SHORT TERM SCIENTIFIC MISSION (STSM)
SCIENTIFIC REPORT

Applicant:

Siv Lene Gangenes Skar

Affiliation address:

Norwegian Institute of Bioeconomic Reseach – NIBIO,
Post address: P.O. Box 115, NO-1431 Ås, Norway
Office for visitors: Reddalsveien 215, NO-4886 Grimstad

Email:

siv.skar@nibio.no

Name of the host scientist:

Prof. Dr. Ragnheidur I. Thorarinsdottir

Institute:

Agricultural University of Iceland - AUI

Funded by the Horizon 2020 Framework Programme
of the European Union

This report is submitted for approval by the STSM applicant to the STSM coordinator

Action number: CA17133
Implementing nature based solutions for creating a resourceful circular city (Circular City Re.Solution)

STSM title:
A step towards creating a resourceful circular city in context of producing city food

STSM start and end date: 27/02/2019 to 22/03/2019 (extended to 26/03/2019)

Grantee name: Siv Lene Gangenes Skar

PURPOSE OF THE STSM: (max.200 words)

This STSM facilitated MSc Skar to visit Iceland as a guest researcher at the Agricultural University of Iceland (AUI) and the company Samrækt, to foster collaboration in future, applying for new projects and to learn an innovative technique, called AISFA, a method which has not been used in NIBIO. The STSM aimed at fostering and enhancing the collaboration with Prof. Dr. Ragnheidur Thorarinsdottir, providing a possibility to learn how to design and build a new system, using circular innovative future food production technique (CIFFP).

DESCRIPTION OF WORK CARRIED OUT DURING THE STSMS: (max.500 words)

Prof. Dr. Thorarinsdottir invited MSc. Skar to visit all the facilities and infrastructure the university provides for future collaboration, located in Hvanneyri/Borganes, in Keldnaholt/Reykjavik and in Reykir/Hveragerdi. All places have good research facilities, laboratories for analysis and offices. In addition to this, the university runs several animal/agriculture farms. The university has innovative and well educated staff, willing to be in a team developing circular innovative future food systems. While visiting the places, research questions and possible project collaboration were discussed with researchers at the university. This STSM made it possible to develop MSc Skar's plan of starting her PhD, and an application was written and delivered to the AUI. The working title on the thesis is "Smart integrated circular food production with sustainable approach for global urbanisation".
The company Samrækt invited MSc. Skar to see the company's research, the facilities and future opportunities were discussed. The company plans to set up a circular food production system in 2019, and MSc. Skar was during the stay discussing different opportunities regarded to her experience and knowledge on running circular production system at NIBIO in Norway, using cold fresh water fish, such as rainbow trout, brown trout and a relict salmon, called „Bleke".
MSc. Skar also visited several companies working on urban farming and horticulture in general, including the integration with food tourism. She learned about the status and future possibilities for urban farming, agriculture and horticulture in Iceland. She also learned about the direct use of geothermal energy for food production, its capacity in Iceland and worldwide. She visited the United Nations University – Land Restoration Training Programme (UNU-LRT) and learned about the training programme hosted at AUI. Moreover, she took part in a meeting and a symposium with agriculture researchers from Mongolia discussing future cooperation.
During her stay, in addition to her PhD application, MSc. Skar started the work on a research project application to Nordforsk together with partners from AUI in Iceland and Gothenburg University.
Lastly MSc. Skar began the structuring of two articles, one on reviewing the urban farming techniques used in a global perspective and one state-of-the-art on ground-breaking research on efficient and responsible food, water and energy use with nature-based solutions.

DESCRIPTION OF THE MAIN RESULTS OBTAINED

Learnt about the new technique, called AISFA (Analytical Innovation System Framework Analysis), and took advances of this new technique when visiting the companies and farms within food production in north, west, and southwest of Iceland.
Worked on a new Nordic research application using the new concept called Circular Innovative Future Food Production (CIFFP), as a technique to do a food production system more efficient by combining more productions together.
A review article has been defined, research for articles has been done, and the writing process is in progress, with goal for first revision by 1st of July.
The COST Action state-of-the-art-of-urban-farming WG4 review article is under construction.
Siv Lene Gangenes Skar and AUI has an agreement on starting up a PhD study within circular food production systems, and the PhD application is received by Prof. Dr. Barni Didrik Sigurdsson on behalf of the university.

FUTURE COLLABORATIONS (if applicable)

Siv Lene Gangenes Skar will start her PhD study at the Agricultural University of Iceland, with estimated defence of degree in 2022. Prof. Dr. Thorarinsdottir is the main supervisor.

M.Sc. Skar and Prof. Dr. Thorarinsdottir are writing a review article about urban farming.

M.Sc. Skar and Prof. Dr. Thorarinsdottir are working on a research project proposal to be submitted to Nordforsk together with Gothenburg University.

New contacts, both in university and companies, have been established for new future ideas.

FORESEEN PUBLICATIONS / ARTICLES RESULTING FROM THE STSM (if applicable)

M.Sc. Siv Lene Gangenes Skar works on a review article about global urban farming technologies and another one focusing on state-of-the-art within WG4. Both are planned to be published in 2019. Additional publications / articles are planned connected to her PhD.

The proposed publications of results and journals of publication are:
Paper I: *Review: Trends in urban farming – a global perspective of impacts, food production techniques and food security. Journal: Elsevier, Journal of Cleaner Production.*
Paper II: *State-of-the-art: Urban Farming for a sustainable future – ground-breaking research on efficient and responsible food, water and energy use with nature-based solutions.*
Journal, IWA Publishing: Blue-Green Systems
Paper III: *Research article: Testing and validating real-time circular food production system in Living Lab, a case study to implement in (prisons and) urban environments.*
Journal, Elsevier: Agriculture, Ecosystems and Environment or Sustainable Cities and Society
Paper IV: *Research article: Successful long-term operation of a closed aquaponic system production trout and lettuce. Journal, Elsvier: Aquacultural Engineering*