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# Pollination and International Development

## What do we know, what are the challenges and what more can we do?

## *Executive Summary*

***A UKCDS report highlighting the relevance of pollination to international development and identifying opportunities for improving development outcomes***

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# Background

This report is the result of a three month project led by Thomas Timberlake, a pollination ecology PhD researcher from Bristol University, whilst on a three month work placement with the UK Collaborative on Development Sciences. It draws upon the experiences of a range of academics, funders and practitioners working across various disciplines with relevance to pollination and international development. It also incorporates some of the outcomes and points of discussion from a Pollination and International Development Webinar hosted by UKCDS on 26 January 2018. The project was supervised by Vicky Morgan (former UKCDS director) and benefitted from the valuable inputs of the whole UKCDS team.

See here for a copy of the full report.

**This report draws upon the experiences of the following consultees to whom UKCDS is extremely grateful:**

Don Doering | JRS Foundation, US
Barbara Gemmill-Herren | Consultant to the UN FAO and Convention on Biological Diversity
Michael Lattorff | International Centre of Insect Physiology and Ecology, Kenya
Janet Lowore | Bees for Development, UK
Daphne Mayes | Kansas University, US
Nicolas Mounard | Farm Africa, UK
Samuel Myers | Harvard University, US
Hien Ngo | IPBES Secretariat, Germany
Simon Potts | Reading University, UK
Ulrika Samnegård | Lund University, Sweden
Deepa Senapathi | Reading University, UK
Phil Stevenson | Royal Botanic Gardens Kew, UK
Adam Vanbergen | Centre for Ecology and Hydrology, UK
Ruan Veldtman | South African National Biodiversity Institute

Suggested citation: Timberlake, T. & Morgan, V. (2018). *Pollination and International Development: what do we know, what are the challenges and what more can we do?* Report for the UK Collaborative on Development Sciences, London.



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# Key Messages

## Why pollination matters to international development

1. Pollinator declines and their effects on human wellbeing have received a great deal of international attention. Although a number of researchers in developing countries [1] have made substantial and important contributions to this field, limited resources and capacity have meant only a small proportion of pollination research has focused on the developing world. However, the consequences of losing these services could be at least as detrimental to economies, ecosystems and communities in these regions.

2. Pollinator declines have the potential to negatively impact the income and livelihoods of farmers through reducing crop yields. Over 2bn people in developing countries are smallholder farmers, often heavily reliant upon pollinators. Pollination deficits (reduced yield as a result of insufficient pollination) have already been detected in a variety of crops across the developing world [1].

3. Many important cash crops grown in developing countries (e.g. coffee, cocoa and cashews) are highly pollinator dependent. The production of such crops has increased five-fold in the developing world over the last 50 years, and continues to grow [2].

4. Declining pollination services are likely to reduce production and human intake of nutritious pollinator-dependent food groups such as fruits, nuts and vegetables. As a result, millions of people around the world, and particularly in developing countries, would become newly deficient in important micronutrients such as vitamin A, vitamin C, iron and folate [3].

5. Beekeeping can generate an important source of income for many developing communities, as well as providing a range of social, cultural and health benefits.

**Food security**

**Global health**

**Cultural values**

**Income generation**

## Should we be worried?

6. Due to limited resources and capacity, most developing countries are lacking baseline data and monitoring programmes for pollinators. This makes it difficult to determine population trends in these countries. But from various studies showing local declines and extrapolating from regions where many of the same threats exist, declines seem likely.

7. As human populations expand and agriculture intensifies in the developing world, 120m hectares of natural habitat are expected to be converted to farmland by 2050 [4]. The use of pesticides is also rapidly increasing across the developing world, particularly in sub-Saharan Africa [5].

8. Because of the regional knowledge bias in pollination science, there isn't always the locally relevant research and information available to manage and mitigate these threats across much of the developing world.

## What is being done internationally?

9. In 2000, the Convention on Biological Diversity (CBD) established the 'International Pollinator Initiative' to build greater understanding, management and conservation of pollinators around the world.

10. In 2016, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) published its *Thematic Assessment of Pollinators, Pollination and Food Production*. The report's key findings were subsequently incorporated into the CBD at its 2016 Conference of the Parties.

11. The international attention and momentum generated by such initiatives has led many governments to increase their engagement with these issues. National pollinator initiatives have been established by various countries, including a handful of developing nations.

[1] *For simplicity, we use the term 'developing countries' to refer to all countries listed in the Organisation for Economic Co-operation and Development's (OECD) Development Assistant Committee (DAC) list of Official Development Assistance (ODA) recipients. This includes countries from a range of economic classifications, from 'Least Developed' to 'Upper Middle Income'. Whilst we group all these nations under the broad term of 'developing country', we acknowledge the great heterogeneity between them in terms of wealth, development and research capacity.*

# Key Messages

## Research priorities

**12.** Gaps in our understanding of pollinators, pollination and the ways in which we can conserve them, provide a fundamental barrier to ensuring they deliver the maximum benefit to developing communities.

**13.** Topics in need of further research and capacity building in the developing world include:

- Taxonomy of wild pollinators
- Abundance, distribution, population trends and ecology of wild pollinators
- Threats facing pollinators in the developing world
- Pollinator dependence of different crops
- Extent of pollination deficits and their causes
- Managing wild pollination service provisioning
- Utilising managed pollinators most effectively

**See full report for more details and research questions**

**14.** Many of these knowledge needs will take years to address. In the meantime, it would be beneficial to take lessons from existing research, as well as utilising personal experience and local knowledge to start conserving pollinators and managing their services as soon as possible.

## Development Opportunities

**15.** Despite the challenges, there are a number of opportunities in this field for tackling important development goals such as food security, global health and poverty alleviation.

**16.** Understanding of pollination by smallholder farmers in the developing world is generally low. Education programs which teach farmers how to manage pollination and other agro-ecological processes may allow them to increase their productivity without the need for financial, chemical or technological inputs.

**17.** The use of beekeeping in sustainable development projects can increase and diversify income as well as boosting local crop pollination.

## Building and strengthening capacity

**18.** Strong in-country institutions are essential for delivering long term project outputs such as education, conservation and community engagement. Long-term and equitable 'North-South partnerships' and core institutional funding can help build this.

**19.** Agricultural training centres and extension work are the foundation of farmer education in the developing world. Their capacity to deliver training in pollination and other agro-ecological techniques will determine farmers' understanding of these topics.

**20.** Strong global researcher networks can increase the exposure to funding, literature and collaborators for developing country researchers. Networking events such as the BES-Net trialogue, or GCRF's Global Engagement Meetings foster these links by bringing international researchers together.

## UK Contributions

**21.** The UK is the 2nd largest contributor to pollination research papers worldwide (Web of Science 2018) and contributes the 2nd largest share of funding for pollination research (ÜberResearch 2018).

**22.** However, only a small proportion of these papers have any relationship to a developing country. And only 6% of the UK's pollination science funding involves work in a developing country or has any direct relevance to international development.

**23.** As more of the UK's ODA budget is made available for research, there is a shift in emphasis towards research that directly contributes towards international development. New funding programmes encourage UK researchers to engage in collaborative projects with researchers in developing countries. To be effective and ethical, partners in developing countries must co-design and benefit from these collaborations.

**24.** With the relevance of pollination and agro-ecology to addressing the UN's Sustainable Development Goals, these topics may fit into this new funding landscape


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