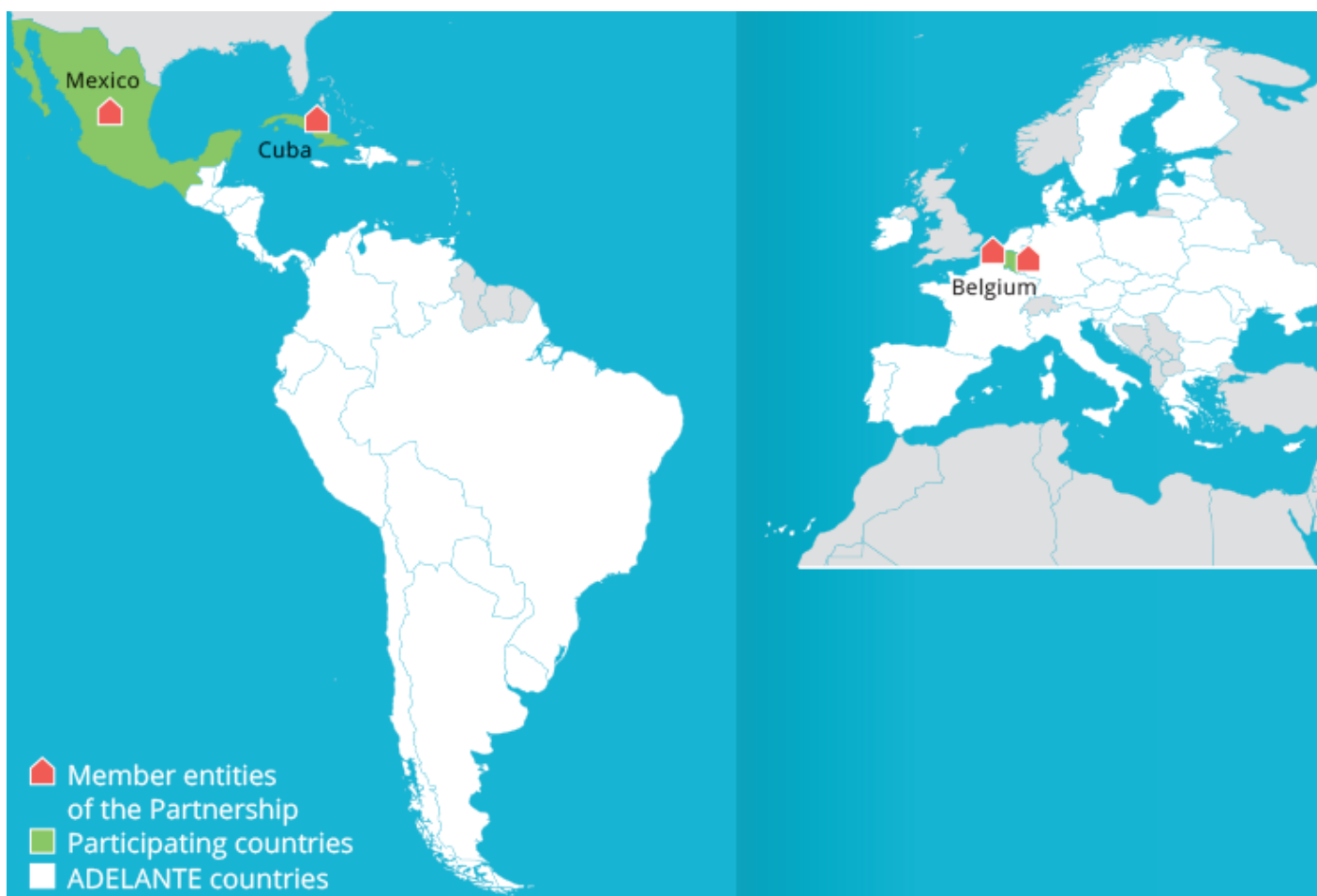


Contribution to the development of herbal medicine

PARTNERSHIP



Background

The **University of Antwerp** - UA, in Belgium, and the **University of Namur** - UNamur, also in Belgium, have extensive experience in scientific research on natural products for pharmacological use, having developed innovative techniques for the analysis and characterisation of medicinal plants and other biological products for the development of medicines of natural origin.

In parallel, the **Instituto Politécnico Nacional** (National Polytechnic Institute - IPN), in Mexico, has perfected its plant cultivation techniques in controlled environments, through the development of easy-to-implement technologies, which is an essential element in accompanying the implementation of the new research

techniques offered by the UA and UNamur.

The ***Instituto de Farmacia y Alimentos de la Universidad de La Habana*** (Institute of Pharmaceutical and Food Sciences of the University of Havana - IFAL-UH), in Cuba, has collaborated with the UA and the IPN in various scientific research projects in the field of natural products, giving rise to the creation of the International Scientific Network 'Vitroplants' as a space to exchange ideas between European and Latin American universities. Within the framework of these exchanges, an opportunity has been identified to create a Partnership between these universities, thus incorporating UNamur as a key member for the transfer of its scientific techniques in order to promote the development of herbal medicine in Cuba.

Entities and roles

BENEFICIARY ENTITIES



[Instituto de Farmacia y Alimentos. Universidad de la Habana](#)

Cuba

FIRST PROVIDER ENTITIES



[Instituto Politécnico Nacional](#)

Mexico

SECOND PROVIDER ENTITIES



[University of Antwerp](#)

Belgium



[University of Namur](#)

Belgium

Development challenges

This Triangular Cooperation Initiative aimed to contribute in a very direct way to tackling the challenge of medicine shortages in Cuba, made worse by the COVID-19 pandemic. The intervention aimed to make use of the knowledge of the Partnership's provider entities in the research and development of natural products, as well as in innovative plant cultivation techniques in controlled environments, in order to strengthen the capacities of the Institute of Pharmaceutical and Food Sciences for the development of new medicines.

The Initiative is aligned with the Cuban government's strategies to increase domestic production of medicines in order to reduce the reliance on imported medicines, thus contributing to a steady supply for the country's health system. In addition, strengthening capacities for the production of raw materials in controlled environments, in order to promote the development of natural medicines, will help mitigate the effects of external factors caused by climate change that may affect their production.

This process of capacity building, research and development has been featured in a model, which will be scaled up across the country and in any other territory that wishes to implement it.

INITIATIVE

This Triangular Cooperation initiative was able to harness the knowledge of the Partnership's Provider entities regarding the scientific research of natural products and crop production in controlled environments, in order to create a model for the development of herbal medicine. The model involved maximising new technologies to ensure the introduction and supply of new plant-based medicines in Cuba's health system, with aim of making this available to the international community.

Triangular approach

The COVID-19 pandemic revealed the vulnerability of health systems around the world, making it clear that the supply of medicines is a matter of national security.

For this reason, the Initiative aimed to harness the knowledge and expertise of the leading European and Latin American entities in this field, strengthening capacities to develop and apply a model that meets the specific needs of the Cuban population, with the purpose of replicating the experience in similar contexts in the region.

The experience of the Partnership entities in their previous joint work, together with their expertise in the scientific-academic field, helped ensure the quality of the knowledge triangulation; a complex process that requires a great deal of commitment and dedication from all involved.

The work in the academic sphere was combined with high-level awareness-raising processes, which enabled the ownership of such knowledge by the Beneficiary entities and other actors, thus laying the foundations for ownership at the national level in Cuba and resulting in a success story that could be easily replicated at the regional level.

Sectoral approach - Contribution to the 2030 Agenda

PRIMARY SDG



Goal 3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all.

Goal 3.B Support the research and development of vaccines and medicines for the communicable and noncommunicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all.

SECONDARY SDG



Goal 4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university

Goal 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

Goal 4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development

ADELANTE SDG



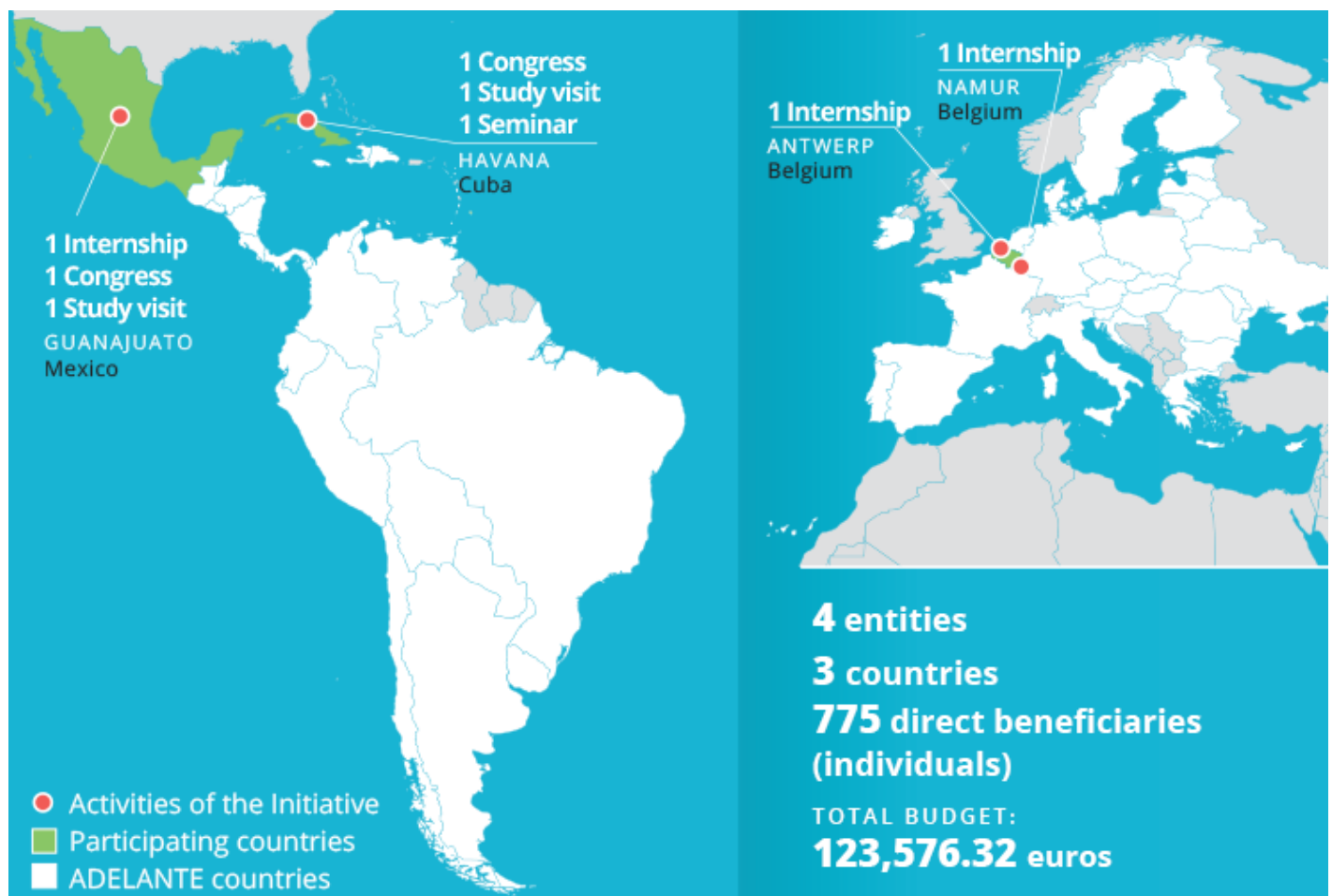
Goal 10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average



Goal 17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism

Goal 17.7 Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed

Territorial approach



Intervention methodology

The introduction of new medicines in the Cuban health system in response to the medicine shortage in Cuba made it necessary to increase research and production capacities at IFAL-UH, in addition to actions that promoted the participation, awareness, training and ownership among the national government

entities working in this field.

To this end, the Initiative's approach primarily involved the introduction of technologies and methodologies at IFAL-UH, through **three specialised internships** focused on the methodologies to be transferred. The first internship took place at the University of Antwerp (UA) with the purpose of studying methodologies and procedures for the development of new plant-based medicines. The second internship was carried out at the University of Namur and further reinforced the knowledge acquired at the UA through capacity building in pharmaco-toxicological evaluations made possible through laboratory practice. The third internship was carried out at the National Polytechnic Institute and sought to increase and strengthen the knowledge and techniques for obtaining high-quality raw material to be used for the production of new medicines. In addition, the IFAL-UH interns used the knowledge gained during their internships at the Belgian universities with IPN academics to strengthen their research activities in vitro culture of plants with a pharmacological approach.

The knowledge acquired through the internships was shared during **two congresses, one in Mexico and the other in Cuba**, which served as a space to engage with the scientific and academic community and as a platform where contacts and synergies with official entities were established, which proved to be essential in guaranteeing the impact and sustainability of the model to be applied. At the same time, it was possible to share the knowledge acquired with various universities and research centres in other countries, promoting the joint work carried out by the four Partnership member entities.

In parallel, the Partnership member entities participated in **two study visits**, one to IFAL-UH and the other to the IPN. The objective was to monitor and follow up on the training actions and analyse the conditions for introducing the technologies and methodologies that were transferred to IFAL-UH, in addition to developing a roadmap with the steps to be taken by the Beneficiary entity in order to incorporate these techniques in its laboratories in a sustainable manner.

This methodology allowed for continuous feedback among all Partnership entities and shared use of the knowledge developed, thus allowing the Provider entities to review and update their methodologies and systems, and to learn from the Cuban experience in the application of its Experimental Pharmaceutics model.

The Initiative concluded with a **final seminar in Cuba** that brought together all the professionals involved in the Initiative, together with national and regional representatives of the government, public health, pharmaceutical industry and the scientific and academic community. The management model for the development of medicines was presented, in addition to other high-quality products for the Beneficiary entities related to the techniques they learnt during the implementation of the Initiative. The results were also included in scientific articles and research papers by IFAL-UH academics.

Internship - Phytochemical and pharmaco-toxicological studies

Antwerp, Belgium, 5 October - 10 November 2022

[\[@gallery:galeriaict328-actividad1@\]](#)

Internship - Training in zebrafish research methodologies: a biomodel for pharmaco-toxicological studies

Namur, Belgium, 3 October - 4 November 2022

[\[@gallery:galeriaict328-actividad2@\]](#)

Internship -Training in plant vitroculture: an environmentally friendly solution for phytomedicine development

Namur, Belgium, 22 October - 20 November 2022

[@gallery:galeriaict328-actividad3@]

Working visit to IFAL-UH laboratories

Havana, Cuba, 24 January - 27 February 2023,

[@gallery:galeriaict328-actividad6@]

Working visit to the laboratories of the UPIIG-IPN

Guanajuato, Mexico, 8 January - 23 January 2023,

[@gallery:galeriaict328-actividad7@]

Direct beneficiaries (individuals)

According to Rule 9 of the Guidelines for Applicants: all persons participating in the activities of the Initiative.

The Initiative involved more than **775 direct beneficiaries**; primarily professionals from the Partnership entities involved in the planned activities as well as in the scientific research and identification of new medicines throughout the Initiative. Within this group there were more than 320 students, professors and researchers from the Partnership member universities who were able to learn about the latest technologies and methodologies for the development of new natural products.

In addition, professionals affiliated with the pharmaceutical and food industry in Cuba benefited from training on the introduction and commercialisation of natural products, as well as officials from public entities, such as the Ministry of Public Health and the National Pharmaceutical Directorate.

Budget

EU contribution: 74,781.32 €

Co-financing - Triangular Cooperation Partnership: 48,795.00 €

Total budget: 123,576.32 €