

Activity summary of CIAS research fellow in Budapest

Grant category: junior senior

Name:

Sofía De León Almaraz

Home institute (name, position, country):

Academic Year / Semester:

2021-22

Duration:

10 month

Project title:

Multi-objective Optimization of a Sustainable Hydrogen Supply Chain

Project description*:

This research project considers the potential future use of hydrogen as an alternative to be used with renewable energy sources to face problems such as global warming, air pollution, energy security and competitiveness. Hydrogen could increase flexibility in energy systems and can be used in fuel cells for both mobile and stationary applications to produce electricity. However, the lack of infrastructure has been identified as one of the main barriers to develop the hydrogen economy.

Moreover, the inclusion of sustainability criteria is crucial for ensuring the adequate design and deployment of resilient hydrogen systems and networks. While the cost and environmental impact of hydrogen are the main metrics included in analyses and models, social aspects are rarely included. This research project aims to identify the social criteria related to the hydrogen economy.

Achieved result(s)*:

- One article published in Applied Energy (June 2022)
- One article submitted to IJCP (June 2022)
- Participation in one international conference (POMS - Resilient networks)

Connected publications*

1.

Title: Multiobjective and social cost-benefit optimisation for a sustainable hydrogen supply chain: Application to Hungary

Date of submission/acceptance/publication: August 2022

Journal: Applied Energy

Journal category (if applicable): Q1 Q2 Q3

Status: accepted/published in progress planned

2.

Title: Incorporating Social Aspects into the Hydrogen Economy: Review, Synthesis, and Research Perspectives

Date of submission/acceptance/publication: June 2022 (correction in progress)

Journal: Journal of Cleaner Production

Journal category (if applicable): Q1 Q2 Q3

Status: accepted/published in progress planned

Professional collaborations, partnerships*

1.

Name: Dr. Viktor RÁCZ

Institution: REKK

Field of research: Energy

2.

Name: Dr. Catherine Azzaro Pantel

Institution: Laboratory of Chemical Engineering (LGC)

Field of research: Optimisation

3.

Name: Dr. Zoltán Szántó

Institution: CIAS-Social Futuring Center. Corvinus University of Budapest

Field of research: Sociology

4.

Name: Dr. Tamás Kocsis

Institution: Institute of Sustainable Development of Corvinus University of Budapest

Field of research: Sociology

Additional activities* (public lectures, presentations, professional meetings, media connections etc.):

1. **Public lecture.** September 6th 2021

Course: *Contemporary Issues Related to Business and Management*

Module: *Energy Sustainability: The Role of Hydrogen (3x90min)*

Institute for the Development of Enterprises

Contact: Márta Aranyossy

2. **Public lecture.** October 26th-November 16th 2021

Course: *Solving Strategic Problems*

Module: *Operations management (6x90min)*

Institute of Business Economics

Contact: Krisztina Demeter

3. **Professional meetings**** September 22nd 2021- Today

Team: REKK

Reason: *Database and scenarios development*

Contact: Viktor RÁCZ (viktora.racz@rekk.hu)

4. Professional meetings** September 15th 2021- Today

Team: *Laboratory of Chemical Engineering. Toulouse, France*

Reason: *Internal consultation for the model development*

Contact: Catherine Azzaro-Pantel (catherine.azzaropantel@toulouse-inp.fr) and Yohan Vincotte

5. Workshop** Social criterion in the energy transition. October 26th 2021

Team: *CIAS – Social Futuring Center*

Reason: *Internal consultation for the model development*

Contact: Zoltán Szántó

6. Media connections.

Interview for the Alumni news from BA in Business and Management (29th September, 2021).

Invited by Márta Aranyossy. Section Life in campus (published Nov. 2021)

7. Presentation. October 22nd 2021

Event: *Research Seminar- Institute of Business Economics*

Session: *“Share my experience in Hungary”*

Contact: Dávid Losonci

8. Presentation** November 23rd 2021

Event: *4th CIAS International Workshop*

Session: *Multi-objective Optimization of a Sustainable Hydrogen Supply Chain*

Contact: Szidónia Nagy

9. Presentation. January 10th 2022

Event: *Research Week*

Session: *“My experience at CIAS”*

Contact: Szidónia Nagy

10. Seminar instructor. February-May 2022

Course: *Operations management (14x90min)*

Department of Supply Chain Management - CUB

Contact: Krisztina Demeter

11. Professional meetings.** February 2022 – June 2022

Teams: *CIAS, LGC Toulouse, Institute of Sustainable Development*

Reason: *Research plan, brainstorming, conceptualization, and draft preparation*

Contact: Dr. Tamás Koscis, Dr. Catherine Azzaro Pantel and Dr. Zoltán Szántó

12. Public lecture. April 7th 2022

Course: *Contemporary Issues Related to Business and Management*

Module: *Energy Sustainability: The Role of Hydrogen (3x90min)*

Institute for the Development of Enterprises

Contact: Márta Aranyossy

13. Presentation.** May 11th 2022

Event: *5th CIAS International Workshop*

Session: *Social aspects related to the hydrogen supply chain deployment*

Contact: Szidónia Nagy

14. Participation in the faculty section of the Peer-Review Visit of the AACSB accreditation.

June 21st 2022

Event: *Peer-Review Visit of the AACSB accreditation*

Session: *Faculty session*

Contact: Mónika Czizmár

15. **Presentation****. June 22nd 2022

Event: *Research week – Corvinus University of Budapest*

Session: *Multiobjective Optimisation to Design a Sustainable Hydrogen Supply Chain: Application to Hungary*

Contact: Melinda Pap

16. **Conference presentation****. June 29th 2022

Event: *Resilient networks – POMS international conference*

Session: *“Social Aspects Related to the Hydrogen Supply Chain Design and Deployment”*

Program: <https://poms2022-budapest.org/preliminary-program.html>

Future plans, planned return (if any):

- I plan to return to Hungary later
- I plan to maintain my professional contacts via e-mail
- Any other comment:

*Please give us a properly detailed summary.

**These activities are part of the research project

Date: 28-09-2022

Signature: Sofía De León Almaraz