

Geography and Development

The world by latitudes

Key Messages



Cross country approaches do not capture the full range of factors influencing development issues.



Basic concepts of physical geography, such as latitude, distance to sea and others are important explanatory aspects of development studies.



A physical geography based approach can complement cross country perspectives and can help to find solutions to development problems and application of these in different places.

A geography based approach to development topics

Development related topics are most commonly approached based on administrative divisions, such as nations or states/provinces. However, many factors forming the natural living conditions of human societies largely depend on the distance to the equator. Climate depends strongly on the distance to the equator and with it precipitation and temperature resulting in different vegetation types and suitability of land for agriculture.

The study by Kummu and Varis (2011) adds another perspective to development related topics by relating commonly used development indices to the latitude (i.e. distance to the equator) to emphasize the im-

portance of the geographic location of a place for development related topics. They include historical data to assess which regions have been under the highest pressure over the last five decades.

The authors conclude that country based approaches do not capture all aspects of development related topics. Basic concepts of physical geography, such as latitude, distance to sea and others are important explanatory aspects of development studies and should be taken into account when approaching issues of development and development research. A physical geography based approach reveals different aspects of development that can help when solutions to development problems are to be found and applied in different places.

Compound Development Indices

HDI – Human Development Index is based on: life expectancy, education and GDP

ANS – Adjusted Net Savings is based on: net national savings, education expenditure, energy, mineral, and net forest depletion, carbon dioxide and particulate emissions damage.

HPI – Happy Planet Index is based on: subjective life satisfaction, life expectancy and ecological footprint

ESI – Environment Sustainability Index is based on: natural resources, pollution levels (past and present), environmental management efforts, a society's capacity to improve its environmental performance over time, and contributions to protection of the global commons.

Latitudinal patterns of development indicators

Used indicators include: population and population density, share of urban population, infant mortality, life expectancy, median age, per capita GDP, cultivated area, water availability and additionally com-

pound development indices, such as Human Development Index (HDI), Happy Planet Index (HPI), Adjusted Net Savings (ANS), and Environment Sustainability Index (ESI).

To account for the variation of each of the indicators based on latitude, the study by Kummu and Varis

(2011) divides the globe into bands of 5° and calculates the mean value of each indicator for each band. The results show clear latitudinal patterns for the social indicators life expectancy, median age and infant mortality. Life expectancy and median age are lowest close to the equator and increasing with increasing distance.

Infant mortality shows the opposite behavior with the highest values close to the equator and decreasing values with increasing distance from the equator. The results for the compound development indices show very different patterns for the different indices. This reflects that they take very different perspectives on development and include different factors in their calculation.

Water availability and population density

The results for water availability and population are shown in the Figure. It reveals that most people live in the northern hemisphere accumulating about 50% of world population between the latitudes of 20°N and 40°N. In these areas renewable water resources are on the lower end and together with the high population densities this leads to very low water availability per capita. The historical data show

that this was already the case in the 1960s. Population growth was highest in this area over the last five decades and has therefore aggravated this trend. Additionally, this shows that pressure on water resources is highest in these highly populated areas.

Extending the view of global development patterns

The study shows clearly that the tropical regions are among the most disadvantaged regarding social and economical development. Regions of different latitudes are facing different challenges that are at least partially related to their geographic location. The resulting differences in climate, vegetation and other environmental factors need to be taken into account independently from national borders.

BASED ON THE PAPER

Kummu, M., Varis, O., 2011, The world by latitudes: A global analysis of human population, development level and environment across the north-south axis over the past half century, *Applied Geography* 31 (2): 495-507

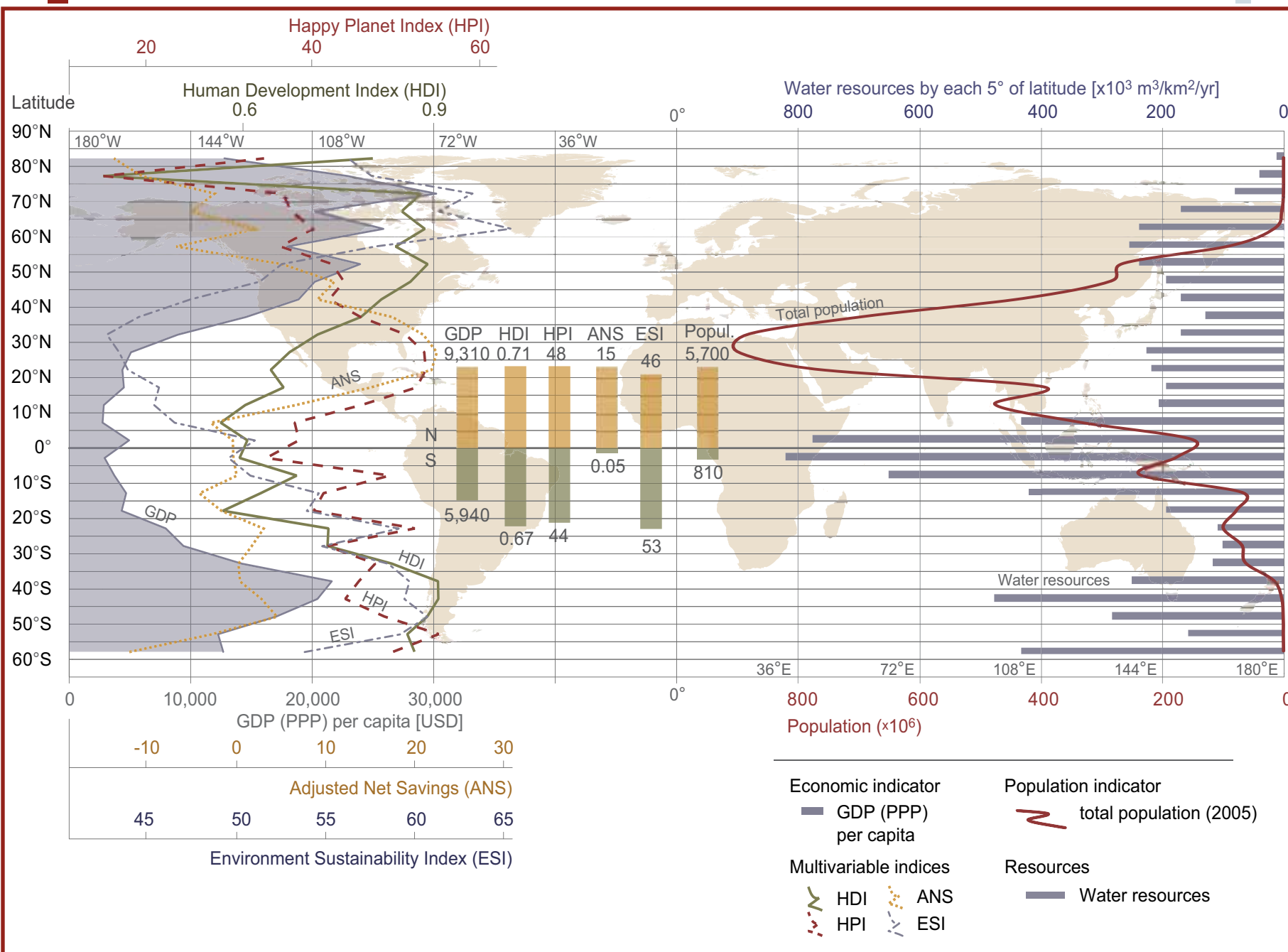


Figure (adapted from Kummu and Varis, 2011): Latitudinal distribution of renewable water resources and population (right) and economic indicator (GDP) and multivariable indices (HDI, HPI, ANS, ESI) (left).



IMPRESSUM

Summary by Anna Schürkmann

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The Global Water System Project seeks to answer the fundamental and multi-faceted question:

How are humans changing the global water cycle, the associated biogeochemical cycles, and the biological components of the global water system and what are the social feedbacks arising from these changes?

GWSP is a joint project of the four Global Environmental Change Programmes: DIVERSITAS, the international programme of biodiversity science, the International Geosphere-Biosphere Programme (IGBP), the International Human Dimensions Programme on Global Environmental Change (IHDP) and the World Climate Research Programme (WCRP).

