Poverty Research in a Science for Development Policy Context

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Abstract

This study examines the state of poverty/hunger research 1975-2008 (ISI Web of Science) and relates this to the Netherlands Organisation for Scientific Research (NWO)-WOTRO *Science for Global Development Strategy Plan 2007-2010*. International studies concerning poverty/hunger (1975-2008) have grown steadily in the fields of Health & Medicine and Development & Planning since 1975, but the most impressive growth is in the field of Environmental Studies. We evaluate the Dutch scientific community's contribution and propose a strategy for agenda setting and monitoring future problem-areas for new research.

Introduction

In September 2000 world leaders came together at the United Nations Headquarters in New York to commit their nations to a new global partnership concerning 8 Millennium Development Goals (MDGs). An unprecedented effort was set to focus on a range of third-world issues, including the reduction of extreme poverty to halting the spread of HIV/AIDS and providing universal primary education, all by the target date of 2015.

Due to the 8 MDGs, scholars are beginning to show a growing interest in the relationship between science policy and social inequality. Woodhouse & Sarewitz (2007) state that the "knowledge and innovation wants of the affluent world tend to be quite different from those of most people living in poorer countries…[T]hose with little economic, political, and scientific clout are not likely to have much say over what science gets and who benefits from it" (p.141). Cozzens (2007) believes that "S&T policy needs to know whether it produces benefit for the disadvantaged as well as for the advantaged…" (p. 93). She admits that it is "difficult to implement a general assessment" but suggests that "the science indicators profession perhaps should take this measurement on as its special moral responsibility" (p. 93). In an address to the Development Studies Association, Apthorpe (1990) suggests that "development studies" has had its day and should be replaced by "poverty studies." Clarke (2002) also suggests that it is in fact useless to talk in terms of development when "the gaps between rich and poor, and the numbers living in absolute poverty, have continued inexorably to rise" (p. 2).

For this study, we examine a set of journal articles and proceedings papers (ISI database: 1975-2008) pertaining to *poverty* and *hunger* (avoiding the term *development*). The United Nations Office of the High Commissioner for Human Rights defines extreme *poverty* as "a human condition characterized by the sustained or chronic deprivation of the resources, capabilities, choices, security and power necessary for the enjoyment of an adequate standard of living and other civil, cultural, economic, political and social rights" (see Office of the High Commissioner for Human Rights, 2009). *Hunger* is the body's way of signaling that it is running short of food and severe hunger or *famine* is often associated with undernourishment and malnutrition (see World Food Programme, 2008).

Here we want to know the following: 1) *What is the multidisciplinary landscape of poverty and hunger research* 2) *To what extent has poverty/hunger research been an internationally*

collaborative effort? 3) *What is the Netherlands contribution and what does it mean in light of this country's new science-for-development policy?*

Data Collection

Bibliographic data (journal articles and proceedings papers) published during the period of 1975 to 2008 were downloaded from the ISI Science and Social Sciences Citation Indexes. We experimented with the various retrieval options, and found that TI searches yielded the most relevant records. TS searches resulted in a higher recall of records, but less precision. Our TI search using the Web of Knowledge[SM] was constructed with the following terms: *poor*, *poverty*, *hunger*, *malnutrition*, *famine*, *food security* and *food insecurity*. To ensure that certain words, like *poor* had been used in connection with *poverty* (and not, for example "poor memory") an additional topic search was introduced: e.g., TI=poor AND TS=poverty. Since the field of agricultural studies is intricately linked to the issue of *poverty/hunger/food security*, we combined our first set of TI results with one TS search: TS=*agriculture** and TS=*poverty, famine, hunger, food security*. A total of 8,603 journal and proceedings records were transferred to Microsoft Access for analysis. A filtering procedure was used to remove a number of non-relevant research records (e.g., articles on hunger strikes/air hunger etc.). After filtering, we obtained a working set of 8,043 articles. Amongst the addresses in the final set, 125 countries were represented: 23 advanced and 24 scientifically proficient countries, 18 countries classified as emerging or developing, and 60 countries that are lagging behind in terms of their scientific research capacity (see Wagner et al., 2001, scientific capacity index, pp. 10-17).

Data Analyses and Results

What is the multidisciplinary landscape of poverty and hunger research (1975-2008) and how does this research relate to the first MDG? Figure 1 illustrates the index of the number of publications per selected journal categories, based on three year moving averages. Research associated with the field of Environmental Studies grew throughout the 1980s and has, since 2005, experienced another period of growth.

To what extent has research concerning poverty and hunger been an internationally collaborative effort? Figure 3 indicates that scientists affiliated with organisations in the United States, the United Kingdom, and the Netherlands have been the most frequent collaborative partners (collaborations>2).

Table 1. Total articles per period compared to index and compound average growth rate.

|	Total articles per period			Index of the number of articles on X (1990=100); 3 years around each benchmark year					Compound average growth rate		
	1975-1985	1986-1996	1997-2008	1975	1980	1985	1995	2007	1975-1985	1985-1995	1995-2007
Planning & Development	151	397	740	19	39	73	177	261	14,5%	9,2%	4,0%
Economics	208	447	1113	25	62	62	155	405	9,3%	9,6%	10,1%
Political Science	178	193	232	81	88	169	150	155	7,6%	-1,2%	0,3%
Nutrition & Dietetics	45	98	301	29	43	62	167	600	8,0%	10,4%	13,7%
Health & Medicine	132	330	973	78	82	113	280	902	3,8%	9,5%	12,4%
Agricultural Studies	50	135	534	20	70	40	193	660	7,2%	17,1%	13,1%
Area Studies	51	101	169	27	52	45	115	155	5,2%	9,7%	3,0%
Food Science & Technology	20	54	102	0	78	78	200	411	0,0%	9,9%	7,5%
Sociology & Social Sciences	278	472	914	87	88	101	240	363	1,6%	9,0%	4,2%
Environmental Studies	27	174	1897	18	11	24	104	3329	3,2%	15,6%	41,4%
Education	48	57	130	44	67	106	150	289	9,0%	3,6%	6,8%
Other Specialties	355	586	1065	53	46	64	97	214	1,9%	4,2%	8,2%
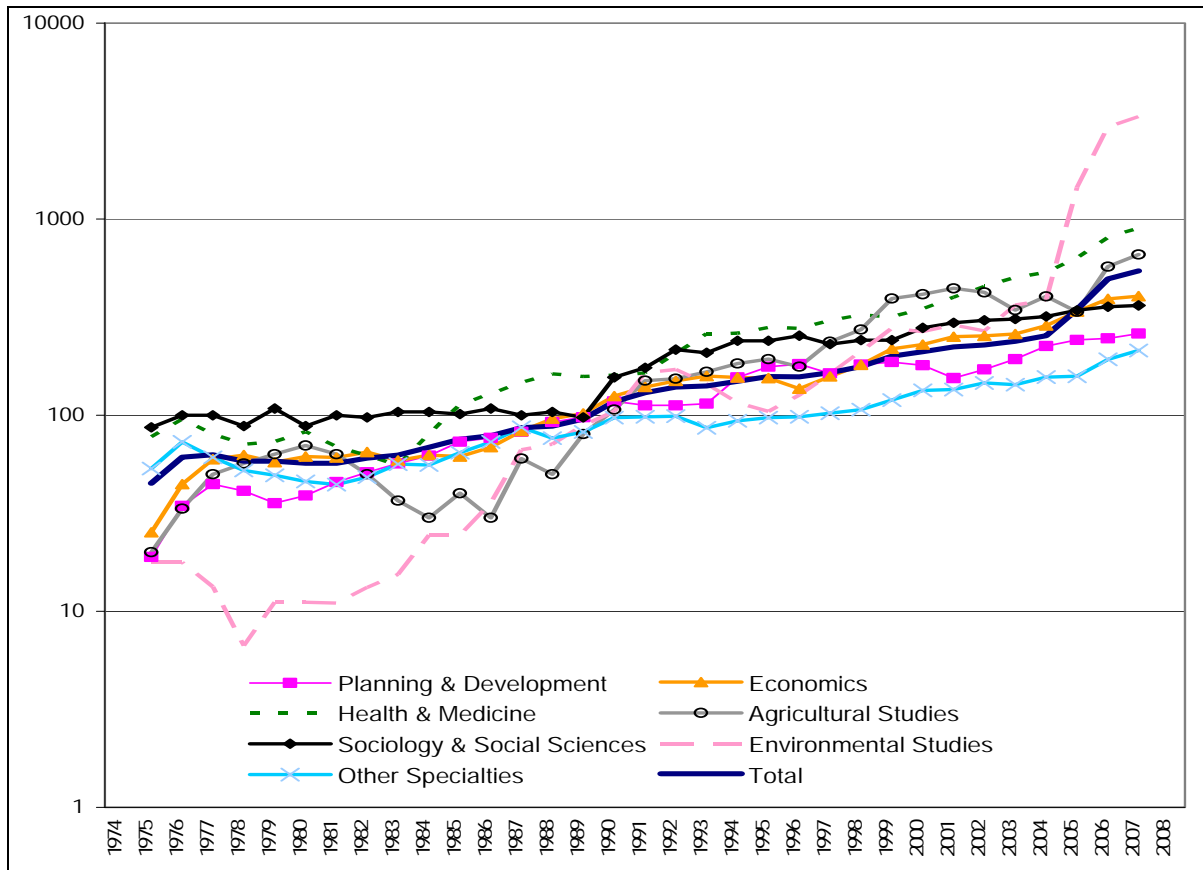
**Figure 1. Index of the number of publications per selected categories, 1974-2008
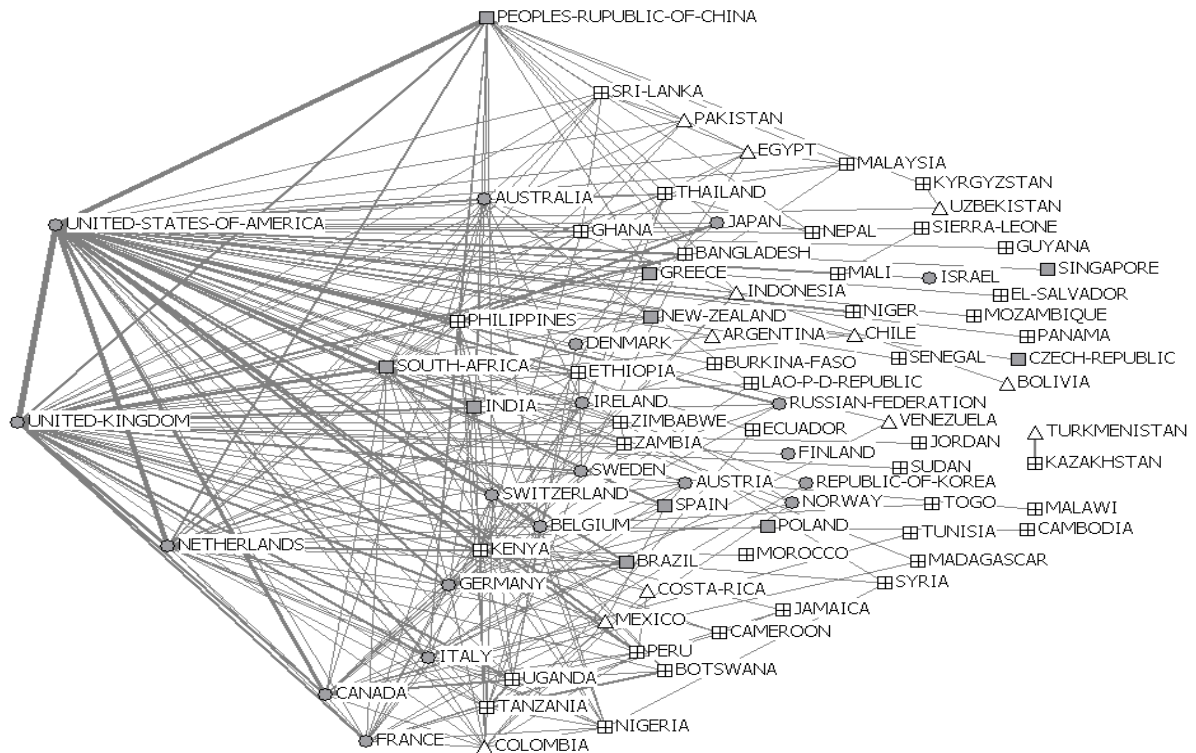(1990=100; three-year moving average)**

Figure 2. Collaborative partners in poverty/hunger research (1988-2008).

Science-for-Development Policy: The Netherlands WOTRO Strategy Plan.

What is the Netherlands contribution to poverty/hunger research and what does it mean in light of this country's new Science for Global Development policy?

1) Contributions by Dutch scientists are attributed primarily to the following journal classes: *Health & Medicine* (24%) (60-80% coverage by ISI); *Agriculture* (15%), *Environment Studies* (11%) and *Economics & Business* (11%) (40-60% coverage by ISI).

2) Much of the medical-related research on poverty/hunger in the Netherlands has focused on the Dutch "Hunger Winter" 1944-1945.

3) The United States is the Netherlands most frequent poverty/hunger-research collaborator. Scientists from the two advanced countries have worked together on issues relevant to developing countries, and their joint work is primarily attributed to *Economics/Business* (28%), *Health & Medicine* (21%) and *Planning & Development* (20%).

4) In the field of *Agricultural Studies*, The Netherlands has previously collaborated with the following scientifically developing/lagging countries: Ethiopia, Kenya, Mexico (developing), Niger, Nigeria, Pakistan, Togo, and Zimbabwe.

The current mission of WOTRO in The Netherlands is to take the NWO's policy and translate it into new research that will help to combat poverty and promote sustainable development. NWO-WOTRO (2007) has identified the following target areas, relevant to the MDG theme of poverty and hunger: "1) agricultural and institutional innovations, 2) disaster and displacement, 3) critical assessments of policies and interventions" (p. 36). The strategy attached to the theme is to "mobilise top researchers in all relevant disciplines, in the Netherlands and the South, and bring them together in partnerships for problem-oriented scientific research on societal issues of local and global concern" (p. 19).

Table 2 lists a sample of agricultural-related problems (i.e., keywords from ISI dataset), organisations associated with previous research that have been involved in finding solutions to these problems, and titles from WOTRO's recent research investments. The purpose of this table is to show how past research can be used to assist the Dutch scientific community with identifying gaps in particular problem areas and locating potential collaborators. This constitutes the first phase of agenda setting. Ideally it would be useful to integrate the most comprehensive body of poverty/hunger documents into a searchable database, so that scientists would have ongoing access to its content to monitor research progress relevant to all of the MDGs.

Table 2. Profile of potential collaborators for future WOTRO-funded research.

Keywords	Relevant organisations in developing countries	Current WOTRO investments
Agricultural intensification	• **UNITED REPUBLIC OF TANZANIA-** Ifakara Hlth Res & Dev Ctr, Ifakara	
Agricultural technology	• **KENYA-**ICRAF, Nairobi; ILRI, Nairobi • **MEXICO-**Univ Autonoma San Luis Potosi, Fac Ingn, San Luis Potosi	
Agricultural water management	• **SRI LANKA-**Int Water Management Inst, Colombo • **GHANA-**CSIR, Water Res Inst, Accra, Ghana.	*Adaptive development of water systems innovations: Method development for improved adoption at watershed and community scale* - Technische Universiteit Delft

Agro-ecosystem; Agro-ecological sustainability; Agronomic sustainability	• **SOUTH AFRICA**-Univ KwaZulu Natal, Sch Bioresources Engn & Environm Hydrol, ZA-3209 Scottsville • **INDONESIA**-ICRAF SE Asia, Reg Res Programme	*Vulnerability and resilience of the Brazilian Amazon forests and human environment to changes in land-use and climate*- ALTERRA Research Institute, Wageningen.
Crop improvement	• **ZAMBIA**-Mutanda Res Stn, Root & Tuber Improvement Programme, Solwezi	
Deforestation	• **MEXICO**-Colegio Frontera Sur, Div Conservac Biodiversidad, Chiapas; • **UNITED REPUBLIC OF TANZANIA**-Tech Coll Arusha; • **INDONESIA**-CIFOR, Ctr Int Forestry Res, Bogor; • **PERU**-Int Potatoe Ctr, Lima.	*Economic Analysis of Deforestation in Developing Countries Countries: The Case of Gum Belt in Sudan* - Wageningen Universiteit & Researchcentrum *Local resilience of the human-environmental system in the Amazon (Brazil) under conditions of global climate change and large-scale deforestation*- ALTERRA Research Institute, Wageningen.
Drought; dryland-agriculture; dryland-farming.	• **SRI LANKA**-Int Water Management Inst, Colombo • **ZIMBABWE**-Univ Zimbabwe, Harare • **KENYA**-ICPAC, IGAD, Nairobi; Maseno Univ, Dept Environm Sci, Maseno • **BOTSWANA**-Univ Botswana, Dept Environm Sci, Gaborone, Botswana.	
Fertilizer use/practice	• **PHILIPPINES**-Int Rice Res Inst, Div Agron Plant Physiol & Agroecol, Manila	*Impact of atmospheric sulfur and nitrogen deposition on vegetable crop cultivars in relation to fertilizer practice in rapidly developing regions of China*-University of Groningen
Soil fertility	• **ZIMBABWE**-WaterNet, Harare; ICRISAT Bulawayo, Matopos Res Stn, Bulawayo; Univ Zimbabwe, Dept Agr Econ & Extens, Harare; CIMMYT, Harare • **ZAMBIA**-Mutanda Res Stn, Root & Tuber Improvement Programme, Solwezi ; ICRAF, Chipata. • **MEXICO**-[La Rovere, Roberto; Szonyi, Judit] CIMMYT, Int Ctr Wheat & Maize Improvement, Mexico City • **KENYA**-Int Ctr Res Agroforestry, Nairobi, Kenya. • **MALAWI**-ICRISAT, Lilongwe	*Soil fertility management in the cereal-based farming systems of Northern Ethiopia* - Wageningen Universiteit & Researchcentrum

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