



*DOCTORAL INPhINIT FELLOWSHIPS PROGRAMME – INCOMING FRAME  
INFORMATION CALL 2020*

**PhD POSITION OFFER FORM**

**Position**

**1. Project Title/ Job Position title:**

Assessing the role of green infrastructure to promote water, food and energy security in urban regions.

**2. Area of Knowledge: (choose one option)**

- PHYSICAL SCIENCES, MATHEMATICS AND ENGINEERING

**3. Group of disciplines: (choose one option)**

PHYSICAL SCIENCES, MATHEMATICS AND ENGINEERING

Theoretical and Applied Mathematics, Computer Sciences
Physics
<b>Geology, Earth Sciences, Environmental and Atmosphere Sciences, Mines, Geological Engineering, Oceanography, Hydrology</b>
Civil and Construction Engineering, Energy, Nuclear Energy and Renewable Energy Engineering
Chemistry and Chemical Engineering
Telecommunications, Electronics, Robotics, Biomedical Engineering, Automation Engineering, ICT
Industrial Engineering, Mechanical Engineering, Metallurgy, Materials, Nanotechnology, Aeronautical, Naval and Aerospace Engineering

**4. Research project/ Research Group description (max. 2.000 characters) 3**



Urban and peri-urban agriculture is currently experiencing rapid growth. This covers a variety of forms, such as vertical farming, greenhouse rooftops, local foodsheds, which together with green spaces like parks and green roofs, are referred to as green infrastructure (GI). It potentially makes cities more resilient to climate change and more sustainable in terms of water management, food production, air quality, human well-being and biodiversity. The aim of this research project is **to evaluate which combinations of urban/peri-urban agriculture and green spaces result in the best performance in terms of these local and global environmental impacts**. The innovation of the study is to create a geo-referenced land-use model of urban areas to optimize GI in terms of nutrients, energy, and water metabolic flows considering urban morphology and determining life cycle impacts. The goal is to optimize these resource flows for future scenarios of green infrastructures proposed by urban planners. Two case cities will be used to design and test the methods: Barcelona and Oslo. This project will give city planners and policy makers the guidance to determine how the growth in urban food production and green spaces can be managed to enhance urban sustainability, avoid unintended environmental consequences, and promote wider and diffused social benefits.

The PhD candidate will form part of the Integrated Metabolic and Atmospheric Research for Urban Sustainability team, supported by the ERC-Consolidator project Integrated System Analysis of Urban Vegetation and Agriculture. Leveraging from this project, the candidate will have the support from researchers and public administration of the two case study cities to assure social relevance of the research. There will be an important emphasis given to knowledge transfer to policy makers and urban planners. Furthermore, the multi-disciplinary URBAG team will provide the candidate with data, support, and team work to carry out this work.

## **5. Job position description (max. 2.000 characters)**

### **1500 characters**

The candidate will participate mainly in the following tasks:

- Perform a city-wide, geo-referenced metabolism analysis of the nutrient, energy, and water resources in the urban areas of the two case study cities. Determine the life cycle carbon footprint of the city.
- Help design scenarios based on results of environmental impact assessment and urban atmosphere implications, the city's greening policies and social implications of the green infrastructures, that best build on existing plans, policies, and practices, and are socially- and politically-acceptable.
- Establish a research-policy translation pathway useful for/in cooperation with city's departmental managers in urban sustainability and biodiversity, urban planners, and other stakeholders. Use this pathway to describe the environmental and social benefits and policy impact of the scenarios defined in URBAG.
- Examine the political and social feasibility of replication and upscaling of expanded urban/peri-urban agriculture and green spaces, paying particular attention to constraints to further develop green spaces.



## **Group Leader**

1. Title: Associate Professor, ERC-Consolidator grant holder
2. Full name: Gara Villalba
3. Email: gara.villalba@uab.cat
4. Research project/ Research Group website (Url): [www.urbag.eu](http://www.urbag.eu) , [www.sostenipra.cat](http://www.sostenipra.cat)
5. Website description: Information about the URBAG project and the team.

## **Additional website (optional, max. 5 websites)**

1. Url: <https://ictaweb.uab.cat/>
2. Website description: More information about the Institute for Environmental Science and Technology at UAB

## **Additional website (optional, max. 5 websites)**

1. Url: <http://www.sostenipra.cat/en/>
2. Website description: More information about the SosteniPra Research Group