

EU-Project – Horizon2020 – “Green Deal” Calls

About acib:

The **Austrian Centre of Industrial Biotechnology (acib)** is private, non-profit, research institution with **30+ years of experience** and a **BIC-associate member**. More than **200 highly skilled scientists** from organic chemistry and bioinformatics over cell biology and structural biology to process engineering and molecular biology, allow for successful **multidisciplinary research** in various fields:



acib bridges the gap between academic and industrial research and over the years acib has become a **hub of industrial biotechnology** in Europe with a multitude of company (100+) and academic (80+) project partners.

Some of acib’s industrial partners:



acib is an **innovative and reliable partner** in several EU projects, from FP7 to H2020 including BBI, IMI, FET-Open, MSCA-ITNs, MSCA-RISE, MSCA-NIGHT-projects.

Let’s work together -> just contact our business development team: bd@acib.at

Overview –“ Green Deal” @acib

Area 1: Increasing Climate Ambition: Cross Sectoral Challenges

- 1.1: Preventing and Fighting Wildfires by application of fully bio-degradable, non-toxic lignin-based glues/hydrogels containing bio-based coatings directly on trees to protect them from fire and thus stop the wildfire without harming the trees
- 1.2: Climate-neutral cities by offering 4-pilots for CO₂-recycling techniques (microorganisms converting CO₂+H₂ into valuable products, from proteins to biopolymers and biofuels)
- 1.3: Climate-resilient Innovation Packages for EU regions: Lignin-based hydrogels allowing for agriculture in otherwise too arid/dry regions and for greener cities

Area 2: Clean, affordable and secure energy

- 2.1: Integration of renewable energy technologies into the energy system by using depleted natural gas reservoirs to store and convert H₂ also at offshore locations. With our technology, we add CO₂ to the H₂ stored deep underground and check for microorganisms (naturally present in more than half of investigated underground sites), which can convert H₂+CO₂ into CH₄ (natural gas) within a few months. This would allow for a safe and cheap long-term storage of H₂ and in-place conversion into ‚green‘ natural gas, which can be used with the existing infrastructure.
- 2.2: acib can provide the combined expertise of computational fluid dynamics (CFD) and metabolic modeling to simulate and assess the suitability of large underground gas reservoirs to store and convert H₂ (from the 100 MW electrolyser) to methane by natural microorganisms present in these underground storage facilities to be used for the existing gas-grid
- 2.3: Accelerating the clean energy transition and access in partnership with Africa. We’ve already been a partner for similar calls and we have contacts in Africa which we can bring in for this project

Area 3: Industry for clean and circular economy

- 3.1: Closing the industrial carbon cycle by application of our CO₂-recycling technology (see also 1.2)
- 3.2: Demonstrating systemic solutions in the circular economy by valorization of waste/side-streams by microorganisms and/or enzymes (from sugars to fats and proteins and even plastics)

Area 4: Energy and resource efficient buildings

- 4.1: Resource efficient buildings by application of bio-based glues for construction of wooden parts, as well as bio-based coatings which can protect e.g. bio-based building materials (e.g. wood from fire)

Area 5: Sustainable and smart mobility

- 5.1 Green airport and ports as hub for sustainable mobility can be supported by technologies for biofuel production, but also using other project ideas e.g. ship-based wastewater recycling modules, allowing for sustainable on-site treatment and valorization of waste (from organic waste and urine to plastics and CO₂).

Area 6: Farm to Fork

- 6.1 Especially for subtopic C and D acib can offer biocontrol agents i.e. microorganisms able to control pathogens to avoid synthetic pesticides and to allow for a higher yield. Also, biocatalytic synthesis of natural compounds (pheromones, deterrents, etc.) allow for a sustainable bio-based defense against pests. acib can also work on better pre-/probiotics for animals.

Area 7: Ecosystems and Biodiversity

- 7.1 Restoring biodiversity and ecosystems could involve bioleaching of (toxic) metals by microorganisms (bioremediation), but also the assessment of current biodiversity using eDNA analysis

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(e.g. checking water from a river to find out traces of DNA to tell if some animals, plants, etc. are living in that ecosystem).

Area 8: Zero-pollution, toxic free environment

- 8.1 Innovative zero-pollution solutions and bioremediations approaches using enzymes and/or microorganisms; offering in-depth knowledge of biocatalytic solutions replacing current routes of chemical synthesis (often requiring toxic metal catalysts, acids/bases, high temperatures and/or pressures or organic/toxic solvents)
- 8.2 Addressing chemical and pharmaceutical mixtures can be supported by the deep knowledge of our chemists and molecular biologist working with dozens of chemical and pharmaceutical companies who could be brought in as partners

Area 9: Strengthening our knowledge in support of the European Green Deal

- 9.1 Research Infrastructures and services: We have already established research infrastructures for the industry in Vienna; we participate in H2020-open innovation testbeds and have ideas to additionally operate open innovation research infrastructures. We also offer innovative energy storage infrastructure opportunities (e.g. underground storage/conversion of H₂ to CH₄ by microorganisms)
- 9.2 Developing end-user products and services supporting climate adaption and mitigation is possible using various R&D results, from recycling of plastics (instead of burning it and make more from fossil-based resources) and biopolymers (from sugars and/or CO₂) to current H2020-projects e.g. Bioplastics-Europe, where we already work on suitable end-user products (also by creating new blends and composites of biopolymers for improved characteristics). With our experience in outreach activities we'll enable citizens to make better decisions to help us fight climate change.
- 9.3 acib offers its in-depth knowledge of plastic-biodegradation processes in oceans to tackle the major problem of (micro)plastic pollution and to help bring this knowledge into suitable digital models

Area 10: Empowering citizens for the transition toward a climate neutral, sustainable Europe

- 10.1 Citizen deliberation and participation for the Green Deal can be strengthened by our communication & dissemination team (leading and participating in this work package in several H2020-projects) comprising a science journalist, a graphics designer, an event/project manager and an EU/science communication expert.
- 10.2 Behavioral, social and cultural change for the Green Deal: In addition to the communication & dissemination activities we have also experience in coordinating and conducting scientific education projects, from small-scale projects with kindergartens and schools to open-day R&D festivals to large-scale MSCA-NIGHT events.
- 10.3 Combining our expertise from 10.1 and 10.2 with our citizen-science capabilities we can create civic involvement on climate research

Dissemination & Exploitation: The Austrian Centre of Industrial Biotechnology (acib) is also able to professionally cover a wide spectrum of outreach activities within EU-projects:

- EU compatible plan for communication & dissemination for maximizing impact
- Project-Logo design and professional website
- Press releases and press conferences
- Flyer, leaflets, factsheets and other promotional materials
- Social media activities (LinkedIn, Facebook, Twitter, etc.)
- Blog-articles, newsfeeds, podcasts and video
- Newsletter services
- Event organization (conferences, stakeholder workshops, training activities)
- Application for awards and prizes
- Large industrial network for Letter of Interests (LoIs) and exploitation

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