Project Collaboration between the Mathematics for Real-World Systems Centre for Doctoral Training, University of Warwick & Polymaths

Developing a Model to Help Policymakers Evaluate International Development Programmes in Afghanistan

Summer 2016

polymaths

1. Project Background

International development emerged from the challenges to rebuild Europe in the aftermath of the Second World War. Soon, it also began to extend to the rest of the world, when the colonies of the major European powers sought independence.

The war changed the power structures of the international system, and these changes combined with the dynamics of the Cold War saw international development become integral to foreign policy. Then, with the end of the Cold War new challenges emerged; climate change, food security and biodiversity conservation comprising just some of the new challenges facing the world. As a result, international development is now seen, as even more essential to global security.

Big Data for Development

In this relatively short period of time international development has evolved into a highly complex and multidisciplinary field. The field is also being revolutionised by Big Data and computational approaches to the social sciences. This is only just the beginning. At this time in human history we have an unprecedented opportunity to truly create a new epoch in policymaking. We really are witnessing the birth of a new scientific revolution.

> Better data and statistics will help governments track progress and make sure their decisions are evidence-based; they can also strengthen accountability. This is not just about governments. International agencies, CSOs and the private sector should be involved. A true data revolution would draw on existing and new sources of data to fully integrate statistics into decision-making, promote open access to, and use of, data and ensure increased support for statistical systems[1].

With this in mind, we conceived of this project so as to contribute to developing innovations in international development. This project comes at an opportune time. As the United Nations embarks upon a new programme of development goals, which were recently outlined last September - Transforming our world: the 2030 Agenda for Sustainable Development - we aim to develop powerful new tools to help achieve them.
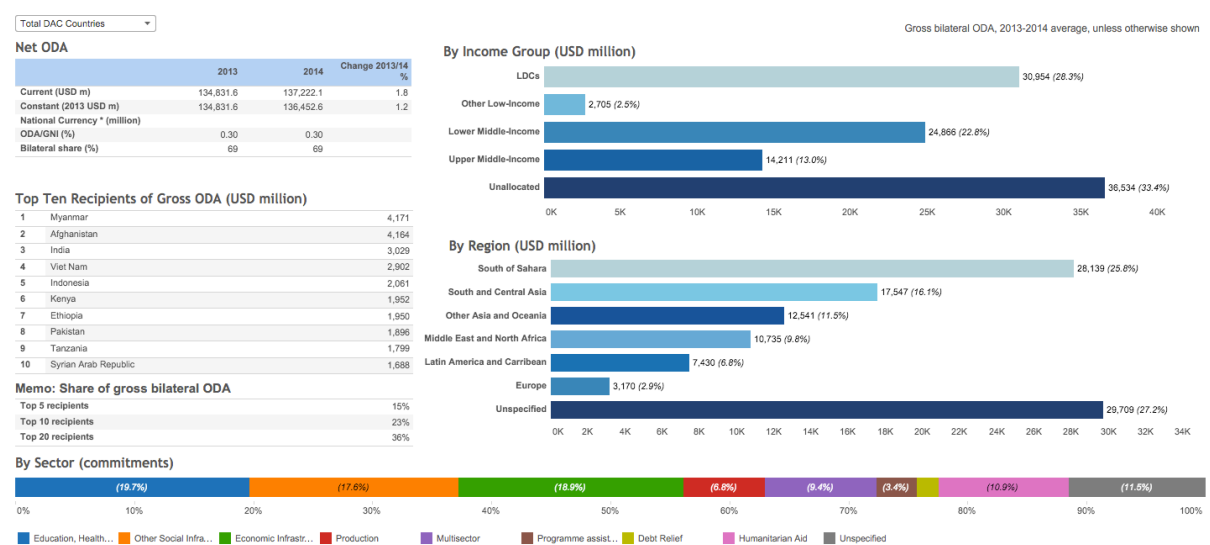
---

[1] The Report of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda by the United Nations

Afghanistan

This project will examine the impact of international development programmes upon Afghanistan.

We chose Afghanistan as our case study for two reasons. The first reason is because of its strategic importance to global security. This is partly reflected in the amount of aid it receives, ranking second in the world for official development assistance (ODA) in 2013-14.

Source: OECD – DAC: www.oecd.org/dac/stats/aid-at-a-glance.htm

The second reason is that the country is now embarking upon an ambitious development programme - the Transformation Decade 2015 to 2024 – where the government of Afghanistan will take the lead in managing its own development and security. This marks an exciting new chapter in its history.

> Afghanistan is a conundrum. For not just centuries, but for millennia we were a central node for world trade, culture, entrepreneurship, and the exchange of ideas with the world at large. Our cities were the hubs where the caravans of Asia rested before continuing their journeys through Iran and Turkey on their way to Venice. Even as late as the 1960s, Afghanistan was the tail end of a young people's discovery route that connected Europe to Asia. But forty years of conflict have destroyed not just a vast amount of material and lives, but the sense of time and space that we need to rebuild the country on a foundation that will yield the

prosperity and trade that is Afghanistan's birth right. Rebuilding Afghanistan is going to be a long-term endeavour… Eight months ago our National Unity Government presented an agenda for achieving self-reliance in the London Conference on Afghanistan's Development. That strategy is being put into effect[2].

Therefore the new UN sustainable development goals, combined with the start of the Transformation Decade strategy for Afghanistan, provide a very rich context for researching and developing novel methods of analysis to support policymaking.

2. Project Objectives

The aim of this project is to develop a model, which helps policymakers understand the impact of official development assistance (ODA) upon development indicators as specified by the World Bank.

The project will examine data from the period 2004 to 2014. During this period Afghanistan received $51 billion in aid from the OECD group of rich countries. Examining how the aid was spent and its impact upon development indicators, the project will also explore how we can develop models to predict the impact of development policies.

The model should enable policymakers to evaluate the success of their policies, and it should also provide them with a tool to help them when they formulate development strategies. The model should enable policymakers to explore questions such as:

1. What impact did money spent on each individual development programme have upon economic development? Collectively what impact did the development programmes have upon economic development? Which international development programmes had the least impact upon economic development? How long did it take for each individual development programme to have an impact upon economic development?

2. Which development programmes should be prioritised to have the greatest impact upon economic development? Given the current security conditions,

---

[2] Opening Remarks By President Mohammad Ashraf Ghani at the Senior Officials Meeting, September 2015

which development programmes should be given greater investment? When is the best time to invest in each development programme? What is the impact of individual development programmes in the current situation? How will each programme impact upon each other? Is there an optimal time to invest in particular development programmes?

The power of the model will partly come from its predictive capability to help policymakers identify which areas it needs to invest in, and also how much it should invest. So for example, if the Department of International Development (DFID) had a budget of £100M for Afghanistan, the model should allow policymakers to identify how it should allocate its investments to have the greatest impact upon Afghanistan's overall development.

Policymakers could then explore different scenarios. If they invest £2M in education and £5M in health, what would be the most likely outcome of such an investment? Or if policymakers invested £5M in education and £2M in health, what would be the impact upon economic development?

These are just some of the questions we anticipate asking in this research project.

3. Methodology

The project will explore the most effective mathematical and computational methods to model the effectiveness of ODA upon the development of Afghanistan. The project will:

1. Outline the theoretical principles of developing a model that describes the impact of international development programmes upon a country's development performance.

2. Develop a model prototype, using data provided by the Organisation for Economic Co-operation and Economic Development (OECD), and the World Bank. Aid data will be taken from the OECD, and development indicator data will be taken from the World Bank. The government of Afghanistan will also provide data. We will collate and organise the data for this project.

3.1 Data Sources

OECD

http://stats.oecd.org/Index.aspx?datasetcode=CRS1#

The World Bank

http://data.worldbank.org/indicator

4. Supervisors

Javier Cuervo PhD	Farooq Khan	Kabir Isakhel
Polymaths	Polymaths	Senior Advisor
		Office of the President's
		Special Representative for
		Reform and Good
		Governance - Afghanistan

5. Further Reading

Afghanistan's Transformation Decade (2015-2024)

http://mfa.gov.af/en/page/6547/transformation-decade2015-2024

Ashraf Ghani: How to Rebuild a Broken State

https://www.ted.com/talks/ashraf_ghani_on_rebuilding_broken_states

Big Data for Development: Challenges & Opportunities

http://www.unglobalpulse.org/sites/default/files/BigDataforDevelopment-UNGlobalPulseJune2012.pdf

Common Ecology Quantifies Human Insurgency

http://www.nature.com/nature/journal/v462/n7275//full/nature08631.html

Data Revolution Group

http://www.undatarevolution.org/

The Structure and Dynamics of International Development Assistance

http://www.chidalgo.com/papers.html

Transforming our World: The 2030 Agenda for Sustainable Development

https://sustainabledevelopment.un.org/post2015/transformingourworld/publication

Polymaths
Birmingham Research Park
Vincent Drive
Edgbaston
Birmingham
B15 2SQ

+44 (121) 412 8454
@polymathsglobal

www.polymathsconsulting.com