

... to involve all interested Canadian funders to cooperate with Horizon 2020

... to address all areas and cut across all domains of science, research and innovation

... to feed in and coordinate the work with the EU-Canada JSTCC meetings



Success story EU-US cooperation project - Atlantic

An integrated observing system for the Atlantic Ocean

Buoys, floats, moorings and research vessels, to name just a few examples - data about the state of the Atlantic is collected by a number of means. And by a profusion of actors, who could jointly produce even better results if they applied a common strategy. EU-funded researchers are driving the development of an integrated system.



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Project details

Project acronym:
AtlantOS

Participants: Germany (Coordinator), UK, Ireland, Denmark, France, Poland, Norway, Spain, Portugal, Netherlands, Faroe Islands, Belgium, Italy, Croatia, Canada, Brazil, United States, South Africa

Total costs:
€ 20 652 921

EU contribution:
€ 20 652 921

Duration:
April 2015 to June 2019



Interested to know more?

Visit our Horizon 2020 Participant Portal



Useful links:

<http://ec.europa.eu/research/index.cfm>

<http://ec.europa.eu/research/participants/portal/desktop/en/home.html>

<http://ec.europa.eu/programmes/horizon2020/en>

Thank you!

#InvestEUresearch

www.ec.europa.eu/research

Participant Portal www

