

Green Deal and Horizon Europe

Facilitating a European circular
economy

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Materials for Tomorrow

DG Research & Innovation

European Union



Our vision

A sustainable, fair and **prosperous** future for **people** and **planet** based on European values.

- Tackling **climate change** (35% budgetary target)
- Helping to achieve **Sustainable Development Goals**
- Boosting the Union's **competitiveness and growth**



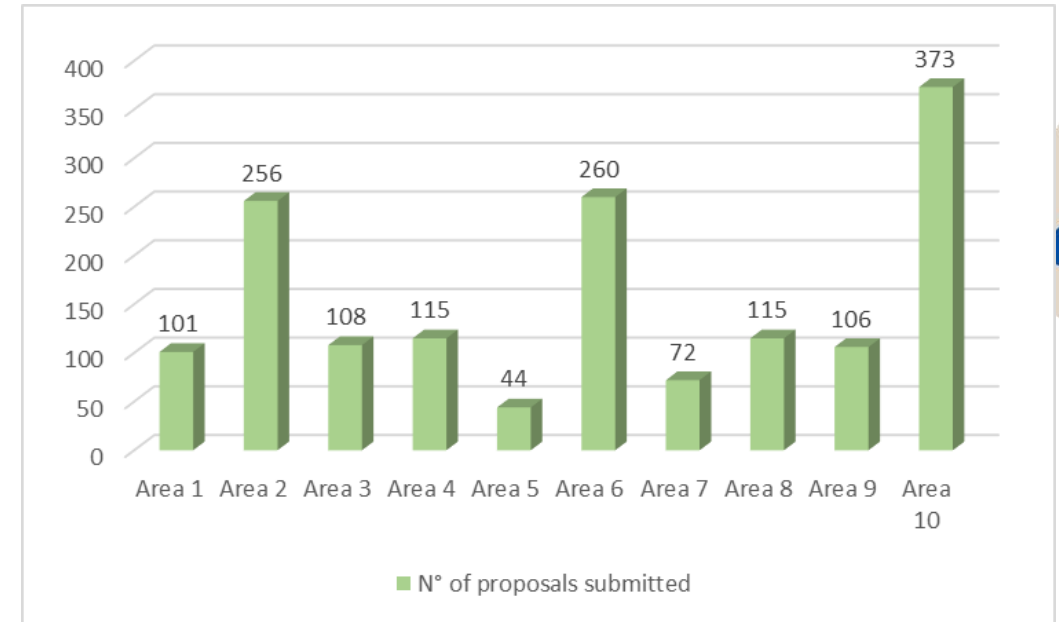
European Green Deal Call

Call	H2020-LC-GD-2020
Deadline	27 January 2021
Number of topics	20
Indicative budget available (EUR million)	983
Proposals submitted	1.550
Total amount requested (EUR million)	16.306

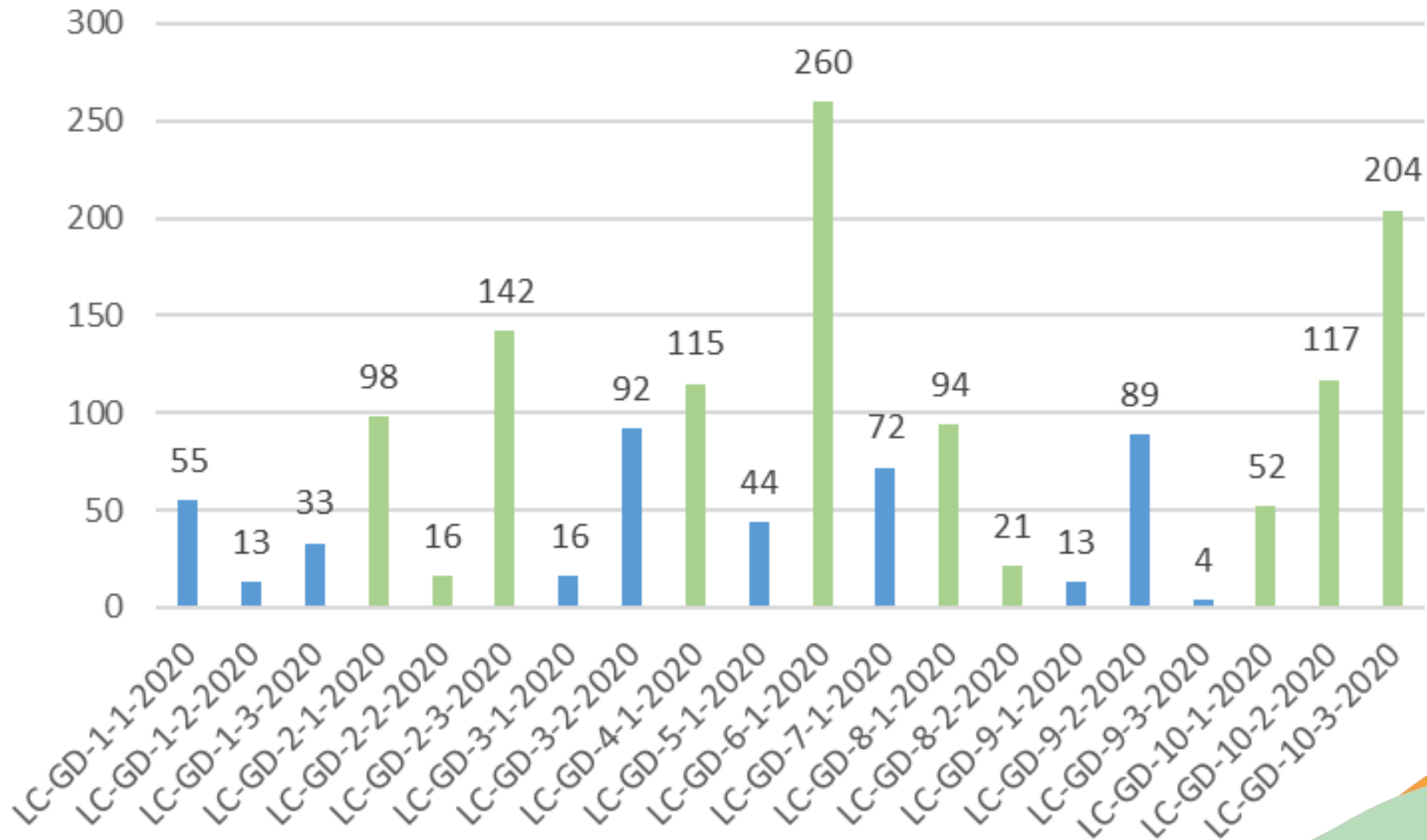


Proposals submitted per Area

Area	Area title	N° of proposals submitted
Area 1	Increasing Climate Ambition: Cross sectoral challenges	101
Area 2	Clean, affordable and secure energy	256
Area 3	Industry for a clean and circular economy	108
Area 4	Energy and resource efficient buildings	115
Area 5	Sustainable and smart mobility	44
Area 6	Farm to Fork	260
Area 7	Ecosystems and Biodiversity	72
Area 8	Zero-pollution, toxic free environment	115
Area 9	Strengthening our knowledge in support of the European Green Deal	106
Area 10	Empowering citizens for the transition towards a climate neutral, sustainable Europe	373
Total		1550



Proposals submitted per topic



Overview - 3.1. Closing the industrial carbon cycle to combat climate change

Call	H2020-LC-GD-2020-5
Opening	22 September 2020
Deadline	27 January 2021
Topic	LC-GD-3-1-2020
Indicative budget available (EUR million)	80
Proposals submitted	16
Total amount requested (EUR million)	504



H2020-LC-GD-2020-5

LC-GD-3-1-2020 – Topic description 1/2

Closing the industrial carbon cycle to combat climate change - Industrial feasibility of catalytic routes for sustainable alternatives to fossil resources

The challenge is to sustainably convert CO₂ emissions from industrial processes into synthetic fuels and chemicals utilising renewable energy driven processes with novel, highly optimised and energy efficient catalytic systems. This has the potential e.g. to reduce by over 30 % the current ~665 Mt of CO₂ emissions per annum related to the Energy Intensive Industries in Europe. However, it is necessary to demonstrate the industrial and economic feasibility of producing synthetic fuels and chemicals by scaling-up the developed technologies to reach industrial production levels and validate the industrial exploitability and circularity.

Scope:

- Develop and deploy highly innovative and recyclable catalytic material systems to facilitate the production of synthetic fuels and chemicals from industrial flue gas emissions: mainly CO₂ (but also CO and H₂), aiming at 50 % increase in the overall efficiency compared to the State-of-the-Art;
- Develop innovative, renewable energy driven, catalytic processes, to produce synthetic fuels and chemicals, at a sufficiently large scale to demonstrate its cost effectiveness, while reducing the use of critical raw materials;
- Demonstrate the full value chain for industrial production (including SMEs) of synthetic fuels and chemicals, whilst reducing greenhouse gas emissions;
- Address financial, regulatory, environmental, land and raw material (including critical raw materials) constraints, as well as public acceptance issues and socio-economic impact related to the proposed technological pathways



Expected impact:

- Industrial scale demonstrator operational by 2026 based on Industrial Symbiosis and novel, highly optimised and energy efficient catalytic systems.
- Significant reduction of industrial CO₂ emissions (~200Mt p.a. reduction by 2050) with the potential to achieve a carbon intensity below 20g CO₂eq/MJ.
- Enhance the effectiveness of renewable energy sources (i.e. solar, wind) by enabling the production and transmission of a flexible high energy density storage medium in the form of chemicals and synthetic fuels to be used for specific industry segments (e.g. aviation, chemical, shipping, defence) and validated through Techno-Economic and Life Cycle assessment (TEA/LCA).
- Demonstrate and validate the industrial feasibility and cost effectiveness of the technologies, at pilot plant level with a minimum chemical production capacity of 4000 tons per annum, while enhancing Europe's sustainable competitiveness in accordance with the Commissions Industrial Strategy[3].
- Significant indirect impact on air quality and citizen health through the filtering of flue gas emissions from large industrial plants (e.g. energy, cement, chemical, non-ferrous metals and steel).
- Foster a cross-sectorial European innovation eco-system to deploy sustainable alternatives to fossil resources and create demonstration capacity for sustainable catalytic systems of superior efficiency towards 2030 and 2050.



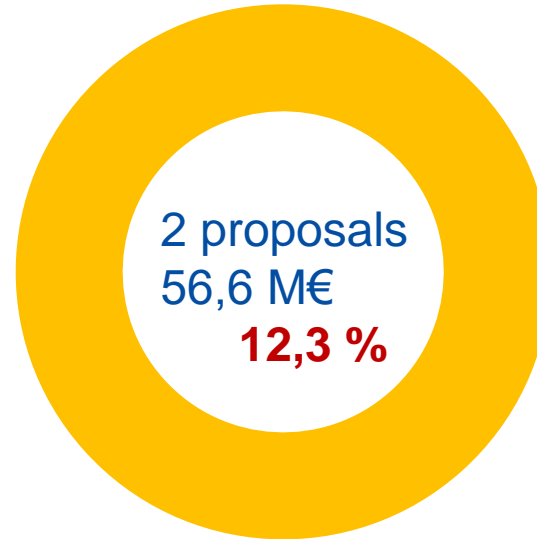
H2020-LC-GD-2020-5

LC-GD-3-1-2020 - Proposals

Eligible Proposals



Retained Proposals



Topic Budget: 80 M€

Ranked list:

- 50% above threshold – 50% below threshold
- 2 retained proposals request a grant of 56,6 M€
- 1 proposal on reserve list requests 37 M€
- 4 proposals insufficient budget (116 M€)
- 7 proposals rejected below threshold (252 M€)



H2020-LC-GD-2020-5

LC-GD-3-1-2020 - Overview of the evaluation process



Horizon Europe

with focus on Safe-and-Sustainable-by-Design

- ✓ Support to European policy goals and priorities
- ✓ Systems approach with sustainability criteria governed by societal empowerment, industrial relevance and regulatory preparedness
- ✓ Comprehensive concept of sustainability driven by safety, circularity and functionality of materials and products through their lifecycle
- ✓ Aligning actors across value chain on sustainability criteria

Policy Framework

The Green Deal



Climate neutrality



Zero pollution



Circular economy

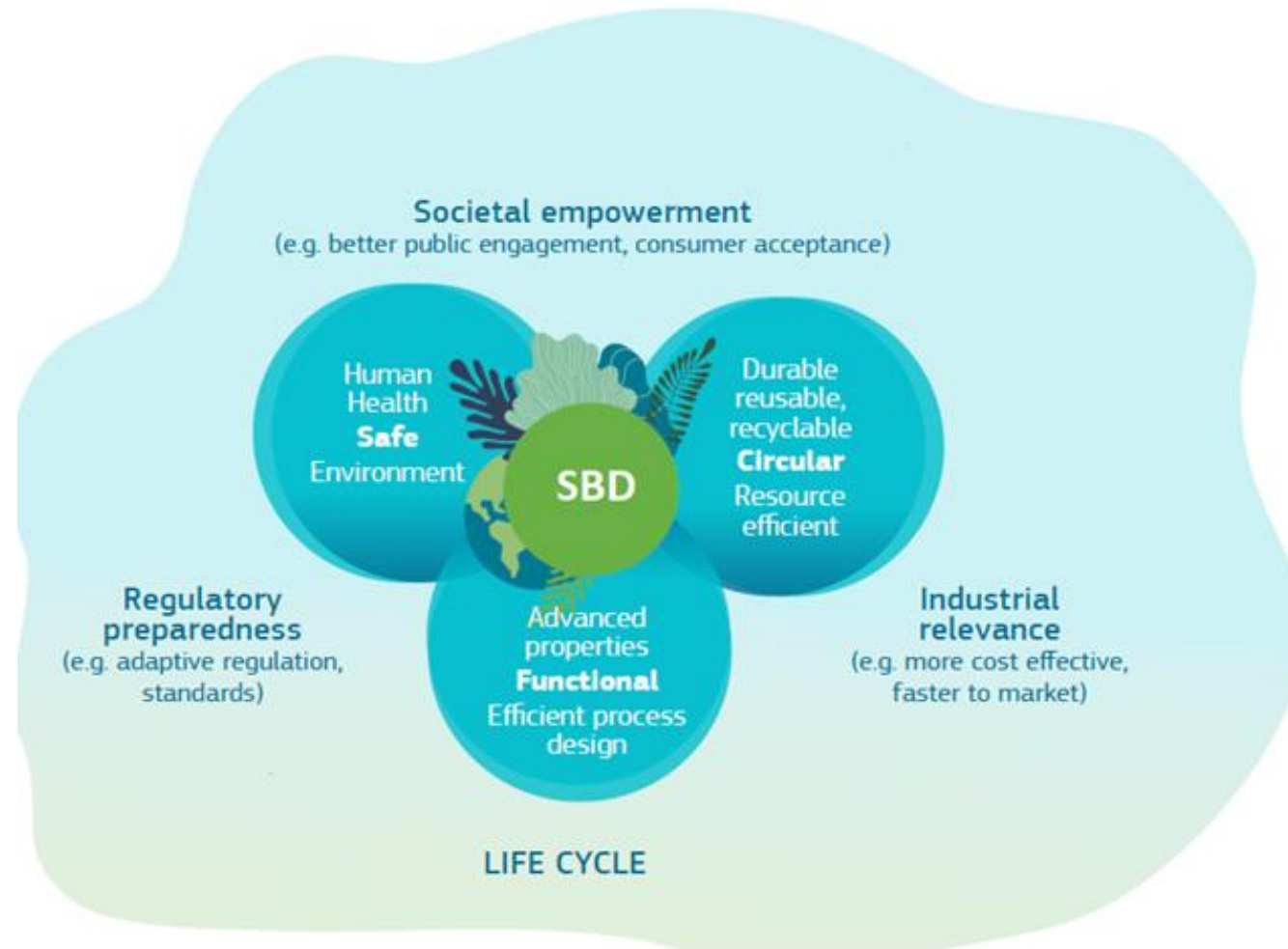


Chemicals Strategy for Sustainability

- Banning the most harmful chemicals in consumer products
- Account for the cocktail effect of chemicals when assessing risks
- Phasing out the use PFAS in the EU
- Boosting the investment and innovative capacity for **safe and sustainable by design chemistry** throughout their life cycle
- Promoting the EU's resilience of supply and sustainability of critical chemicals
- Establishing a simpler "one substance one assessment" process
- Playing a leading role globally

The concept

An approach to the design, development and use of substances, materials and/or products that focuses on providing a function (or service), while reducing harmful impacts to human health and the environment



Towards Safe Sustainable-by-Design

How to develop underlying criteria?



What process to follow?
Which dimensions of safety and sustainability to include?
How to measure? Which indicators and tools?
Which are the priority sectors to address first?
How to create a community?

Framework for criteria development

Criteria definition

Network of experts and stakeholders

Potential benefits of SSbD

**Reduce time
required for R&D**



**More cost effective
innovation**



Faster to market



**Prepare for future
regulatory challenges**



**Safer, circular,
functional products**



**Better consumer
acceptance**



| Thank you

European Union

