

ANNOUNCEMENT

WORKSHOP ANNOUNCEMENT

**High Level Training Course
Population-Development-Environment Case Studies**

Organized by
**Asian MetaCentre
for Population and Sustainable Development Analysis**

Date
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Venue
National University of Singapore, Singapore

Introduction

The original proposal for the establishment of an Asian MetaCentre for Population and Sustainable Development Analysis included as a key component the proposal of a series of in depth PDE (Population-Development-Environment) case studies following the general approach of earlier IIASA PDE-studies in Africa (Mauritius, Cape Verde, Namibia, Botswana and Mozambique) and Latin America (Yucatan peninsula). This component of the proposal had been positively evaluated as a key activity of the MetaCentre in the original review process and in discussions between the Wellcome Trust and the principal investigators a strategy has been designed in which the Wellcome Trust initially funded a preparatory phase during which contacts with local research teams in different Asian countries should be deepened or newly established and a number of proposals for PDE case studies should be jointly developed.

This preparatory phase started with an APN (Asian Population Network) seminar on "Methods of Population-Environment Analysis" in Penang, Malaysia in April 2000. This seminar brought some of the world's leading scientists in that field and a number of Asian researchers interested in the topic together. A selection of the papers presented in Penang is scheduled for publication in a Special Supplement of Population and Development Review (entitled: "Population and Environment: Methods of Analysis", editors: W. Lutz, A. Prskawetz and W. Sanderson) with individual papers currently under in depth review. Several of the participants in this seminar and a few additional scientists who expressed interested in conducting PDE case studies were then invited for a two week intensive training workshop at Chulalongkorn University in Bangkok in November 2000. During this workshop participants were introduced to the tools of interdisciplinary systems analysis (using the software Vensim) and were encouraged to develop specific study designs for PDE in depth case studies in their specific region of analysis. Six teams developed proposals for case studies in India (two teams), China, Indonesia, Thailand and the Philippines.

These six case studies are submitted to the Wellcome Trust as a package of six individual proposals plus one proposal for co-ordination, scientific support and comparison. This structure of the proposal will allow the Wellcome Trust to reject individual case studies (if deemed inappropriate) without endangering the whole project of comparative Asian PDE analysis. As will be outlined below, the proposed case studies all follow variations of a general conceptual framework with specific adjustments made to the specific local research priorities. Since incompatibility of approaches, methods and variables used in the numerous PDE studies conducted by teams around the world is one of the main reasons for the lack of satisfactory progress in the field of population and environment analysis, it is hoped that this research design will make a significant contribution to the more general understanding of these complex interrelationships in addition to serving the functions of location specific analysis and capacity building.

Variations of a Common PDE Approach

The basic approach of the past six PDE studies in Africa and Latin America and the proposed six studies in Asia starts with the fundamental understanding that population and environment are not separate entities that can be seen independently or even in opposition to each other (as is the approach of many especially economic studies) but that the human

population is an integral part of nature, completely subordinate to the laws of nature (even in the man made environment and infrastructure called development) and at every stage dependent on functioning life support systems. There is no human development without the air to breathe, without sufficient water and without fertile land. Human populations are increasingly influencing the environment. But their health, longevity and well being also depends crucially on environmental factors. For this reason the chosen approach is best described by three concentric circles (see Figure 1) in which the human population (P), whose quality of life is our major point of interest and who is also the sole agent of economic change and the primary agent of environmental change is at the centre. It is surrounded by the man made infrastructure, institutions, markets etc. that we call development (D), but all human life and all human activities are at every point embedded in the laws of nature or what we call the environment (E). Following a tradition that ranges from the presocratic Greek philosopher Anaximander (600 B.C. in Miletus speaking about the four elements) to the chapters of the Earth Charter at the Rio 92 Earth Summit, the environmental aspects can be meaningfully grouped into categories: air, water, earth (land) and fire (energy). An additional aspect discussed in Rio but not by Anaximander is biodiversity.

PDE in depth case studies can study the interactions of population, mediated by the economy and other aspects of development, to one or several of these environmental aspects. Depending on the specific setting chosen, certain environmental factors seem to be more relevant than others in terms of their long term impacts on human quality of life and other possible sustainable development criteria. The Mauritius study, for instance, mostly studied water and land with some consideration of energy and biodiversity, but decided to completely leave out air pollution because, due to the strong winds on this small island, it simply is not an issue (at least on an island scale). In contrast to this, e.g. in the proposed case study on Bangkok air pollution is a key issue while the quantity of water (to be distinguished from health relevant water pollution) seems to be of lower urgency.

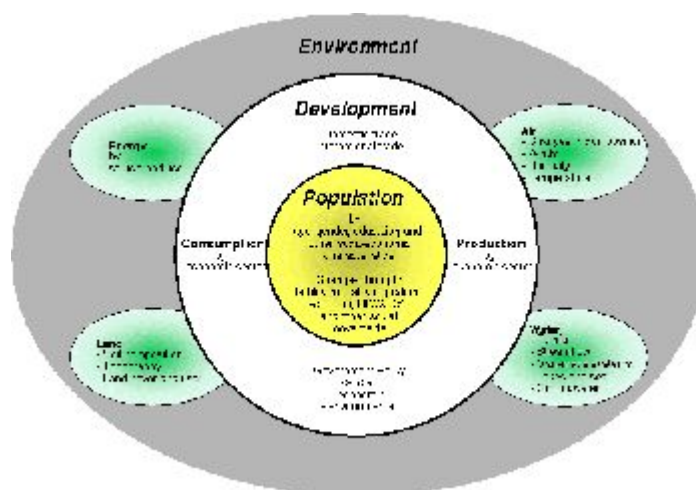


Figure 1: The PDE-Approach
 (Click on the figure for enlarged version of Figure 1, Acrobat Reader required)

In terms of the outline given in Figure 1 all of the proposed projects, can be viewed as certain segments of this full circle. All of the studies do have a common standard as far as

the population part is concerned. They all consider the population by age, sex and educational status and the all use multi-state cohort-component models to project the population along these three dimensions. This is already a quite sophisticated and important exercise in it own right. In certain case studies the population is further broken down by place of residence (district), labour force participation or ethnicity as deemed relevant for the specific research question. But for comparative purposes all six population modules can be collapsed into multi-state projections by age, sex and education (i.e. human capital projections).

As to the environmental aspects chosen and the assumed mechanisms of interaction between the population and the chosen environmental aspect the six proposed case studies fall into three categories: (A) three on urban air pollution (Bangkok, Jakarta and Delhi), (B) two on rural land degradation (Western China and Southern India) and (C) one on water (Cebu Island). In terms on segments cut out of the PDE circles in Figure 1 the first group of studies can be described as P-D (urban) -A (air pollution), the second as P-D (rural)-L (land degradation) and the third as P- D (urban and rural)-W (fresh water). While the population modules will be strictly comparable across all six studies, the environmental modules will only be comparable within each group. The economic “in between” will be partly comparable (e.g. productivity gains through higher human capital in all six cases; common structures of the urban and rural economic modules with Cebu having both elements). This specific combination of research designs should be seen as a (hopefully good and efficient) compromise between comparable research designs, variability in research questions, local priorities and interest of local research teams to conduct the studies.

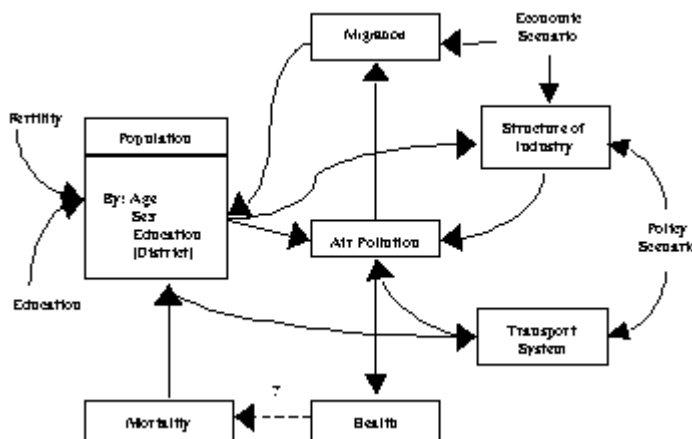


Figure 2: Urban Air Population Studies

(Click on the figure for enlarged version of Figure 2, Acrobat Reader required)

Figure 2 gives an outline of the basic interactions to be studied in the three urban air pollution studies (Bangkok, Jakarta, Delhi). The population module will consist of the population in certain districts of the cities by age, sex and educational group. It will change through exogenously assumed fertility trends (by district and education), exogenous educational transition trends and endogenous migration. To what degree mortality as being influenced by urban air pollution can be endogenised is a difficult

question that will be addressed during the course of the study. There also will be exogenous economic development scenarios influencing the structure of the economy and migration patterns as well as policy scenarios with direct consequences on transport systems (and associated pollution standards) as well as the structure of the economy. Air pollution which is being driven by emissions of the transport sector, emissions from industry and household level emissions is in turn assumed to influence migration patterns (higher educational groups moving to cleaner districts) as well as human health. In terms of modelling the intensity and the regional dissemination of certain pollutants (including fine particles) these models will link up to the well established methodology of IASA's transboundary air pollution project (the RAINS model). Although the original RAINS-Asia has been operating on a continental scale, recently the model has been expanded to allow to zoom into certain megacities (with applications to Seoul and Shanghai so far). It is proposed to use this model to also zoom into Bangkok, Jakarta and Delhi using the Rains model and linking it to the elaborate analysis of driving forces that constitute the main focus of the proposed studies. This linking of models of population related driving forces with the atmospheric modelling of the RAINS model will be unique and a significant contribution to both fields of modeling. (The co-ordinating project will include a budget for the researcher who has already done the Seoul RAINS application to do it for the three cities in this proposal). On another important but difficult and not yet well studied issue, namely the health and possible mortality impacts of air pollution, the co-ordinating project will also propose to include an experienced expert on environmental health to both make sure that the studies are up to the state of the art in the field and also determine what kind of additional empirical information (possibly surveys of school children in areas around given air quality monitoring stations) would make useful contributions toward better understanding the health impacts.

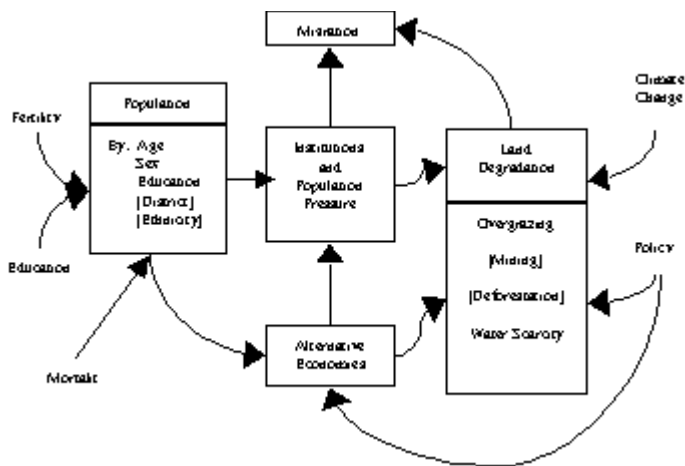


Figure 3: Rural Land Degradation Studies
 (Click on the figure for enlarged version of Figure 2, Acrobat Reader required)

Figure 3 gives the somewhat different model that will be applied to the two studies on rural land degradation. While the population module will be identical, only the migration components will be fully endogenized in the model. The key environment concern in these studies is land degradation which in both cases is caused by overgrazing and in China by mining as well, while in India deforestation all will play a role. The way in which

population variables will impact on land degradation depends on the specific institutional setting in the studied regions that determine the way in which population pressure expresses itself and on the way in which alternative and less land demanding industries can be developed in those districts. This can partly be seen as a function of the development of human capital and education. Land degradation will feed back to the population module through migration. At least in the Chinese case study it will be important to differentiate between the migration patterns of different ethnic groups in this context.

The analytical framework for the Cebu study will be a combination of the models outlined in figures 2 and 3 and will focus primarily on the water issue. More details about all the six studies can be seen from the individual study proposals.

Coordination, Co-operation and Comparison

To make sure that the joint conduct of these six proposed studies results in more than simply the sum of the individual studies the co-ordinating project will organize a series of three meetings (one each year) with the first two meetings being internal working meetings with some external experts giving advice and the last meeting would be on a broader scale communicating the results.

The Coordination project will also have two specific experts employed, one expert on the RAINS model to be stationed partly at IIASA and the three urban air pollution studies sites, and one expert on environmental health to be stationed at Chulalongkorn University.

This coordination project will also make sure that results are presented in compatible form and published together in a joint book.