



BIOTECHNOLOGY FOR ENVIRONMENT AND HUMAN HEALTH, AN EU-CHINA FLAGSHIP INITIATIVE IN HORIZON 2020

STRATEGIC MULTI-LATERAL RESEARCH PROJECTS IN THE FIELD OF MICROBIOLOGY TECHNOLOGY

New biotechnologies for environmental remediation
Microorganism communities for plastics bio-degradation
New biotechnologies for remediation of harmful contaminants

*Research and
Innovation*



THE EU-CHINA FLAGSHIP INITIATIVE ON BIOTECHNOLOGY FOR ENVIRONMENT AND HUMAN HEALTH

The first administrative arrangement to implement coordinate calls between NSFC and DG RTD to launch co-funded research projects in specific research areas of common interest was signed in March 2010. The terms of the RTD/NSFC agreement included to select the best proposals with joint evaluation panels composed of independent experts from both EU and China and to have balanced proposals in terms of number of partners and in terms of persons/month devoted to research projects, while following their respective decision processes. A pilot call FP7-NMP-2013-EU-China was launched in July 2012 under FP7 focussing on “biomaterials: Imaging and rapid precise prototyping technology for custom made scaffolds”, with the selection and co-funding of three FP7 projects.

Building on this positive experience, a flagship initiative on biotechnologies research cooperation with NSFC, along with an ad-hoc NSFC specific co-funding mechanism, has been set up under H2020 for the period 2018-20, in line with the conclusion of 13th EU-China Joint Steering Committee on Science and Technology Cooperation held in March 2017. NSFC organized a workshop in China prior to the opening of the first call in 2017, which was attended by experts of both sides, and it had the following objectives: to explain the state of play, to invite the participants to act as ambassadors with their research communities and in their home countries and to stimulate the building of consortia across the regions.

The scientific field proposed for cooperation (biotechnology for health and environment) is an emerging field, with evident needs worldwide and offering a good condition for win-win cooperation, as Europe and China have complementary know-how, with Europe being more advanced in the industrial application, though. Three topics were identified with the joint support of EU-NSFC experts, with the objective of supporting two projects each year.



EU-CHINA CO-FUNDING MECHANISM (CFM) IN HORIZON 2020

In 2014, the Horizon 2020 programme ceased to fund automatically Chinese applicants. Co-Funding Mechanisms (CFM) were needed, eventually set by Chinese authorities to support the joint research activities carried between the EU and China. The China CFM on research and innovation cooperation has played a significant role in supporting the cooperation in topics of mutual interest since its launch in December 2015.

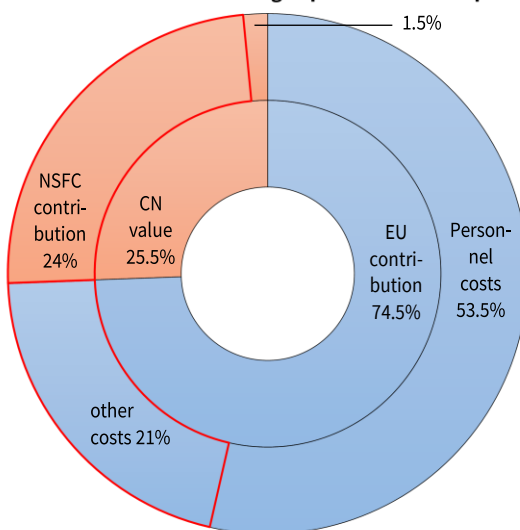
The CFMs involved two Chinese Ministries: the Ministry of Science and Technology (MOST) and the Ministry of Industry and Information Technology (MIIT), as well as one Chinese funding agency, the National Natural Science Foundation of China (NSFC). MOST, MIIT and NSFC co-funded five different flagship initiatives: food, agriculture and biotechnologies; environment and sustainable urbanisation; surface transport, aviation, biotechnologies for health and the environment.

In addition to the flagship initiatives, MOST covered also the participation of Chinese entities in nine additional priority areas, for an overall (flagship and priority areas) commitment of 200M¥ on an annual basis to provide competitive funding to China-based entities participating in joint projects with European partners under Horizon 2020 calls from 2014-15 and 2016-17 Work Programmes. During the third Innovation Cooperation Dialogue (ICD) meeting, held in June 2017, the CFM was renewed for the period 2018-2020 with the same budget commitment from both sides.

THE EU-CHINA FLAGSHIP INITIATIVE ON BIOTECHNOLOGY FOR ENVIRONMENT AND HUMAN HEALTH IN H2020 WITH THE CFM

The CFM set by NSFC has supported the flagship initiative on Biotechnology for environment and human health, for which the two sides (EC and NSFC) secured an overall investment of 34M€ altogether under Horizon 2020 (from 2018 to 2020), covering 5 projects, 4 of which were co-funded by NSFC, with a successful co-funding rate of 80%.

NSFC and EU contribution to Biotech flagship initiative in the period 2014-2020



Under Horizon 2020, the totality of projects under the flagship initiative on biotechnology for environment and human health saw a split division of costs between EU and NSFC with $\frac{1}{4}$ of the total costs covered by NSFC and $\frac{3}{4}$ by the Horizon 2020 Programme. Although at first sight this seems an unbalanced contribution, it is worth noting that personnel costs are not eligible in NSFC grants, while Horizon 2020 grants can cover personnel costs up to 60% of the direct costs. Considering that personnel costs generate also an overhead of 20%, the contribution from EU and China to projects under the flagship initiative on biotechnology for environment and human health is more balanced as it seems, with NSFC even overcoming the EU contribution in contractual items other than personnel costs.

THE EU-CHINA FLAGSHIP INITIATIVE ON BIOTECHNOLOGY FOR ENVIRONMENT AND HUMAN HEALTH AND IN H2020 WP 2018-2020

Based on the mutual agreement on collaboration, NSFC and DG-RTD jointly launched opportunities for funding multi-lateral research projects in the field of “Microbiology Technology” between Chinese and European researchers, submitting their proposals to NSFC and DG-RTD, respectively. Research and innovation with microorganisms were at the core of the three topics included into the last phase of Horizon 2020 Framework Programme.

The topics titles and the proposed equivalent funding from both institutions to fund two common proposals each year was agreed upon by signed letters accompanying Implementation Modalities, including details on topics, size of the projects and coordination, indicative call timing and project particularities, and finally the selection process. A similar document was updated and signed every year based on lessons learned.

In 2018, some initial difficulties in the implementing arrangements during the joint panel sessions led to the NSFC co-funding of one project only, while Chinese participants included in the second project funded by H2020 programme had to secure alternative sources of funding.

As a result, in November 2018, new detailed implementation modalities were negotiated and agreed upon for the H2020 flagship initiative through exchange of letters between DG RTD and NSFC for 2019-2020. The objective was to move back to parallel selection procedures between the EU and NSFC and to reconcile the results to determine the project proposals to be selected and co-funded by both sides. With these new implementation modalities, two projects have been selected and co-funded under the 2019 topic. The same arrangement was replicated for the 2020 call, where only one proposal resulted to be eligible for funding by the two parallel evaluations combined together.

PROJECTS/TOPICS IN WORK PROGRAMME 2018-2020

ELECTRA

Electricity driven Low Energy and Chemical input Technology for Accelerated bioremediation
<http://www.electra.site/>

GREENER

Integrated systems for Effective Environmental Remediation
<http://www.greener-h2020.eu/>

BioICEP

Bio Innovation of a Circular Economy for Plastics
<http://www.bioicep.eu/>

MIX-UP

Mixed plastics biodegradation and UPcycling using microbial communities
<http://www.mix-up.eu>

EiCLaR

Enhanced In Situ Bioremediation for Contaminated Land Remediation

Color coding

New biotechnologies for environmental remediation (2018)

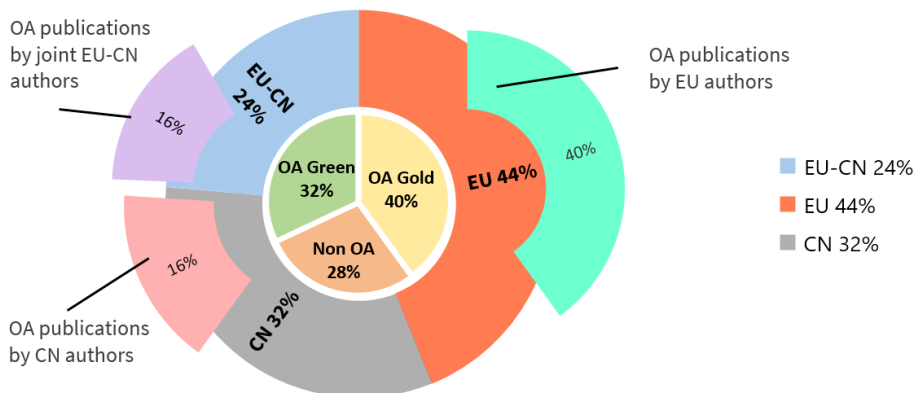
Microorganism communities for plastics bio-degradation (2019)

New Biotechnologies for remediation of harmful contaminants (2020)

IMPACT OF THE EU-CHINA FLAGSHIP INITIATIVE ON BIOTECHNOLOGY FOR ENVIRONMENT AND HUMAN HEALTH IN H2020

The projects funded by the EU-China flagship initiative on Biotechnology for Environment and Human Health under the Work Programme 2018-2020 of Horizon 2020 have produced so far 90 publications in peer-reviewed journals and filed for one patent. The project that was selected under 2020 topic started in January 2021 and it is therefore not mature enough to have yet produced any scientific literature.

OA modality of publications (90) produced by H2020 projects from EU-China biotech flagship and distribution according to author's region of origin



A significant percentage of publications was published in open access mode, following the contractual obligations introduced by the Horizon 2020 programme on scientific papers. This allowed a wide dissemination and a high impact.

The contractual obligation on publishing in Open Access concerns only European participants, as they are actual signatories of H2020 Grants, while Chinese participants are bound to NSFC rules that may differ from those of H2020. The impact of open access publications is therefore less evident in papers published by Chinese authors only, resulting in 16% of the overall publications produced by the project, compared to the 40% of Open Access publications signed by EU authors out of 44%, the overall share of papers produced by EU authors.