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A REVIEW OF EXISTING EMPIRICAL RESEARCH ON GLOBALIZATION AND HEALTH

BACKGROUND PAPER FOR ANNUAL MEETING OF WHO/HSD SCIENTIFIC RESOURCE GROUP ON GLOBALIZATION AND HEALTH

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I. INTRODUCTION

One of the key priorities for developing appropriate and effective policy responses to the impacts of globalization on human health is the need to strengthen empirical research. The present weakness, in many cases, of sound evidence linking the processes of globalization with specific health impacts is diffusing efforts to influence the pace and direction of globalization. While there are a number of broad overviews of the subject (Hong 2000), some criticize the globalization and health literature for the prevalence of opinion, anecdote and rhetoric over “scientific facts”. This is exacerbated by the contested nature of globalization itself in terms of its definition, manifestations and consequences, as well as debates over the kind of evidence needed. The paucity of methodological tools to describe and measure global change also remains to be addressed. Furthermore, the multiplicity of factors at work on many different levels makes the task of clearly demonstrating cause-effect relationships highly complex. As Weick (2000:39) writes, "Global issues that involve organizing on a massive scale have been described as contested, nonlinear metaproblems with long lead times, unintended side effects, unclear cause-effect structures, and consequences that are often irreversible." All of these issues make understanding and responding to globalization and health issues a clear challenge for the research community.

This paper reviews the existing empirical research on globalization and health as a contribution to defining a clearer research agenda. The review has been commissioned by the Department of Health in Sustainable Development, World Health Organization (WHO/HSD) as part of its efforts to support globalization and health research. It draws on a modified version of a conceptual framework developed by WHO/HSD of the linkages between globalization processes and health outcomes (Figure 1). While the globalization and health literature is substantial and rapidly growing, this review focuses on writings that offer insights for strengthening empirical research. This includes works that provide evidence of the causal links between globalization and health, or potentially useful approaches, methods or tools that might be applied to analysing such links. Particular attention is also paid to how macro level (global) change can be related to micro level health outcomes.

The sources consulted in this review are admittedly skewed towards published material, English language publications, and scientific/medical sources. Medline and Popline searches were carried out under the search term “globalization”, and further searches on the internet were undertaken under specific topics such as global health, globalization and health, emerging infectious diseases, and global environmental change. These were supplemented with the authors’ familiarity with the globalization and health literature, and established institutional contacts through the Centre on Globalization, Environmental Change and Health (CGECH) at the London School of Hygiene & Tropical Medicine (LSHTM). Nonetheless, this review undoubtedly falls short of being comprehensive but aims to provide a good guide to key scholars and institutions, and their main subject areas and outputs, in the field of globalization and health.

In brief, the objectives of the paper are:

- To describe the scale and scope of empirical research on globalization and health;
- To identify gaps and overlaps in research activities; and
- To indicate potential ways forward for defining a research agenda.

In addition, Appendix A is a review of major research programmes being undertaken in subjects related to globalization and health. The listed institutions are described in the following terms:

- What institutions are currently undertaking research?
- What type of institution (e.g. academic, international organizations, NGOs)?
- What subject areas (e.g. trade, infectious diseases, drug policy, environment)?
- What types of research (basic versus applied) and research activities (e.g. clearing house, capacity building, networking)?
- What level of analysis (i.e. subnational, national, regional, international, global)?
- Whether specific countries/regions are analysed?
- What disciplinary approach(es) is taken?
- Whether there is a stated methodology?
- What is the timeline of the research?
- What, if any, outputs have been produced?

II. DEFINING AND MEASURING GLOBALIZATION AND HEALTH LINKAGES

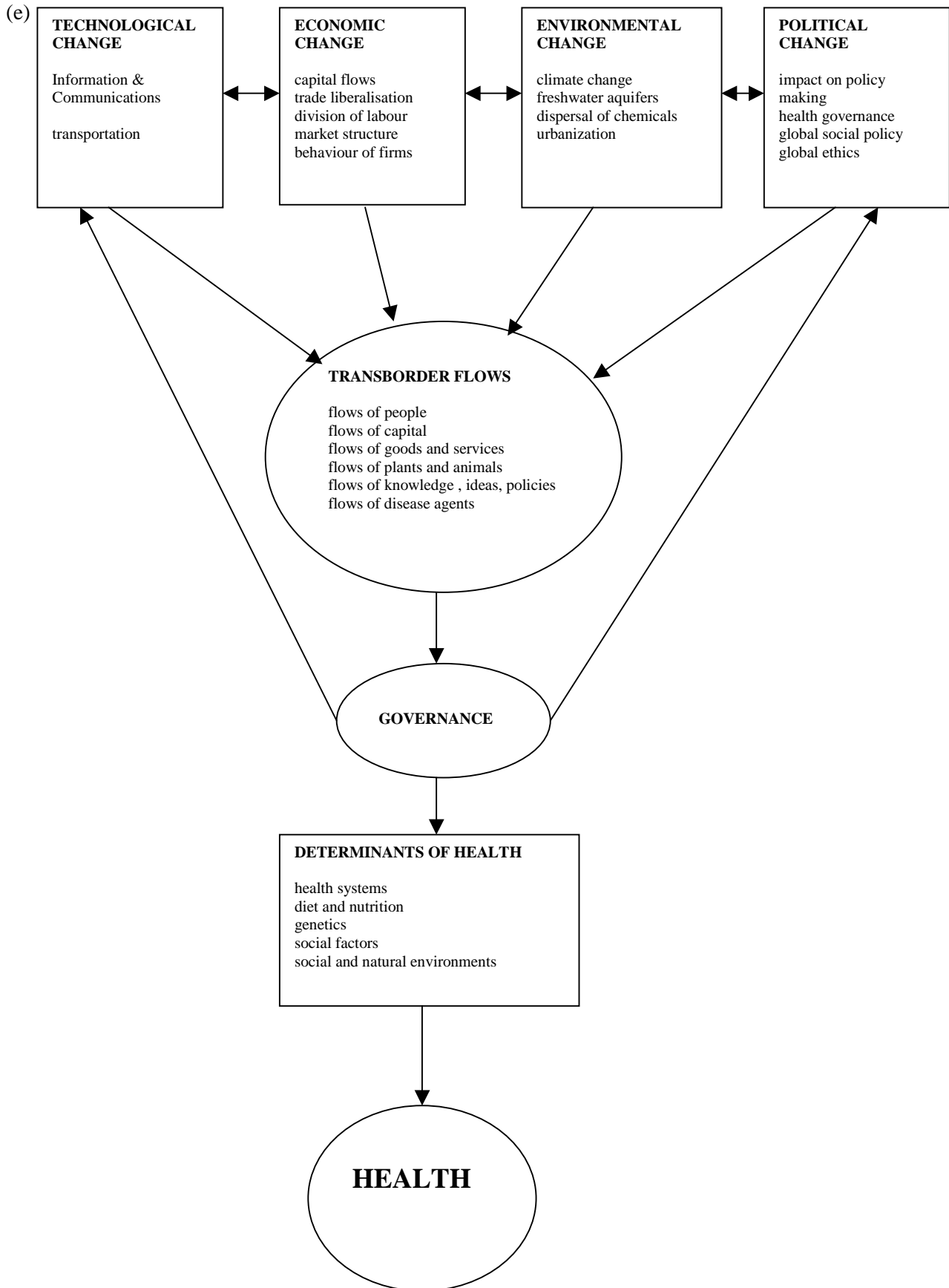
The study of globalization is defined by often polarized debates over what globalization actually is, the degree to which it is occurring, and ultimately its impacts on the world. Divided along disciplinary, theoretical and ideological lines, this scholarly literature offers diverse and sometimes contradictory perspectives. In sorting through this rich body of research, the aim is not to identify the "right" perspective on globalization, but rather to understand the basis of this intellectual contentiousness. Most importantly, in seeking to develop empirical research on globalization's impacts on health, there is a need to be explicit about the value basis and ideological underpinnings of one's own research.

It is beyond the scope of this paper to explore this multidisciplinary literature in detail.¹ However, it is a useful starting point to map out the key sources of contention in the globalization debate as a means of making them explicit in the study of globalization and health. These are described by Held et al. (1999) along five principal issues:

- (a) conceptualization - what is the nature of the globalization process, how is it qualitatively or quantitatively distinct, does it have a predetermined fixed end point or historical destination, is it a contingent and open-ended historical process, is it a homogenous or differentiated process?
- (b) causation - what is driving this process, is there a single imperative, is it a product of a combination of factors?
- (c) periodization - what is the timeframe of this process, when did it start, at what speed is it progressing, can we identify an endpoint when it has run its course?
- (d) impacts - what is the effect of this process on different aspects of social life (e.g. states system, social democracy), what consequences does it have for social and natural environments from the local to global levels, how is it creating positive and negative changes?

¹ For a brief review of the globalization literature see Beynon J. and Dunkerley D., "General Introduction" in Beynon J. and Dunkerley D. eds. *Globalization: The Reader* (London: Athlone Press, 2000): 1-38. For a concise discussion of the broad parameters of the globalization debate see Held D., McGrew A., Goldblatt D. and Perraton J., *Global Transformations, Politics, Economics and Culture* (Stanford: Stanford University Press, 1999), Chapter 1.

FIGURE 1: KEY DRIVERS OF GLOBALIZATION



trajectories - what is the dynamics and direction of global change, is it a progressive or regressive force, is it an integrating or disintegrating process?

Research on the relationship between globalization and health has inherited the existing debates in the literature, sometimes engaging in them, but generally without a reflective understanding of how they define and shape empirical analysis. A more concerted effort in health research to deal explicitly with the above issues would be fundamental to sorting out the growing and already contentious literature.

Although the general globalization literature is abundant, methods of empirically measuring the process are limited. If we define globalization as follows,

...the expanding scale, growing magnitude, speeding up and deepening impact of interregional flows and patterns of social interaction...a shift or transformation in the scale of human social organization that links distant communities and expands the reach of power relations across the world's major regions and continents (Held and McGrew 2000),

then the most useful approaches to measurement are those identifying both quantitative and qualitative changes in the flows of selected factors across national borders. These flows may be characterized as official (e.g. international trade) or unofficial (e.g. illicit drug trafficking, undocumented migrants). Alternatively, flows may be considered more or less subject to state control. Indeed, those flows that presently go beyond state controls, and in doing so even undermine state authority, in the strictest sense can be seen to best epitomize processes of globalization (Fidler 1996). Within the current globalization literature, three potentially useful conceptual frameworks and methodologies for measuring global flows are as follows:

- Held et al. (1999) establish a simple but precise definition of globalization, and a methodology for making sense of it in historical terms. They assess the scope and depth of a state's enmeshment in the global system through five sets of indicators of connectedness (politico-legal, military, economic, sociocultural and environmental). These indicators are based on existing research in international relations, international political economy, geography and sociology, and on official statistics.
- Dicken (1998:5) focuses on the shift from an international to global economy, and distinguishes between internationalization and globalization. The former is "a *quantitative* process that leads to a more extensive geographical pattern of economic activity." Globalization is "*qualitatively* different from internationalization processes. They involve not merely the geographical extension of economic activity across national boundaries but also - and more importantly - the *functional integration* of such internationally dispersed activities." Evidence of this "global shift" is shown using economic data from the textiles, automotive, electronics and service industries to illustrate the "fragmentation of many production processes and their geographical relocation on a global scale in ways which slice through national boundaries".
- Friedman (2000) takes a more colloquial approach to measuring global change, focusing on changes in information and communication technologies. He argues that power today is no longer defined, for example, by military might or natural resources but by how "wired" your company or country is to the "new system". Measures of this degree of "connectivity" might include PCs per household; network links among PCs in homes, schools and companies; connections to the internet; amount of installed bandwidth; and megabits per capita. Furthermore, power will flow to those individuals, communities, firms, and governments that can most effectively come together to create commercial (corporations), geopolitical (governments) and human (civil society) values. Flows of

information, capital, services and other variables that use the global information superhighway would be a measure of the degree to which globalization processes have reached an individual, community, country or region. This will determine whether one is a "shaper" or "adapter" in the global era.

Health research on globalization may draw on these types of transborder flow measures as an initial step to identify what is distinct (quantitatively and qualitatively) about globalization. Some agreed indicators of globalization, and sources of data to measure them, might be used to identify which individuals and population groups (e.g. communities, countries or regions) are more or less "globalized". How such flows have been measured in the existing globalization and health literature is discussed below in sections relating to technological, economic, political and environmental change.

While the above flow measures concern the causal side of the cause (globalization)-effect (health) equation, measures of impacts on health presents a different set of challenges. Potential measures of effects on health can largely be drawn from the health field (e.g. Murray and Lopez 1996). However, one of the difficulties of measuring changes in health status from a global perspective is the prevalence of health data in national aggregates. Impacts on health status may slice across national boundaries as a result of globalization, and thus may not be captured by nationally-defined data. Indeed, this is further confused by the common practice of presenting international data (national aggregates) as "global" (Altenstetter and Bjorkman 1997; Coulter and Ham 2000). The task is to show that something distinct is indeed happening to health systems, health-related behaviour, the social and natural environment, diet and nutrition, and ultimately through these various determinants of health - health status or outcomes.

A further methodological challenge is to link cause and effect together. Indeed, this is perhaps the biggest analytical challenge and the Achilles heel of much of the globalization and health literature. This requires the linking of macro level changes to micro level impacts, often in indirect ways through the broader determinants of health (e.g. socioeconomic environment). Yach and Bettcher (1999), for example, categorize global impacts as either distal (direct) or proximate (indirect) determinants of health, with the latter particularly challenging to the demonstration of cause-effect relations. Nonetheless, as the review of the literature in the next four sections shows, varied efforts are being made to provide stronger empirical evidence in a number of fields. Understanding the current strengths and weaknesses of this existing literature will then enable us to develop a more detailed research agenda.

III. GLOBAL TECHNOLOGICAL CHANGE AND HEALTH

The technological changes associated with globalization center on information/communication and transportation technologies. The specific changes to such technologies have been greater capacity (e.g. memory, carrying capacity), speed, reduced costs, increased accessibility. These changes, in turn, have provided the means by which transborder flows have increased.

Developments in **information and communication technologies** since the 1970s can be described as one of the key drivers of globalization. The implications for health are multiple. Developments in communications technology have been widely perceived as offering significant opportunities in advancing health care and in the dissemination of information, and attention has focused on those provided by telemedicine and the internet. Medicine at a distance holds particular promise for the provision of health services to remote locations and to low-income countries, where email attachments such as image files can be used to economically provide specialist support for the management of difficult cases (Fraser and

McGrath 2000). The connection to databases, journals and reference materials via the internet has similarly been viewed as having the potential to address health information needs among low- and middle-income countries (Lown et al. 1998).

There is, however, a need for more rigorous scrutiny of the actual and potential impacts on global public health associated with these developments. Yellowlees (1998) has noted the necessity for more extensive evaluations of telemedicine techniques in terms of diagnostic accuracy, usability and cost, while more sceptical appraisals of the internet focus on issues of access, reliability of information, and illegal trading. The dramatic nature of the digital divide, whereby the ratio of those with access to the internet to those without is 1:5000 for much of Africa compared with 1:6 in the US or Europe, clearly undermines the impact of the internet in addressing inequities in information (Edejer 2000). Research assessing the reliability of patient oriented healthcare information hosted on the web indicates high levels of incomplete and inaccurate information on web pages dealing with common medical problems (Impicciatore et al. 1997). While countries such as Australia have sought to use internet trading to ensure the adequate supply of medical provisions to remote areas (International Narcotics Control Board 2001), there has been increasing concern about the scale of on-line trafficking in contravention of drug regulations (discussed below).

Developments in **transportation technologies** pose varied impacts on health. Though a geographically extensive network of commercial air routes developed in the 1930s, it was the introduction of long range jet aircraft during the 1950s that provided a major stimulus to the number of airline passengers. The introduction of pressurised cabins allowed the more efficient use of fuel through flying at higher altitudes, while further design improvements subsequent to technological innovation driven by military requirements further facilitated the rise of mass air travel (House of Lords Select Committee on Science and Technology 2000). According to the World Tourism Organization (2000), in 1999 the number of international tourists reached 664 million. From a figure of only 25 million internationally in 1950, this represents an average annual growth rate of 7%. The rapid increase in total numbers of tourists is reflected in a corresponding expansion of the geographical spread of travel patterns. Whereas in 1950 the top fifteen tourist receiving countries accounted for 97% of the world total, by 1999 the proportion had fallen to 62% and over 70 countries and territories were receiving over one million international tourist arrivals.

Travel health (international travel for work or pleasure) is a well-established field of research that documents the incidence of foreign-acquired illnesses such as hepatitis B, malaria, HIV/AIDS and STDs (Phillips-Howard et al. 1990). For example, Porter et al. (1996) draw attention to the rapid expansion of international travel since the 1970s and the implications for the spread of HIV/AIDS. The role of international travel in the global spread of penicillinase-producing strains of *Neisseria gonorrhoea* is documented by Barlow and Sherrard (1992). The data suggests an increasing incidence of foreign-acquired diseases, with behaviour constituting a significant risk factor for international travellers (Porter et al. 1996). What is less well-documented is the health implications of global movement of people for other reasons, notably undocumented migrants, and displaced and refugee populations. The political climate in many countries towards immigration, and especially asylum seekers and refugees, makes the collection of reliable data on the health needs difficult and exploration of the health risks a sensitive area to explore.

- Zlotnik (1999) examines international migration trends using data for 218 countries obtained from UN databases of national censuses. Between 1965-90, the number of migrants increased from 75 to 120 million at an annual growth rate of 1.9%. Whereas in 1965 there were 34 countries for which international migrants constituted over 15% of the population, this had risen to 52 countries in 1990. Around 120 million people, or 2% of the global population, now live outside of their country of origin, 55% whom reside in low-income countries. Migration patterns can have significant health impacts within

destination countries. This is illustrated, for example, by change in the epidemiology of tuberculosis in the US (Talbot et al. 2000) and the UK (Public Health Laboratory Service 2000), with rapid rises in the proportion of cases among foreign-born residents. A similar pattern occurs with reference to imported malaria in the UK, where around half of all cases occur among settled migrants making visits to friends and relatives in their country of origin (Behrens 1995).

- Though the often desperate circumstances of their journeys make numbers difficult to gauge, it is estimated that there were 14.1 million refugees and a further 21 million internally displaced people in 2000 (US Committee for Refugees 2001). There are enormous disparities in the global distribution of such groups, with extremes being represented by an estimated ratio of refugees to host country population of 1:2 for the Gaza Strip and 1:316,750 in Japan. A still more problematic group to quantify is illegal or undocumented migrants, given the absence of data consequent upon their avoidance of contact with authorities in the receiving country. This uncertainty is indicated by the recent estimation by the International Organization for Migration (2000) that there is a global total of between 15 and 30 million illegal migrants at any one time. The global implications for health of such large numbers of refugees is suggested by the range of specific health concerns and problems often encountered. A recent Australian report, for example, notes as issues likely to be relevant in the provision of health care for refugees antenatal care; dental disease; depression and anxiety; eating difficulties; failure to thrive in young children; family violence; female genital mutilation; hepatitis B; immunisation; infectious and parasitic diseases; nutrition and diet; post-traumatic stress disorder; psychosomatic disorders; sexual assault; and tuberculosis (Victoria Foundation 1999).

IV. GLOBAL ECONOMIC CHANGE AND HEALTH

Global economic change concerns how processes of globalization are changing the production, distribution and consumption of wealth. Much of the wider globalization literature focuses on the economic sphere, documenting how changing market structures and the behaviour of firms are contributing to an increasingly globalized economy (Dicken 1998). The globalization and health literature has largely been an extension of this work, extending analysis to the implications for health in two ways: (a) how are market structures becoming globalized and what implications does this hold for health; and (b) how are market structures of health-related industries becoming globalized?

On the first, a growing body of research seeks to analyze specific policies directed at the creation of a globalized world economy and the implications they may hold for health at the national, regional and global levels. The most established body of work relates to health consequences associated with **macroeconomic reform**. Beginning in the 1980s, when policies under the rubric of neoliberalism began to be adopted and exported worldwide, researchers in many countries have studied how policies such as structural adjustment, deregulation, privatization and trade liberalization have been translated to, and impacted on, the health sector. For example, Alubo (1990) presents quantitative data linking structural adjustment programmes with increased debt burden, austerity measures for health services, and ultimately worsening basic health indicators in many Africa countries.

The direct relationship between macroeconomic policy reforms in the 1980s and the more recent discourse around economic globalization is now acknowledged through an understanding of the longer timeframe of globalization processes. Importantly, however, while structural adjustment lending continues to be a major component (60% of total lending) of World Bank loans since the Asian financial crisis, criticisms continue over the lack of impact assessment associated with adjustment reforms (*Bretton Woods Update* 2001). An explicit recognition of these linkages is evident in more recent works documenting the impact

of global economic change on inequities in availability and access to health services for, and the health status of, selected population groups, countries and regions.

- Coburn (2000) offers a theoretical starting point for linking neoliberalism (tied to globalization trends), income inequality, social fragmentation and lower health status. Reviewing the literature on income inequality/socioeconomic status and health status, he challenges the neglect of macro and global level social, political and economic factors as extra-human forces.
- Data collected by UNCTAD (1997) and UNDP (1999) presents the most comprehensive data on the adverse impact of globalization on socioeconomic inequality within and across countries. *The Human Development Report 1999*, in particular, argues that these inequalities have been widening since the early 1980s, and that these inequalities are attributable to the current form of globalization.
- Similar data are provided by Galbraith (1998), Cornia (1998) and Milanovic (1999). The latter is especially compelling in compiling a measure of world income distribution by combining the results of household budget surveys in 91 countries using purchasing power parity values. This method shows that equality in the distribution of income globally worsened between 1988-93, with income in the top decile increasing at the expense of the bottom 90%. The global Gini coefficient increased during this period from 62.5 to 66.0, a relatively rapid change in equity over five years.
- Loewenson (1999) undertakes a case study of women's work within export processing zones to explore changing conditions of employment and health status as a consequence or feature of economic globalization. She concludes that positive impacts in terms of enhanced employment opportunities in nontraditional spheres are accompanied by negative impacts in the growth of poor quality, insecure jobs with weakened social support systems.
- Stalker (2000) uses data on legal and undocumented migration, employment by transnational corporations, and remittance flows, to argue that the current nature of globalization is encouraging greater migration globally. He explores this in relation to a range of social issues including employment patterns, brain drain, exchange of skills, and wage disparities. This study has relevance for health research in terms of the health needs of migrant workers, impacts on social welfare and labour standards, and changing supply-demand for health workers.
- Lemus-Ruiz (1999) describes dramatic changes to work processes, industry-union relations and workers health and safety following the privatization of the sugar industry in Mexico. Privatization has been pursued as part of the country's efforts to integrate itself within an increasingly globalized world economy.
- Loewenson (2000) analyses the reversal in key health indicators in Zimbabwe following the introduction of structural adjustment and economic liberalization policies during the 1990s. After a decade of impressive health gains for a low-income country in the 1980s, national health data shows a rise in HIV/AIDS infections, infant and child mortality rates, maternal mortality, spread of tuberculosis and worsening of a wide range of other health conditions. She argues that macroeconomic policy reforms have led to reduced public spending, increased socioeconomic inequalities, and greater poverty at the household level which, in turn, has resulted in the above trends.
- A collaborative study by UNFPA and Australian National University (UNFPA 1998) analyses the impact of the global financial and economic crisis on population and

reproductive health in four Southeast Asian countries (Indonesia, Malaysia, Philippines, Thailand.). The study uses “rapid assessment techniques” to bring together existing national data on economic indicators (e.g. exchange rates, levels of poverty, public spending) with health indicators (e.g. number of unsafe abortions, use of family planning services). The lead time between the onset of the crisis and full impact necessarily makes this a preliminary analysis. Follow up analyses of the impact of cuts in public spending on other health outcomes, notably rates of HIV/AIDS and STD infection, unwanted pregnancies and maternal mortality, are proposed [NB: Need to follow up with Richard Leete, UNFPA].

- Subramanian (1999) presents similar data on the overall health and well being of women in light of the Asian financial crisis. This paper is set within the broader context of health sector reform, migration, domestic violence and globalization of the pharmaceutical industry. Like UNFPA (1998), data is focused on the reduced public provision of selected health services (e.g. treatment of STDs and cancer screening), and follow up analyses of trend data on health outcomes, health seeking behaviour, and patterns of access to health services are needed.

Analysis of specific policy instruments for economic globalization has focused on the liberalization of trade and, in particular, the various **multilateral trade agreements** under the GATT/WTO. This is a highly contentious subject that has generated polarized views as to the true impacts of specific agreements on health and other social sectors. In general, there is a high level of suspicion about the theoretical and ideological underpinnings of trade agreements by the NGO and, increasingly, public health communities. With very different constituencies, end goals and value bases, health and neoliberal trade policies are largely described in the current literature as diametrically opposed. What is only beginning to be studied in greater depth by health researchers are the specific features of particular trade agreements, notably GATS, TRIPS, along with SPS and TBT measures, in relation to their impacts on health policies. Other trade issues, such as the proposed Multilateral Agreement on Investment (MAI), have been noted as subjects of concern but have not received concerted study. Much of the existing work remains on a general level. Further case studies linking the above trade rules and agreements with specific countries, health policies or health conditions would provide more detailed understanding of their implications (e.g. GMOs, hormone beef case, Canada-France asbestos case) . Empirical analysis of alternatives to neoliberal trade theory, or options for building in health-protective measures into existing agreements (e.g. fair trade provisions) would be useful. Research that provides greater clarity to the public health community of the importance of trade agreements to health policy and outcomes, especially given the technical and legal complexities of the subject, would be an important contribution.

- In a wide-ranging paper, Koivusalo (1999) reviews a range of trade agreements in terms of the extension of trade-related rules to govern the field of health policies (trade creep).
- Correa (1999) similarly provides a detailed review of the public health aspects of trade obligations under the GATT and WTO, particularly the TBT, SPS measures, GATS and TRIPS. The paper is supported by reference to specific cases where the dispute settlement mechanism raises implications for health.
- Pollock and Price (1999; 2000) analyze multilateral trade agreements under the WTO in relation to their potential implications for the liberalization of health services to foreign investors and markets. They examine specific articles of the GATS, in particular, as reducing the interpretation of government authority services such as health. Their analyses are based on close reading of trade agreements, background position papers of key negotiators, and recent dispute settlement of trade and health issues to draw the

conclusion that there will be a further levering open of public services to foreign investment and private markets. This will lead to an undermining of policies based on social insurance or collective risk-pooling principles.

- Analysis of how multilateral trade agreements (i.e. TRIPS) are impacting on access to essential drugs at the national and subnational level is growing. Bond (1999) documents the conflict between the government of South Africa and U.S. pharmaceutical companies over the importation of generic substitutes and imposition of compulsory licensing [NB: Ask Zafar Mirza for references to empirical studies].
- Fuller (1999) discusses the Agreement on Technical Barriers to Trade in relation to pharmaceutical regulatory issues. She points out, given that there are no existing international standards recognized by WTO for biologicals or pharmaceuticals, WHO may have an opportunity to liaise with the TBT Secretariat in order to promote the former's potential role in dispute settlement.
- Taylor et al. (2000) explored the impact of trade liberalization on tobacco consumption using annual data on per capita cigarette consumption and trade intensity for 42 countries from 1970-1995. Their estimates implied that “trade liberalization has a large and significant impact on smoking in low-income countries, and a smaller, but still important effect on smoking in middle-income countries, while having no effect on higher income countries”.

The changing **market structure of health-related industries**, and the implications for health outcomes, has received growing attention. The strength of this literature is its documented analyses of changing structural features of these industries and the consequent behaviour of firms in their drive to establish global presence. This literature tends to be industry specific, and analyses drawing lessons across industries of the implications for health, as well as linking these trends to economic globalization as a whole, would be worthwhile. Issues of regulation at various levels the national and global levels also need far great exploration in relation to these industries as discussed below in Section 5 (Kumaranayake and Lake, forthcoming).

The increased concentration of ownership and domination of the **pharmaceutical industry** by large transnational corporations has been the subject of considerable analysis over the past three decades (Bodenheimer 1984). What is distinct about more recent research is the focus on how this trend has intensified in the 1990s, and the attention to implications for future changes as a result of specific multilateral trade agreements. Documentation of the horizontal and vertical integration of the industry, as a key sector in the global economy, and as sector closely tied to other major industries (e.g. Searle as owned by Monsanto), could be usefully carried out.

- In a two-part report, Casadio-Tarabusi and Vickery (1998a, 1998b) describe the globalization of the pharmaceutical industry in terms of its growth and structure, production and consumption patterns, employment, R&D, capital investment, firm and product concentration, product competition, and pricing. The authors document foreign direct investment, inter-firm networks and government policies (Casadio-Tarabusi and Vickery 1998b). This is a useful overview of the changing structure of the industry.
- Barral and Cohen (1998) analyse the industry over the past twenty years along similar lines, placing changes in the structure of the industry in the context of social and public health care issues.

- Studies of specific drugs and therapies, in terms of their development, marketing and use on a global scale, would be a useful avenue of research. Abraham and Sheppard (1999) examine the development and regulation of the drug Halcion with a focus on the interplay of vested interests behind its availability in the U.S. and U.K. Similar analysis could be extended to a far greater range of countries to understand the global dimensions of drug regulation.

Research on the globalization of the **food industry**, and its implications for human health, has rapidly grown in recent years as a consequence of high-level food scares, efforts to reform national, regional and international agricultural policies, and the commencement of a new round of trade negotiations.

- Tim Lang's work on the increasingly global nature of the food industry is the most relevant. Lang et al. (1999) analyze changes in food production, exchange and consumption practices in recent decades as an integral part of globalization processes. They then draw links to existing data on changing patterns of nutrition, food safety, and the incidence of certain diseases (e.g. CHD, obesity, cancer). Broader conclusions regarding the governance of food policy, in relation to the WTO, FAO and other international organizations, are also drawn.
- Kaferstein et al. (1997) also make the link between globalization of food production, manufacturing and marketing, in a world of increased human mobility and liberalized trade, and the greater intensity (frequency) and extensity (spatial incidence) of foodborne diseases.
- Individual reports on the outbreak of specific foodborne diseases from imports of food products (Herwaldt et al. 1997) provide useful empirical data on the links between global trade and public health.
- Sanders (1999) reviews the new risks associated with modern food production, and argues the need for a systematic approach to identify hazards at each point in the food chain. The paper puts forth the concept of a hazard critical control point and risk analysis framework to guide research and policy making.
- The crisis over bovine spongiform encephalopathy (BSE) in the U.K. and Europe more recently has been the subject of considerable study. Most research focuses on the epidemiology and biology of the disease, but more attention is needed to the global dimensions of the disease (Lee forthcoming). The export by Britain of live cattle, meat products, infected meat and bone meal (MBM) and blood products (see below) all over the world suggests that the disease, and its human form nvCJD, has spread beyond Europe. As FAO Director-General Jacques Diouf states, BSE could spread to as many as 100 countries outside of western Europe (Mann et al. 2001).
- Concerns over the risks to public health and the environment of genetically modified (GM) foods has led to much discussion and debate over the desirability of such technologies. However, scientific research to understand the precise risks remains thin. Godfrey (2000) calls for comparative studies across regions, countries and population groups using health records to determine whether consumption of GM foods affects human health. The consumption already by populations in some countries, notably the U.S., of substantial amounts of GM foods may offer an opportunity for such a comparison.
- Efforts to improve regulation of the food industry, including the creation of national and regional food standards agencies to complement, and indeed strengthen global level

regulation, needs far greater analysis. Varzakas and Jukes (1997) usefully analyze how the globalization of food quality standards (ISO9000 series) has affected the food industry in Greece. It suggests an analytical framework for national institutions, legislators and policy makers to address issues on standardization.

The global dimensions of the **tobacco industry** and its health impacts have received growing attention worldwide, notably since the creation of the Tobacco Free Initiative, WHO and the public disclosure of internal tobacco industry documents of major companies such as Phillip Morris and BAT. The global burden of disease from tobacco-related illnesses is well-documented (Yach and Bettcher 2000). Though the epidemiology of the global tobacco epidemic may therefore seem well defined, significant variations in mortality across different countries, over time, and by gender, socio-economic and age groups need to be more clearly understood. Gajalakshmi et al. (2000) outline three types of reliable data necessary for the development of an overall strategy for research on tobacco, specifying estimates of smoking prevalence and incidence across different populations, absolute numbers of cigarettes sold within countries, and retrospective 'proportional mortality' studies of disease among smokers and non-smokers. There is also increasing appreciation of the global nature of the industry, in terms of its operating, production and marketing strategies. This area of research is expected to grow substantially in coming years as a strong source of empirical evidence linking an increasingly globalized industry with clear consequences for increased morbidity and mortality worldwide. For example, the London School of Hygiene & Tropical Medicine has recently been funded by the U.S. National Institutes of Health to study "Globalization, the tobacco industry and policy influence" based on analyses of four regions and fourteen countries (2001-2005). Specific work is needed on how multilateral trade agreements under the WTO will impact on tobacco control efforts nationally (Bettcher and Shapiro 2001). A clearer understanding of the global political economy of the tobacco industry could then be combined with national and subnational data on smoking prevalence, tobacco-related morbidity and mortality, and national level case studies of the policy environments.

Akin to concerns about the global dimensions of the tobacco industry are changing trends in **other noncommunicable diseases**. Much of the globalization and health literature focuses on infectious disease, but there is slower recognition of the implications of globalization for noncommunicable disease. As discussed above, research on the food industry touches on changing patterns of human diet and nutrition (Lang et al. 1999). Jernigan et al. (2000) report that alcohol consumption has risen in low-income countries and related problems are at epidemic levels in the former Soviet Union. Rapid economic globalization is argued to have contributed to this trend yet alcohol remains treated as a normally traded commodity. Zimmet (2000) reports on the "global epidemic" of type 2 diabetes as "a symptom of globalization with respect to its social, cultural, economic and political significance". The paper usefully draws attention to the need to recognize the transnational nature of its incidence in certain population groups in both low and high-income countries, although the empirical link to specific features of globalization remains unaddressed [NB: VIRGINIA BERRIDGE EMAILED 07.03.01 FOR ALCOHOL AND DRUG RELATED REFERENCES].

The global trade in **biological products**, notably blood and blood products (e.g. albumin) has been the subject of popular writing (Starr 1998), but has received little scholarly attention. Concerns arising from the export of blood products donated by people who subsequently developed new variant CJD (Meikle and Bellos 2001) draws further attention to an often poorly regulated and lucrative industry. The global spread of HIV/AIDS and hepatitis B through infected blood products, either poorly screened and/or of dubious origin, serves as a recent lesson of the risks. In light of previous experience, and growing uncertainty about risks arising from vCJD, detailed research on the global trade in biological products, and notably regulation and safety issues, would seem urgent.

Closely related to the spread of global communications technologies has been the globalization of the **advertising industry**, and its key role in the marketing of health-related goods and services. As Wallack and Montgomery (1992) write, transnational advertisers accounted for 80-90% of all advertising expenditure in the late 1980s. High on the list of advertisers are the tobacco, food and alcohol, and pharmaceutical industries. Updated data on the advertising industry, key advertisers, and the implications of this rise in "global advertising" for health promotion, health behaviour and outcomes, would be an important research endeavour. The fields of cultural and media studies would provide an important and established resource for this type of analysis, and could usefully be combined with data on health status indicators. For example, analysis of how health-related industries target certain population groups might be compared with morbidity and mortality data on such groups. How techniques (e.g. global branding) and channels (e.g. internet) used by the advertising industry to influence attitudes and behaviour globally might be tapped into for health promotion purposes by the public health community might also be studied.

Measures of legal international economic activity are relatively straightforward, as there are recognized methods and data available. The global economy is generally measured by aggregates of national activity although this is not always satisfactory in relation to globalization. Indeed, in describing the global shift in the world economy, Dicken (1998) observes that "The conventional unit of analysis in studies of the world economy is the nation-state. Virtually all the statistical data on production, trade, investment and the like are aggregated into national 'boxes'. Such a level of aggregation is less and less useful, given the nature of the changes occurring in the organization of economic activity."

This methodological limitation becomes even more pronounced when cross border economic transactions are unregulated nationally and thus difficult to measure. The increasing use of the internet to sell products worldwide is a prominent example. Even more difficult is illicit economic activity which has rapidly grown in recent decades, spurred by a combination of political and economic instability (e.g. arms and drug trafficking from eastern Europe), advances in information technologies (e.g. money laundering), and cheaper and widespread transport links (e.g. smuggling). This illegal economic activity is a key feature of globalization today and much of this activity has important impacts on human health. Unsurprisingly, data on illicit economic activity is poor.

- Stares (1996) analyses the globalization of the illegal drug trade, estimating its value as between US\$180-300 billion per year, larger than the GNP of three-quarters of national economies. His focus is on how this trade has circumvented national and international authority, taking advantage of the infrastructure of globalization (i.e. global financial system, information technologies, transportation) to expand worldwide since the early 1970s. Importantly, he links the drug trade to the legal global economy and its marginalization of certain population groups. The author draws on data from the UN, OECD and national governments but admits that much of the data is estimated. The findings have implications for the role of health systems in the treatment of drug addiction, and promotion of health-related behaviours.
- The already formidable problems of estimation associated with irregular migration are further heightened with regard to trafficking. Trafficking has been defined by the International Organization for Migration (IOM) as occurring when "a migrant is illicitly recruited and/or moved by means of deception or coercion for the purpose of economically or otherwise exploiting the migrant, under conditions that violate their fundamental human rights" (IOM 1999). Among the most frequently cited figures, however, are UN calculations that profits from the traffic in human beings now amount to \$7 billion annually, making it broadly equivalent to drug trafficking in financial terms (Kelly and Regan 2000), and that 4 million individuals become the victims of trafficking each year (USAID 1999). Though media reports make it clear that considerable mortality

is associated with the trafficking and smuggling of migrants, Gushulak and MacPherson (2000) have noted the paucity of formal studies of health arising. They develop a framework to consider the impact of trafficking on health structured around risks encountered by the migrant during pre-journey, migratory and arrival phases, with the recipient country potentially assuming additional health burdens.

- Potential health risks associated with developments in information technology are illustrated by the provision of access to controlled drugs via the internet. On-line trafficking is a recent phenomenon, and one for which very few national authorities have developed regulations (Sharma 2001), and approved legal trading practices co-exist alongside the illegal and the dubious. It is therefore extremely difficult to gauge the extent of the problem, though its magnitude will clearly be related to the prevalence of internet connections; as of January 2000, more than 200 websites were subject to FDA investigation (Charatan 2000). The problem has recently been highlighted by the International Narcotics Control Board (2001).
- The scale of cigarette smuggling poses a considerable global threat to tobacco control efforts. It has been estimated that around one third of legally exported cigarettes later appear in the contraband market (Joossens and Raw 2000), accounting for between 6 and 8.5% of all cigarettes consumed worldwide (Merriman et al 2000). This raises diverse concerns for public health including potentially undermining the impact of increased taxation on consumption, particularly among children and the poor; an increased availability of tobacco products, with less restrictions on youth access; and the avoidance of health regulations such as warning labels (Joossens et al. 2000). An additional dimension is introduced by growing evidence of the involvement of transnational crime networks in tobacco smuggling (International Consortium of Investigative Journalists 2001).

In summary, this is a substantial body of research that tackles a wide range of issue areas. It ranges from analyses of macroeconomic reform, to changes within specific industries, to impacts on specific countries, population groups, gender or socioeconomic groups of global economic change. Linking of cause-effect relations among these different levels of analysis, however, is less strong in the research literature, and this might be more productively done by more detailed analysis of specific policy changes in relation to selected health conditions in population groups. Further case studies analyzing the linkages between macroeconomic policy change and microlevel health impacts could be usefully brought together for other population groups, countries and regions of the world. There is also much scope for further research in relation to the global dimensions of health-related industries where a solid foundation for such analyses already exists. There is urgent need, however, for more comprehensive data on illicit economic activity given its increasing core role in economic globalization.

V. GLOBAL ENVIRONMENTAL CHANGE AND HEALTH

There is a substantial body of empirical research on the implications of global environmental change for human health. A number of research programmes in major public health schools around the world have been established in the 1990s (see Appendix A) and scientific journals, including the newly established *Global Change & Human Health*, have published this growing body of work. This area of research draws on established scientific fields, notably public health (especially epidemiology), environmental studies, climatology and clinical science, and is thus advantaged by recognised concepts, methods and tools. It is also distinguished by its capacity to bring together macro level changes with micro level impacts. Finally, it is strongly influenced by systems-based approaches, recognising that "large-scale anthropogenic environmental changes add a new, ecological dimension to the topic of

environmental risks to health" (McMichael et al. 1999). Such a holistic approach is naturally aligned with the need to go beyond socially constructed boundaries (e.g. state borders) to understand the link between global processes and health. Consequently, this field offers compelling and widely respected evidence of the impacts of global environmental change on health.

The field of global environmental change and human health covers a broad range of subject areas. It is important to recognise that not all global environmental change is attributable to globalization, and thus the former should not be seen merely as a subset of the other (McMichael 1993). McMichael and Woodward (2000) identify four main global environmental changes that portend risks to human health: climate change, depletion of freshwater aquifers, dispersal of long-lived and biologically active chemical species, and urbanization.

Study of the relationship between **climate change** and health (bioclimatology) has grown substantially since the early 1990s (Epstein 1999). In recent years, the links between El Nino (and other extreme weather events) and human health have received particular attention (Kovats 2000; Hales 2000). With dramatic improvements in recent years in forecasting techniques to predict and measure El Nino (e.g multivariate ENSO index), a growing number of studies draw important associations between the ENSO cycle, climate phenomena and human health.

- The impact of natural disasters on outbreaks of selected infectious diseases (e.g. malaria, Rift Valley fever, cholera, shigellosis) have been the focus one WHO (1998) study.
- Patz et al. (1996) argue that climactic factors, notably upward trends in global temperatures, are influencing the emergence and reemergence of certain infectious diseases. They argue that interdisciplinary cooperation among physicians, climatologists, biologists and social scientists is needed, along with increased disease surveillance, integrated modelling, and use of geographically based data systems, to contribute to anticipatory measures and preventive strategies. Broader efforts to map the links between the natural environment and health (disease ecology) offer methods of documenting spatial inequalities in epidemiological trends using different units of analysis (world, state, region, town).
- Barthold (1996) observes that the genus *Borrelia* (of which *Borrelia burgdorferi* is the agent of Lyme disease), is genetically diverse as a result of evolution within different ecosystems. Unique and isolated reservoir habitats are conducive to coevolution of genetically distinct tick populations. He argues that there is evidence that, in parts of Eurasia and North America, there is a highly distorted amalgamation of ecosystems that are taken over by dominant reservoir hosts and vectors, and mixed by migratory birds and bridging vectors. Further perturbation of the natural environment, and consequent influence on enzootic cycles, from human habitation is having impacts on how Lyme disease is emerging in the modern world.
- Emerging and reemerging diseases have been studied extensively by ecologists who argue that environmental change and degradation may be contributing to the global resurgence of old and new infectious diseases. Epstein (1995), for example, argues that the appearance in 1993 of hantavirus in southwest U.S. was accompanied by anomalous weather patterns. In the same year, a new variant of *vibrio cholerae* (0139 Bengal) emerged in South Asia where marine ecosystems were experiencing a pandemic of coastal algal blooms. He presents a framework for integrating surveillance of health outcomes and key reservoir and vector species, with ecological and climatic monitoring.

- Lee and Dodgson (2000) analyze cholera in terms of historical changes to the social and natural environment. They argue that the seventh and eighth pandemics of cholera demonstrate the spatial and temporal dimensions of global change through new epidemiological patterns.

The health effects of **depletion of freshwater aquifers**

- Guillet (1998) examines issues around policy changes to water demand management, towards the privatization of water rights, among farmer-managed irrigation systems in Peru, and its effects on water use, efficiency and equity among smallholders. While the paper does not discuss health issues, the social implications of water rights is explored in relation to equity of access. Analysis of potential links to the cholera epidemic of the early 1990s, for example, might be a potential subject of research.
- A similar change in policy in South Africa, which led to the introduction of fees for clean water access among shanty town dwellers, has been attributed to the most serious outbreak of cholera in the country for twenty years. Since August 2000, 46 000 cases have been reported and over 100 deaths. Cross national and regional comparisons of reforms to water policy, in the context of global economic reform, and the incidence of water-borne diseases would be a useful area of research.
- See Scientific American paper (2000)

The global health effects of the **dispersal of long-lived and biologically active chemical species** is a growing area of research.

- Tong et al. (2000) describe exposure to environmental lead as a major public health hazard of global dimensions. They describe how increasing blood lead levels among selected population groups worldwide are linked to certain human activities in the late twentieth century (e.g. motor vehicle use).
- There is a well established body of research on the migration of industrial hazards (Castleman and Navarro 1987). The global aspects of such industrial hazards are addressed in Castleman (1995) who lists a wide range of "double standard cases" where TNCs have been less vigilant in host (largely low-income) countries in controlling industrial hazards.

Links between the trends towards increased **urbanization** and health have been studied as part of the radical transformation of human ecologies amidst globalization. McMichael (2000) reviews the global trend of human populations toward urbanization over the past two centuries as a consequence of industrialization, refuge from conflict and environmental damage, food insecurity and employment prospects. He argues that many large cities in low-income countries have failed to implement appropriate measures to accommodate this trend (e.g. water and sanitation, public health infrastructure), leading to problems of environmental blight, poverty and disease. This process has been slowed even more by the pressures, distortions and priorities of economic globalization. The emerging global division of labour, for example, is a contributing factor to changing patterns of human settlement. Conversely, urbanization has implications for the wider global environment, placing mounting pressures on the world's ecosystems and creating large "ecological footprints".

- Although not directly concerned with health, Yusuf et al. (2000) is a collection of papers discussing some of the major aspects of decentralization and urban change in the context of globalization. The report is an outgrowth of the *World Development Report 1999/2000*

and offers a wide ranging analysis of key trends over the coming decades, with a focus on the Pacific Basin.

- Lo and Yeung (1998) is a collection of papers on “critical themes which relate to globalization such as urban corridors, Islamic cities, new technologies, transport and telecommunications, financial centres and food issues”. While the papers do not address health issues directly, this volume reviews key aspects of urbanization and presents results of regional surveys and studies of selected cities.

VI. GLOBAL POLITICAL CHANGE AND HEALTH

This body of research encompasses a broad range of issues concerning how global changes are impacting on the distribution and use of power. Because of globalization, many writers argue that forms of power, those who hold power, how that power is being wielded, and with what consequences are undergoing change. There is considerable debate around these issues. Within the health literature, particular attention to how processes of globalization are affecting policy making are limited. Moran and Wood (1996) consider how internationalization, defined as "a process through which the authority and autonomy of the nation state is challenged or supplanted by structures, processes or policy developments which cut across national boundaries", is impacting on the making of health policy. They argue that this will impact in four ways: (a) structure of policy making; (b) implementation or application of health policy; (c) internationalization of product markets in health; and (d) context in which health care policy making takes place. They draw on examples of national health care reform that illustrate these types of changes. Lee and Goodman (forthcoming) explore how globalizing forces are changing how health policy is being made in the area of health care financing. The analysis uses semi-structured interviews, primary and secondary document sources to compile a policy map of key individuals/institutions and their formal linkages. It concludes that there is a global dynamic to the policy network surrounding health financing reform, dominated by a relatively small number of actors who have influenced policy reforms nationally and globally.

There is a more substantial literature exploring forms of **health governance** emerging, and those needed, in the context of globalization. This research has arisen as an extension of studies from the early 1990s on reform of international health cooperation, resulting in a general consensus that changing needs and challenges required a rethinking of existing institutions and forms of cooperation (Sterky et al. 1996). One of the key changes identified by many writings is the **transition from international to global health**, resulting in new key actors, distribution of power, factors impacting on determinants of health, and patterns of health.

- Lee (forthcoming) reviews key aspects of governance for global health including the conceptual, historical and legal foundations. Papers by Fustukian and Buse, respectively, in this edited volume explore the potential for civil society and the private sector to contribute to health governance based on survey data and semi-structured interviews. Further analysis could be undertaken in relation to the changing role of the state in health governance at different levels.
- Buse and Walt (2000a; 2000b) document the increase in global public-private partnerships and offer a conceptual framework for analyzing them. Detailed analysis of specific partnerships, in terms for example of their composition, mandates, funding and contribution to improving health outcomes would seem appropriate. Other forms of partnership at various levels of policy making would also build on this initial work.

- The increased role of major private sector interests in health policy contrasts with concerns over the capacity of other actors and population groups to participate. Kunitz (2000) reports mixed consequences for indigenous peoples in poor countries who cannot participate in the global economy but can contribute to global networks of other indigenous peoples, environmental activists and NGOs. Chapman (1999) examines the response of civil society to the globalization of marketing of breastmilk substitutes in Ghana, and documents the links between global and local level campaigning. The important role of local civil society organizations in underpinning such global campaigns, in particular, receive too little recognition. Similar analyses of the global-local links between civil society can be found in relation to population policy (Lee and Walt 1995) and a few other issue areas, but need far greater documenting.

The assessment of existing **institutional mechanisms** for health governance in light of globalization has received some attention. This area of research embraces legal analysis, organization studies, and social policy.

- Fidler examines some of the basic problems of applying international law to facilitate international cooperation to control emerging infectious diseases (1996; 1997) and antimicrobial drug resistance (1998; 1999). The international legal component of a global strategy needs careful attention because of the problems inherent in international law. Efforts to strengthen legal instruments to address global health challenges might be analysed in relation to tobacco control (Framework Convention on Tobacco Control), human genome and chemical safety.
- Health policy has also been set within a broader context of social policy. The existing gaps in authority, regulation and action to mediate the social consequences of globalization has led to a number of research initiatives to develop new ways of thinking about social policy. The work by UNDP on global public goods (Kaul et al. 1999) begins to develop a conceptual framework for describing and analysing global challenges. Drawing on the theory of public goods² from the field of economics in the 1950s, and its application to global challenges from the late 1960s, a typology of global public goods is put forth along with an initial framework for identifying and measuring them (i.e. national externality profile). Similarly, Deacon (1997) coins the term global social policy to reveal the growing gap between globalization processes and the capacity of national governments to make and implement social welfare policies. Reviewing the role of various international organizations in social policy, he observes that the weakness of supranational authority in the current context will mean that the protection of social welfare will not be given sufficient priority. Deacon (1999) takes the above work one step further by exploring how social regulation could be injected into the global economy (e.g. global taxation).
- Cooperider and Dutton (1999) is an excellent introduction to the organizational dimensions of global change, providing a variety of case studies to draw lessons for strengthening global governance. Drawing on the rich field of organizational studies, this edited volume argues that the design of organizations is a key factor in how effective they will be in tackling global scale challenges. Characteristics such as leadership, communication, authority structures, and organizational culture are considered central to the building of effective forms of global cooperation. Detailed case studies presented in the book are not from the health sector, and the approach of the book could be applied to understanding the strengths and weaknesses of health organizations at various levels of governance.

² See for example Samuelson P., "The Pure Theory of Public Expenditure," *Review of Economics and Statistics*, 1954, 36: 387-89.

- Schwartz and Gibb (1999) take a similar approach in evaluating the trend towards more socially responsible corporate behaviour. After reviewing a number of high profile cases, where corporations have failed to behave responsibly at their peril, the authors apply management theory to develop a framework for enabling corporations to develop effective socially responsible policies and practices. Concrete measures for defining and monitoring such behaviour is also provided, and could be drawn upon to inform similar standards in the health sector. Critical analysis of the governance of health-related private companies and civil society organizations themselves is strongly needed.

The **normative basis** of governance for global health, including consideration of ideological values, ethics and human rights, has received limited research attention. Bettcher and Yach (1998) argue the need for firm ethical principles to guide the governance of growing transnational health risks and opportunities. Bioethics are discussed in relation to cloning, HIV/AIDS treatment, tobacco sales and environmental degradation. Taylor (1999) analyses the efforts by UNESCO to develop international guidelines on biotechnology as a means of advancing human rights and public health. Jamieson (1997) explores the ethical basis for addressing the potential health effects of global climate change. It may be worthwhile for this area of health research to draw on the growing literature on globalization and ethical trade (Barrientos 2000) as a means of defining more concretely ethical standards in the form of standards of practice by health-related industries.

VII. TOWARDS DEFINING A RESEARCH AGENDA

This section draws together the findings of the above review of the literature as a contribution to developing a clearer research agenda on globalization and health. In doing so, it also revisits a proposed research and policy agenda originally put forth in Lee (2000) which focused on three key question areas:

- (a) To what extent is globalisation occurring in terms of ways that affect health?
- (b) What positive and negative effects is globalisation having (or expected to have) on the health of particular individuals and groups?
- (c) What policies are needed to optimise the benefits, and mitigate the costs, of globalisation for health?

For **global technological change and health**, the above review focuses on information/communication and transportation technologies which together lie at the heart of globalization. Existing research on the former tends to view the former, in particular, as a generally positive development, offering potential opportunities for health training, education, service provision, and information dissemination to all. Technology is approached as neutral, a tool to be used by health practitioners for good or bad. It is assumed that the overall goal is simply for more technology. A more measured approach to this subject is needed to understand what global information/communication technologies offer the health sector. For low-income countries, research needs to be tied much closer to analysis of existing capacity, as well as capacity building needs and strategies. How technologies may be used by different stakeholders, and for what ends, also requires detailed exploration.

The literature on the links between changing transportation technologies and health remains very limited and, in contrast to information technologies, tends to be negatively focused on infectious disease. Travel health is a well-established research area, and useful empirical analysis of the relationship between tourist/business travel and health is available. What is less well-understood is health within the broader context of migration, in general, which encompasses the particularly problematic data surrounding refugees, displaced populations and undocumented migrants. Despite the political sensitivities attached to this subject area, the health issues raised by highly mobile populations need far greater study. The

appropriateness of national and international regulations and practices at ports of entry, for example, has received little attention.

POTENTIAL RESEARCH ON GLOBAL TECHNOLOGICAL CHANGE AND HEALTH

To what degree is technological globalization, including health and non-health related technologies, occurring?

- To study the extent to which information/communication and transportation technologies are being globalized
- To understand the links between technological globalization and the mobility of people, goods and services, knowledge and information etc.
- To improve documentation of trends in mobility among undocumented migrants, refugees and displaced populations
- To document changing patterns of genetic admixture and link to globalization of human populations
- To identify patterns of local variability within and across countries of access to changing technologies, including any patterns of inequitable access

What positive and negative effects is technological globalization having (or expected to have) on the health of particular individuals and groups?

- To explore what specific information/communication technologies can improve health service provision in low capacity countries and vulnerable population groups and in what ways (e.g. health information, training, surveillance and monitoring)
- To identify how various stakeholders (e.g. patients groups, health professionals) are using the technology to represent their interests
- To understand how global marketing through information/communication technologies can influence the health-seeking behaviour of selected populations (e.g. tobacco, alcohol)
- To document the association between changing transportation technologies, human migration and the changing health status of migrant and host populations
- To study the implications of changing transport technologies on the mobility of other health-related entities (e.g. food, animals, pharmaceuticals)
- To review existing public health regulations in light of changing transport technologies

What policies are needed to optimise the benefits, and mitigate the costs, of technological globalization for health?

- To describe the need for regulating the use of information/communication information in the health sector (e.g. internet pharmaceutical sales)
- To provide public health inputs into policies aimed at facilitating technological globalization (e.g. fast track immigration by “smart cards”)
- To understand how intellectual property law under the WIPO and TRIPS may impact on low-income countries seeking greater access to new technologies
- To review health needs assessments by aid agencies to include the potential benefits and costs of new technologies

For strengthening research on **global economic change and health**, the key task revolves around the need to demonstrate impact on health of macro level economic changes in the form of macroeconomic reform, changing market structures, or changing patterns of ownership and behaviour by economic entities increasingly operating across national boundaries. The review shows growing empirical research on the macro level changes occurring, in general, and in health-related industries (e.g. pharmaceuticals, tobacco, food) more specifically. There is also substantial research on microlevel changes to health status

worldwide, both nationally and regionally. Much of this research is linked to specific policies and changes associated with globalization, although this link is not always specifically made. This research is useful for documenting local impacts of international health policies, and could be usefully drawn upon to link to wider global changes. Some of this work is starting to be brought together across regions (e.g. People's Health Assembly) where local experiences are being shared. Research that could help in developing proactive policies for the South on the trade of goods and services with harmful effects on health as well as those with potential health and economic benefits (Baris and McLeod 2000).

The weakest area of research lies in linking the macro and micro levels together in such a way as to provide evidence that the macrolevel processes of globalization are having impacts on health at the microlevel (individuals and population groups). The link between macro level change and trends in health status, however, is not often made directly. This cause-effect link is beginning to be addressed, but it is challenged by the paucity of data that allows global (transnational) patterns and trends to be observed. Disaggregation of national health data may be one alternative. The collection of data from a truly global perspective is another. In addition, such data may be unavailable because of the illegality of activities (e.g. illicit drug trade, undocumented migration). There is wide scope for case studies to achieve this, focusing on selected countries, industries, population groups across countries (e.g. socioeconomic status, ethnicity), gender or age.

The development of research of this kind, however, is faced with a number of challenges outlined by various authors. Of particular note is the difficulty of studying global or transnational trends from data that is nationally-defined. Disaggregation and reaggregation of data is needed to reveal the transnational trends in health occurring. Specific population groups within and across countries increasingly share health conditions as a consequence of globalization processes, and these need much more documentation. National aggregates, and regional and international data based on those aggregates, continue to be used yet obscure. The availability of such data can then lead to case studies of specific population groups that do not conform to national aggregates (e.g. ethnic groups, gender, socioeconomic strata, age).

The existing literature is strong on defining and measuring globalization at the macrolevel although this substantial body of work is multidisciplinary and highly contested. Nonetheless, health research would benefit much from drawing on the key studies of globalization that seek to empirically measure what is quantitatively and qualitatively distinct about it. Indeed, some criticize official statistics and their interpretation as tending to obscure or neglect the social consequences of global economic change. Others call for a fundamental rethinking of the epistemology and methodology for globalization and health research as a starting point for new research.

- Vandemoortele (2000) brings together current data on globalization and income inequality to demonstrate under investment in basic social services including health. He argues that, without universal access to social services, children's rights cannot be guaranteed and poverty will not be reduced. The paper draws on various surveys to show that markets do not, on their own, yield equitable outcomes. Importantly, the paper notes that use of national averages leads to misleading interpretations of social progress, and that analysis needs to avoid the "fallacy of the mean". This results in interpreting incorrectly global trends in poverty and their implications for economic growth. This paper is a useful example of how existing datasets might be reinterpreted to reveal new insights into global trends in social policy and services.
- Mapping of global patterns and trends in health and disease over time is an important task. This task could draw on a multitude of techniques and tools used in medical geography. The growing field of the geography of health offers perspectives and methods for mapping globalization processes and their impacts on health. The use of

Geographical Information Systems (GIS), for example, has numerous applications. Geographical Analysis Machine (GAM) is used in plotting rare diseases (with low numbers of cases) by allowing the use of disaggregated data and avoids the problem of dealing with administrative units (boundary free method) (Verhasselt 1993). A good example is the mapping of the HIV/AIDS pandemic which has found that cities play a key role in the spatial diffusion pattern (Woods 1988).

- Navarro (2000) presents empirical data from European experience (Sweden, Finland) to challenge the assumption that globalization and monetary integration is incongruous with pro-welfare and full-employment policies. A more broad ranging analysis of the linkages between neoliberalism and the welfare state is presented in Navarro (1998).
- Dyches and Rushing (1996) put forth a causal model that includes several macrolevel variables (e.g. world system position, level of economic development, national military expenditure) deemed relevant to understanding the health status of women on a world scale. They demonstrate both the macrolevel determinants of women's health status internationally, and the structure of inequality in the world. The shortfall of this analysis is its reliance on country level data and its focus on national aggregates, thus failing to identify and link subnational trends across countries.

POTENTIAL RESEARCH ON GLOBAL ECONOMIC CHANGE AND HEALTH

To what degree is economic globalisation, concerning both health-related and non health-related economic sectors, occurring?

- To review existing evidence of the extent to which globalisation is occurring in non health-related industries, capital markets, labour markets
- To analyse the extent to which there is a global restructuring of health-related industries (e.g. pharmaceuticals, medical supplies, biologicals, tobacco, alcohol, food, health services) including concentration of ownership, production and marketing practices etc.
- To compile comparative data on the volume and nature of trade in health services worldwide
- To create a database on flows of health personnel internationally
- To carry out detailed analysis over time of relevant multilateral trade agreements in terms of their membership, jurisdiction and authority over health matters, settlement of disputes
- To study the health sector lending policies of multilateral development banks
- To analyse the changing marketing strategies of major actors in health-related industries (e.g. tobacco)

What positive and negative effects is global economic change having (or expected to have) on health status and outcomes of particular individuals and population groups?

- To carry out health impact assessments of macroeconomic reforms in national and subnational contexts
- To compile trend data on public expenditure on health over pre and post financial crisis periods of adversely affected countries
- To document the health and safety standards of selected corporations in both health and non health-related industries
- To analyse whether TRIPS has led to stronger intellectual property protection in selected low-income countries in health-related industries notably pharmaceuticals, and whether this has affected national drug budgets, access to essential drugs, dissemination of health research
- To document the health implications of selected cases of dispute settlement where public health protection was cited (e.g. hormone beef, asbestos, GMOs)
- To document the onset of macroeconomic reform with public health expenditure and health status indicators for selected populations groups

What policies are needed to optimise the benefits, and mitigate the costs, of global economic change for health?

- To assess the adequacy of existing regulation/legislation to protect health against hazardous and unsafe goods and services, patient confidentiality, data protection, malpractice etc.
- To explore how health interests can be represented appropriately in global trade negotiations
- To document codes of conduct used in other sectors to influence the global practices of corporations that may be relevant to the health sector
- To explore innovative means of financing health sector aid amid globalisation (e.g. Tobin Tax)
- To review health care financing reforms and their appropriateness to meeting global health challenges
- To promote international cooperation on strengthening data on illicit economic activity
- To facilitate interdisciplinary exchanges between economic/trade and public health experts

The field of **global environmental change** is well-placed to make a strong empirical contribution to understanding health impacts. While not without contention regarding the nature, pace, causes and consequences of global environmental change, the field's strengths are its holistic approach to the changes taking place and the methodological tools it draws upon from various disciplines. At present, much of this is quantitative because of its roots in epidemiology and environmental sciences. It is also perhaps most advanced in linking macro level changes to micro level health effects. This is beginning to broaden to include more qualitative analysis as explanations of human-induced changes are sought in terms of global power dynamics, social inequities and economic restructuring. Research to bring closer together these strands of research would offer compelling evidence for informing policy change.

**POTENTIAL RESEARCH ON
GLOBAL ENVIRONMENTAL CHANGE AND HEALTH**

To what extent is global environmental change occurring?

- To document changing patterns of health and disease as evidence of global environmental change
- To draw together linkages between data on global environmental and sociopolitical change

What positive and negative effects is global environmental change having (or expected to have) on health status and outcomes of particular individuals and population groups?

- To undertake detailed analysis of specific health conditions that are demonstrating changing epidemiological patterns due to global environmental change
- To develop predictive models of what and when global climatological change will impact on health
- To study how the biology of selected disease agents may be changing under conditions of global environmental change (e.g. vibrio cholerae).

What policies are needed to optimise the benefits, and mitigate the costs, of global environmental change for health?

- To maintain strong public health inputs into negotiations on global environmental agreements
- To strengthen surveillance systems that would spot emergence or resurgence of infectious diseases or vectors that carry them
- To improve access to prevention and treatment for infectious disease affected by global environmental change
- To support measures that will reduce contributors to global environmental change notably global warming

- To strengthen environmental protection standards for TNCs and other cross border polluters
- To provide training in low-income countries for surveillance and monitoring of factors related to global environmental change and health
- To strengthen interdisciplinary exchanges among the environmental and social sciences

There is much scope for strengthening health research on the **political dimensions of global change**. This begins with an appreciation of the central importance of power dynamics to the impacts of globalization and health, and the need to integrate political analysis into orthodox public health perspectives on the determinants of health. The work of Paul Farmer (1996) is a useful starting point for rethinking traditional theories on the social production of disease. He argues, for example, for a critical perspective on emerging infections that asks how large-scale social forces influence unequally positioned individuals in increasingly interconnected populations, and whether dominant analytic frameworks actually obscure such features. From this perspective, he poses research questions that stem from a reexamination of disease emergence, demanding close collaboration between basic scientists, clinicians, epidemiologists and social scientists.

From this critical perspective, a major task would then be to document the changing configuration of actors and their interests amidst globalization trends. In general, it is believed that power is becoming more concentrated in fewer hands, at the expense of democracy and social justice. However, this trend needs to be empirically demonstrated through broad ranging analysis of specific health organizations, from the local to the global levels.

In seeking to identify appropriate and effective governance mechanisms to address global health issues, this is an overarching area of work that touches upon all areas of health policy described in this paper. The fields of development studies, international relations/politics, organizational studies and social policy offer rich but largely untapped veins of theoretical perspectives and empirical tools for describing the changing structure and process of power and authority amidst globalization. They also offer a broad basis for more normative analysis of what should be the forms of governance to effectively tackle health issues in the context of globalization.

POTENTIAL RESEARCH ON GLOBAL POLITICAL CHANGE AND HEALTH

To what extent is globalization affecting the way in which health policy is/needs to be carried out?

- To determine the extent to which health-related public and private sector actors/interests are changing as a result of globalisation in terms of their relative power and influence over policy making
- To develop an agreed typology and political map of actors in the health sector and around specific health issue areas linking the global to local levels
- To review how globalisation is addressed by the existing mandates of health-related international and regional organizations

How are existing mechanisms of governance influencing the positive and negative effects of globalisation on the health of particular individuals and groups?

- To assess existing health governance mechanisms in terms of their achievement of accountable, transparent, participatory and democratic (i.e. good government) decision making structures and processes

- To undertake case studies of specific global health campaigns (e.g. breastmilk substitutes, reproductive health, malaria, tuberculosis) in terms of their governance
- To analyse specific partnerships between public and private sector actors around key global priorities including their links to local public-private actors
- To comparatively survey national regulation of key health “flows” (e.g. pharmaceuticals, pollution)
- To comparatively survey existing standards of health and safety protection, environmental protection standards in selected national contexts, and compliance with them by TNCs
- To assess the extent to which there is a global civil society emerging in health and its role in policy making around key health issues
- To carry out organizational analysis of key health organizations contributing to governance of global health, and to identify examples of good practice
- To understand whether the diversity of health actors is contributing to increased/decreased resources, and clearer/less clear priority setting
- To identify the extent that there of a “race to the bottom” in social welfare policies as a result of global economic competition?

What policies are needed to create global governance for health that would optimise the benefits, and mitigate the costs, of globalization?

- To define what forms of global health governance (i.e. regulations, laws) are needed in relation to the changing role of the state
- To collaborate with supporters of global social policy/public goods to define the underlying rationale for global governance (e.g. global "social contract")
- To identify whom should participate in global health governance and their relative rights and responsibilities
- To explore the required links, mandates, relative resources and authority among institutional mechanisms at different levels of governance
- To explore the balance between formal and informal mechanisms in governance for global health
- To support the articulation and application of codes of conduct to protect health rights from global market failures

APPENDIX A: RESEARCH PROGRAMMES ON GLOBALISATION AND HEALTH

The following is a listing of major research programmes that substantively address globalisation and health. Many other programmes are, of course, conducting research that is relevant to these themes, but the analysis of globalisation and health is a key focus for those listed below. The list includes academic institutions and think tanks but excludes activist organisations that do not undertake, as their primary activity, empirical research. This distinction is not always clear cut (e.g. International Forum on Globalisation) and invariably there may be a difference of opinion between including and excluding certain organisations.

The listing was compiled in conjunction with the review of existing empirical research above, and so its composition reflects the biases outlined in the Introduction above. These sources were supplemented by extensive internet searches that permutated the terms global, globalisation and globalization with health and research. Searches were conducted during the week of 5-11 March 2001, using the Google search engine.

Centre on Globalization, Environmental Change and Health (CGECH), London School of Hygiene & Tropical Medicine, UK

Key contacts: David Bradley, Kelley Lee, Tony McMichael, Paul Wilkinson
Website: www.lshtm.ac.uk
Research areas: globalisation and infectious diseases, environmental change, tobacco control, global trade, global governance

Description:

The Centre on Globalisation, Environmental Change and Health (CGECH) at the London School of Hygiene and Tropical Medicine (LSHTM) is a cross-departmental initiative that brings together staff and students from a wide range of disciplines to contribute to the School's rapidly growing body of research and teaching on globalisation and health. The creation of the Centre comes at a time of substantial interest in globalisation processes and their actual and potential impacts on social and natural environments and, in turn, on human health. These processes include an emerging global economy, increasing trade and investment activities, changing demographic patterns and trends, large-scale environmental change (including global climate change), and globalising networks of communication and transportation technologies. There is a clear need to address our insufficient understanding of, and develop effective policy responses to, the complex implications of globalisation and global environmental change for human health. CGECH focuses on four closely related themes for which there are already a variety of activities in progress:

Outputs: Peer-reviewed scientific papers; co-editor of *Global Change and Human Health*, annual symposium, seminars and research meetings

Center for Health and the Global Environment, Harvard University, USA

Key contact: Paul Epstein
Website: www.med.harvard.edu/chge/

Research areas:

Description:

The Center was founded in 1996 at the Harvard Medical School to investigate and promote awareness of human health consequences of global environmental change. The Center also organises the Harvard Working Group on New and Resurgent Diseases

Methods:

Outputs: “Human Health and Global Environmental Change” course; *The Quarterly Review*; briefings to U.S. policy makers

Centre for the Study of Globalisation and Regionalisation, University of Warwick, UK

Key contact: Jan Aarte Scholte

Website: www.warwick.ac.uk/fac/soc/CSGR

Research areas:

Description:

The CSGR was created in 1997 as the largest centre in Europe dealing with the study of globalization and regionalization. The focus of its research agenda is the definition of globalization, its impact and the policy implications. Its aim is to provide a venue for new thinking on the relationship between the global and regional dimensions of political economy.

Methods:

The CSGR emphasise the need for clear definitions and measures of globalization. Globalization is understood as multi-dimensional (political, ideological, cultural, economic) and in two broad ways: (a) as the emergence of sequences and processes that are increasingly unhindered by territorial or jurisdictional barriers

Outputs:

Children in a Globalizing World Project, UNICEF

Key contact: Eva Jespersen

Website: www.unicef.org

Research areas: impact on child health and welfare of globalisation

Outputs:

Centre for Food Policy, Thames-Valley University, UK

Key contact: Tim Lang

Website: www.tvu.ac.uk/expertise/research_centres.html

Foreign Policy Centre, UK

Key contact: Mark Leonard, Director

Website: www.fpc.org.uk

Research areas:

Six themes on new rules for foreign policy; security; new global economy; reforming international cooperation; future of diplomacy; identity

Description:

The Foreign Policy Centre is an independent thinktank committed to developing innovative thinking and effective solutions for an increasingly interdependent world. It was launched in 1998 and its work includes in-house research programmes on cross-cutting international issues. Health fits within a number of the centre's six themes notably the changing nature of security due to nonstate threats that are blurring the division between domestic and foreign. Such "internestic" issues cut across the boundaries of states, regions and departments of state.

Methods:

The FPC seeks to develop "a new methodology which is different from traditional approaches to foreign policy", organised around desk officers monitoring specific geographical areas or government departments. Thinking is around major cross-cutting global issues.

Outputs:

Global Health Lecture Series, books and reports, conferences

Global Health Division, Epidemiology and Public Health, Yale University, USA

Key contacts:

Ilona Kickbusch, Kent Buse

Website:

<http://info.med.yale.edu/eph/html/divisions/ihd>

Research areas:

Areas of research interest are global governance for health; global public-private partnerships for health development; health and security; donor coordination and aid management; health literacy; health promotion; cultural determinants of health behaviour; violence and health; women's health; disability and international health policy

Description:

The division focuses on the international and transnational nature of health within the context of social, economic and political development. This multidisciplinary programme places emphasis on situation analysis, health needs and resource assessments, policy and strategic planning to promote health and prevent disease. Research applies the theoretical frameworks and methods of political science, political economy, anthropology and epidemiology to study health policies and institutions at the global, international, national and local levels. The research adopts a generally socioeconomic determinants approach to the understanding of public health.

Methods:

Methods from political science, political economy, anthropology and epidemiology

Outputs:

Global Public Goods Project, UNDP

Key contact:

Inge Kaul

Website:

www.undp.org

Research areas:

Description:

Outputs:

Global Public Goods for Health, WHO / Department of Health in Sustainable Development

Key contact:

David Woodward, SDE/HSD, WHO

Website: (in preparation)

Research areas:

case studies on (preliminary list): polio eradication; injuries/product safety; tuberculosis; tobacco control; public health workforce and infrastructure; drug resistance; basic health services; environment; food security; commercial knowledge; international law; International Health Regulations

Description:

The WHO project on Global Public Goods for Health forms a sectoral case study for UNDP's overall project on Global Public Goods. It is based on a series of subcontracted case studies (as listed above), together with a review of issues related to GPGs viewed from a health perspective by HSD.

Methods:

Case studies will review existing literature in their respective areas from a Global Public Goods perspective, on the basis of a discussion paper on general issues relating to GPGs for Health prepared by HSD, covering economic, financial and political aspects. Recurrent issues from the case studies will be drawn together, and cross-cutting themes (eg gender dimensions, equity, human rights, implications for health systems, etc) will be addressed in consultation with case study authors and others; and policy conclusions will be drawn on this basis.

Outputs:

1. WHO book on Global Public Goods for Health, including all case studies
2. Chapter on Health in forthcoming UNDP book on Global Public Goods.

Globalism and Social Policy Programme (GASPP), University of Sheffield/STAKES, UK/Finland

Key contacts: Meri Koivusalo, Bob Deacon

Website: www.stakes.fi/gaspp

Research areas:

Implications of WTO and trade policy for health; health implications of EU policies; impact of international organizations and INGOs on social policy; reform of global governance in social sphere

Description:

A 5-year (1997-2002) research, advisory, education and public information programme concerned with the globalization of social policy and the social content of global politics. Its research programme includes the implications of multilateral and regional trade agreements for human health. The aim of GASPP is to contribute to understanding of the political processes at the global and supranational level shaping social policy within and between countries; contribute to the improvement in the practice of international organizations, aid agencies, development organizations, consultancy firms and INGOs; and contribute to the dialogue concerning the nature and regulation of universal human and social rights.

Outputs: Peer reviewed scientific papers; editing of *Global Social Policy*; discussion papers,

Globalization and Health Research Programme Proposal, University of Saskatchewan, Canada

Key contact: Ronald Labonte, Professor, Community Health and Epidemiology, University of Saskatchewan

Website:

Research areas: global trade, multilateral trade agreements, health determinants and outcomes

Description:

A proposed research programme of a number of studies in three focal areas: policy-analytical studies, population health studies and sector specific studies. Phase I (March 2001-March 2002) will be a series of developmental studies from each of the focal areas. Phase II (March 2002 onwards) will be additional and more detailed studies. The three main research questions are: (a) what do current trade and investment agreements permit to change, what has changed, and how might these changes impact on four health determining conditions (social and environmental conditions, government regulation, trade in health-damaging substances, and changes in provision of and access to health promoting public services); (b) How actually have health outcomes and the four health-determining conditions varied by changes in international trade and investment volumes and liberalisation policy, both in Canada and internationally; and (c) what are the trade and investment-related effects on the physical environment, the ecological footprint and health outcomes in Canada, among its major trading partners and internationally?

Methods:

The primary research method will be analysis of secondary data including multilateral trade agreements (i.e. GATS, TRIPS, NAFTA); trade dispute decisions of NAFTA and WTO; disputes and negotiations in progress; government reports; and commercial information sources; and NAFTA and WTO documentation. This will be supplemented by selected interviews with trade, health and environment policy officials; Canadian government officials at federal and provincial levels; and WHO, WTO and NAFTA staff.

Outputs:

The programme will produce two main reports: (a) summary of implications of Canada's NAFTA and WTO obligations for regulatory and policy capacity to address health-determining conditions; and (b) report on coherence between multilateral trade obligations and goals of international health bodies including options for Canada to advance international health goals through integration of trade and health policy.

Institute for Global Health, University of California, San Francisco, USA

Key contact: Richard Feachem

Website: <http://www.epibiostat.ucsf.edu/igh/index.html>

Research areas: comparative, evidence-based health policy; vaccinology and immunization; reproductive health and HIV/AIDS; environment and health

Description:

Methods:

Outputs:

Institute on Globalization and the Human Condition, McMaster University, Canada

Key contact: Robert O'Brien

Website: www.humanities.mcmaster.ca/~global/global.htm

Research areas:

Description:

The Institute was created in 1998 to address the subject of globalisation and the human condition as a strategic area of research. The Institute brings together about 30 scholars primarily from the social sciences and humanities. It includes a "theme school" on Globalisation, Social Change and the Human Experience that brings together scholars and students around this theme. Key research questions are what is the continued significance of the nation-state, are the effects of globalisation helpful or harmful, and is globalisation Americanisation?

Methods:

Outputs: Working papers

International Forum on Globalization, San Francisco, USA

Key contact: Jerry Mander, Director

Website: www.ifg.org

Research areas:

Description:

Methods:

Outputs:

Liu Centre for the Study of Global Issues, University of British Columbia, Canada

Key contact: Mark Zacher

Website: www.liucentre.ubc.ca

Research areas:

Description:

The programme of work reflects the rapidly changing nature of the challenges faced by societies and governments worldwide. States and international organizations created and structured in an earlier era now find themselves ill-equipped to respond effectively. The Liu Centre was launched on the premise that scholars and practitioners, working together in a collaborative interdisciplinary fashion, are able to produce fresh, coherent policy-relevant studies of value to the governance function. Global phenomenon assume a number of different forms, more often than not interrelated. Each is the consequence of recent human activity; each now influences humankind in unprecedented fashion. The attention of the Liu Centre is focused on the causative factors of that influence, not upon the products.

Methods:

Outputs: Seminar series, press releases

Program on Health Effects of Global Environmental Change, Johns Hopkins University, USA

Key contacts: Jonathan Patz, Hugh Ellis, Gregory Glass

Website: www.jhsph.edu/globalchange/

Research areas: air pollution and health; mortality due to heat waves; flooding and waterborne diseases; vector-borne diseases; marine ecosystems; human population displacement; deforestation and health; El Nino and climate change

Description:

The programme is dedicated to the scientific discovery and application of new knowledge pertaining to the human health risks posed by global-wide environmental degradation and climatic change. It draws on a multidisciplinary group of researchers including health professionals, climatologists, physical scientists, ecologists, social scientists and risk analysts to develop new models for studying the relationships between complex ecological systems and human health.

Methods:

Geographic Information Systems (GIS) and satellite remote sensing; marine sampling; epidemiological methods; biostatistical methods and mathematical modelling; historical analysis; computer simulation;

Outputs: Peer reviewed scientific papers, co-editing of *Global Change and Human Health*

Society for International Development. Italy

Key contact: Wendy Harcourt

Website: www.sidint.org

Research areas: five thematic themes of sustainable livelihoods; women's empowerment for economic and social justice; democratic approaches to national governance; interational relations, global values and global governance; and strengthening civil society in post-conflict situations.

Description:

SID was created in 1957 as a global network of individuals and institutions concerned with development that is participatory, pluralistic and sustainable. SID has over 6000 members in 115 countries and 75 local chapters. The organisation takes a holistic, multidisciplinary and multisectoral approach to development and social change. The theme of international relations, global values and global governance is most relevant to the theme of globalisation and health. It is based on the premise that existing global institutions do not provide an adequate structure of global governance to address the challenges of globalisation and social justice. New institutions will have to be created, while existing ones may require reform. What are the values that can guide this effort? What are the political opportunities to push this agenda? What does the idea of partnership between North and South mean?

Methods:

Outputs: *Development*; discussion papers; networking activities

International Organization for Migration, Research Unit

Key contact: Brian Gushulak
Gushulak@iom.int

Website: www.iom.int

Research areas: IOM service areas: assisted returns; counter-trafficking; migration health; movements; mass information; technical cooperation

Description:

Announced in February 2001, the Migration Policy Research Programme (MPRP) is designed to increase global understanding of migration issues and strengthen the capacity of governments to manage migration more effectively, to promote the positive aspects of migration and reduce irregular migration, particularly trafficking and exploitation of migrants, while enhancing the protection of migrants' rights. The MPRP will also strengthen IOM's research capacity and improve dialogue and regional and global information sharing amongst states.

Methods:

Outputs:

The IOM provides member states with technical and policy advice on international migration. It also publishes the journal *International Migration* and newsletters including *Migration and Health* and *Trafficking in Migrants*. A new Migration Research Series presents the findings of research projects managed by the IOM's Research Unit. The MPRP process will result in the production of policy guidelines addressed to specific migration problems, providing a tool to identify and solve real problems through a "best practice" approach.

Global Forum for Health Research

Key contact:

Website:

www.globalforumhealth.org

Research areas:

The Global Forum is currently facilitating analytical work on the burden of disease and health determinants; cost-effectiveness analysis and methods to assist resource allocation; resource flows analysis and monitoring progress in the 10/90 gap; a practical framework for priority setting.

Description:

The central objective of the Global Forum is to help correct the 10/90 gap, by which less than 10% of health research spending is devoted to diseases or conditions accounting for the global disease burden. Its specific objectives are to focus research efforts on diseases representing the heaviest burden on the world's health, improve the allocation of research funds and facilitate collaboration between the Forum's partners (policy-makers, aid agencies, foundations, NGOs, women's organizations, research institutions, private-sector companies and the media).

Methods:

Outputs:

The annual meeting of the Global Forum brings together a wide range of partners from around the world to discuss progress in helping to correct the 10/90 gap. It produces an annual report, *The 10/90 Report on Health Research*.

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