

FELLOWSHIP SUMMARY REPORT

Name: **Luz Maria Lozada**

Subject Title: **Advancing processes of local agroecological practices inclusion in climate change global solutions: 4 per 1000 Initiative lessons for and from Scotland.**

Theme Number: **Managing Natural Capital (Theme 1)**

Host Institution: **Alliance CIAT – Bioversity International**

Host Collaborator: **Dr. Paul LUU**

Fellowship Dates: **2nd May – 1st July 2022.**

I consent this report to be posted in the Co-operative Research Programme website.



 **Co-operative Research Programme:**
Sustainable Agricultural and Food Systems



SUMMARY REPORT.

1. What were the objectives of the research project? Why is the research project important?

This research had two aims which were achieved through several specific activities outlined in the question 2 below. The aims were:

- i. to advance knowledge on processes of implementation of the 4 per 1000 Initiative in Scotland through agroecological practices by exploring how the initiative may articulate diverse local practices in its ethos; and
- ii. contribute to the discussion about soils public policy development in Scotland and how the 4 per 1000 could be integrated and achieved through agroecological practices.

Land is an essential resource for human survival and finite in quantity and quality thus setting limits to human exploitation. Land degradation is the cause of productivity decrease in 23% of the areas with reductions in productivity (IPBES, 2019). One of the essential physical characteristics of land is soil. Soil is a finite, non-renewable resource and is very often neglected yet its conservation is vital for human food security and nutrition and many other ecosystem services, amongst which carbon storage. Soils' capacity to deliver human demands is also limited by soil characteristics and the competition from various human needs such as food, ecosystem services, fuel etc. Understanding the politics of soils is very important to generate valuable information about how national and international needs are fulfilled at the local level while socially and environmentally adapted. This research responds to the priorities in the Sustainable Development Goals (SDP)

The international 4 per 1000 initiative offered an excellent opportunity to study how international commitments can be met by local actions for soils and food production. Scotland also is an exceptional case being in the process to write its new agricultural policy. Lessons from this case shade light on both the implementation of 4 per 1000 initiative and on to how integrate international guidelines into local soils policy and management.

2. Were the objectives of the fellowship achieved?

Or are they on the way to being achieved?

If not, for what reasons? (The data or research is still ongoing or being analysed; technical reasons (e.g. equipment not working, adverse weather conditions, unexpected results, etc.; other reasons?)

To achieve the aims of this research, I have carried out and completed most of the tasks. Reviewing the literature of soils policy in Scotland was based on policy documents and the evolution of these. In addition, scientific literature was reviewed for the 4 per 1000 Initiative, complementing it with grey literature. Continuous work at the James Hutton Institute on soils has been used for this project in addition to discussion with colleagues about the initiative.

Based on the review I developed the semi-structured interviews questions with comments from the 4 per 1000 Initiative Executive Secretariat.

I carried out the interviews with members of the Technical and Scientific committee of the Initiative as well as policy makers in Scotland. This information was complemented with information from a previous survey about land managers' farming practices to identify carbon-storing soil practices in Scotland including agroecological farming systems.

The semi-structured interviews were carried out and analysed for writing the report. The report and policy brief are under writing process and the draft version is to be sent to the 4 per 1000 Initiative researchers and executive secretariat and JHI internal review before it is sent to other stakeholders.

3. What were the major achievements of the fellowship? (up to three)

The fellowship's three main achievements were 1. to complete the research on soils policy in Scotland and understanding how the 4 per 1000 objectives can be implemented through agroecological practices; 2. networking with policy and research partners; and 3. setting the basis for continuous collaboration.

The project was achieved as proposed within the fellowship. Understanding international soil policy and how this is implemented at the local level is relevant and the lessons learned are applicable to other areas which involve both top-down - international to local - and bottom-up - local to international - interactions.

Scotland became a member of the 4 per 1000 initiative in November 2021. Scotland is also writing its new agricultural policy offering a unique opportunity to study the path that Scotland will take in the context of international commitments.

The fellowship allowed to start a collaboration with the 4 per 1000 Initiative secretariat. The potential to continue working together on further projects was an important achievement. Once the report is finished, we will discuss potential salient projects.

One of such proposals is to carry out a similar comparative study on the implementation of the 4 per 1000 Initiative in Mexico and compare these two cases at the interplay of international to local levels.

4. Will there be any follow-up work?

- Is a publication envisaged? Will this be in a journal or a publication? When will it appear?
- Is your fellowship likely to be the start of collaboration between your home institution and your host?
- Is your research likely to result in protected intellectual property, novel products or processes?

NO

No scientific publication is planned immediately, but it will be considered. We have a policy brief to finish and a report with recommendations as result from the study.

Once we have the report and policy brief finished, we will continue discussions with the 4 per 1000 initiative for further projects, as mentioned. Some of these could consist of presentations and scientific publications.

We are also exploring the possibilities of formalising institutional collaborations. One of these could be the James Hutton Institute becoming a member of the initiative with some potential inputs from JHI researchers.

5. How might the results of your research project be important for helping develop regional, national or international agro-food, fisheries or forestry policies and, or practices, or be beneficial for society?

Please express this in terms of environmental/food security/food safety/economic/health (human and livestock and plant) benefits, etc.

The results of this research highlight the issues and possible recommendations for implementing the international 4 per 1000 initiative in Scotland through agroecology. As such it contributes to knowledge

on how to leverage the role of soil management for food security and climate change mitigation beyond the case of Scotland.

Global human population is expected to increase 2 billion persons by 2050 (UN, 2019), from 7.8 in 2021 (UNFPA, 2021) to 9.8 billion in 2050. Adapting to such population growth while improving economic prosperity and social well-being implies further pressures on land and water demands as well as on biodiversity not only for food production but also for many other ecosystem services. Societal demands, climate change and biodiversity loss exacerbate pressure on these finite resources and create a vicious circle affecting each other.

Climate change and ensuing weather conditions, pest and diseases threaten current crop production and monoculture. In addition, they reinforce a lack of balanced and nutritious diets.

Increases in greenhouse gas (GHG) concentrations since the 1750 are *unequivocally caused by human activities* (IPCC, 2021). Human influences on climate change and increasing temperatures are both consequences of land uses and affecting land uses. Human-induced climate change has contributed to increase frequency and intensity of heavy precipitation events since 1950 and also increases in agricultural and ecological droughts due to land evapotranspiration (IPCC, 2021)

To manage land in a more sustainable way becomes fundamental for the future of humanity. Soil health is a crucial aspect for sustainable land management, which can also contribute to solutions for climate change mitigation. One proposal to achieve this is through agroecological practices which create more diverse production systems and have demonstrated environmental benefits, especially in the long term. They also help changing current consumption patterns towards more nutritious diets.

As an international commitment ensuing from the 2015 COP 21 in Paris, the 4 per 1000 initiative proposes to recognise and enhance the storage of carbon in soils in agriculture through various types of farming systems and practices, including agroecology. The results from the limited research in this fellowship laid the basis for further research and recommendations on how to integrate already existing agriculture practices which are in alignment with the implementation of the 4 per 1000 initiative, such as agroecology, into public soils and agricultural policies in Scotland with potential for bottom-up feedback at the international level.

6. How was this research relevant to:

- The objectives of the CRP?
- The CRP research theme?

This CRP fellowship proposal provides valuable evidence and relevant scientific insights to advance in the development of soil public policy in Scotland and the implementation of the international 4 per 1000 Initiative by investigating how agroecological practices could be further leveraged and integrated into policies to mitigate climate change and maintain Natural Capital while ensuring food security and nutrition.

By developing this new collaboration between the JHI and the 4 per 1000 initiative, the research is significantly relevant to progress knowledge about the implementation and delivery of globally agreed policy commitments (SDGs 2, 13 and 15; OECD, 2016 and G7, 2016) on sustainable food security and nutrition, sustainable management of agriculture and climate change mitigation.

The fellowship work helped to set the basis for a long-term discussion and knowledge exchange with the host institution to continue progressing soil policy in Scotland and its incorporation of agroecological principles to ultimately benefit land managers by increasing their resilience to climate change and economic shocks. Agroecology's principles propose not only the continuation of sustainable agricultural production but to halt threats that soil (mis-)management can pose (Theme 1). Agroecology can contribute to this through organic soil carbon sequestration and enhancing agrobiodiversity in a wider sense while delivering other key services (food security, mitigation of biodiversity decline, CC mitigation, strengthening local communities, balancing rural-urban interactions etc.). It could thus

contribute to maintaining and/or regenerating functional landscapes and the delivery of wider environmental services, including carbon storage.

7. Satisfaction

- Did your fellowship conform to your expectations? **Yes in general**
- Will the OECD Co-operative Research Programme fellowship increase directly or indirectly your career opportunities? Please specify.

The fellowship will indirectly benefit my career opportunities, as it strengthened my expertise on the contribution of agricultural practices and soil carbon storage to implement international goals regarding food security and addressing climate change.

It also enhanced my knowledge on local, national and international governance issues relating to agriculture and soil policies with regards to these goals. By setting the basis for new international collaborations, the fellowship also opened new possibilities of international mobility within my future career-path.

- Did you encounter any practical problems? **No.**
- Please suggest any improvements in the Fellowship Programme.

The program could benefit from increasing the funding for families, especially when the mother is leading the project. Compensation was somewhat short for me and my children as I had to continue paying all ongoing bills in the UK plus the expenses in France. My children, which had to be enrolled in French school, lost some of their activities in the UK on our return (dis-enrollment and return to long waiting lists for places): such impacts make the fellowship less attractive for researchers with children. Also, as having family slows down one's professional career this type of project could result in benefit for researchers in such circumstances, but having the logistics to deal with at an incomplete level of compensation make it less attractive to apply for.

8. Advertising the Co-operative Research Programme

- How did you learn about the Co-operative Research Programme?
Through mailing lists.
- What would you suggest to make it more "visible"?
Maybe by creating media input such as brief interviews, on radio and/or online, of former fellows of the programme.
- Are there any issues you would like to record?
None beyond the above mentioned relating to the level of compensation for families.