

Short communication

Human development index adjusted for environmental indicators: case study in one Egyptian village

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مَنَسَب التنمية البشرية المصحَّح وفقاً للمؤشرات البيئية: دراسة حالة في قرية بمحافظة الإسكندرية
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الخلاصة: إن تقرير التنمية البشرية في مصر لا يأخذ في الحسبان تأثير البيئة على مؤشرات التنمية البشرية. وقد أجرت الباحثة دراسة حالة في قرية بحى المنتزه في محافظة الإسكندرية، بمصر، واستخدمت المؤشرات البيئية التالية لحساب مَنَسَب التنمية البشرية: إمكانية الحصول على المياه المأمونة، وإمكانية الحصول على خدمات الإصحاح، والبيئة المحيطة بالمنزل. وبيَّنت الدراسة أن مَنَسَب التنمية البشرية لهذه القرية قد انخفض من 0.622 إلى 0.595 بعد تعديله وفقاً للعوامل البيئية.

ABSTRACT The Egypt Human Development Report 2003 does not take account of the impact of the environment on human development indicators. A case study was made in one village in El-Montaza district, Alexandria governorate, Egypt. The environmental indicators used for calculating the human development index were access to safe water, access to sanitation and environment surrounding the house. The human development index for this village decreased from 0.622 to 0.595 after adjustment for environmental factors.

L'indice de développement humain ajusté en fonction d'indicateurs environnementaux : étude de cas dans un village égyptien

RÉSUMÉ Le Rapport sur le développement humain en Égypte de 2003 ne prend pas en compte l'impact de l'environnement sur les indicateurs du développement humain. Une étude de cas a été réalisée dans un village du district de Montaza, Gouvernorat d'Alexandrie (Égypte). Les indicateurs environnementaux utilisés dans le calcul de l'indice de développement humain sont les suivants : l'accès à l'eau saine, l'accès à l'assainissement et l'environnement immédiat des habitations. L'indice de développement humain pour ce village a diminué, passant de 0,622 à 0,595 après ajustement en fonction des facteurs d'environnement.

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Introduction

The *Egypt National Human Development Report 2003* is the seventh in the series issued since 1994 by the Institute of National Planning in collaboration with the United Nations Development Programme (UNDP) [1]. The methodology, concepts, and indicators of these reports have been continuously and steadily adapted to the nature and condition of Egyptian society through the valuable contributions and efforts of national and international specialists in human development. Using the same methodology and indicators, Alexandria governorate, in collaboration with the UNDP, the Ministry of Local Development and the Organization of Reconstruction and Development of the Egyptian Village issued the *Alexandria Human Development Report 2003* [2].

However, neither these human development reports utilize any indicators that measure the impact of a poor environment on human development indicators. We believe this leads to a bias in the structure of the human development indicators [2].

El-Prince southern village is located in El-Montaza district of Alexandria governorate. It was selected as a case study to develop its human development indicators and to recalculate the human development index (HDI) adjusted for relevant environmental factors.

Methods

The data for El-Prince village were collected by filling precoded questionnaires through house-to-house surveys in all 349 houses in the village during 2002–03.

The precoded questionnaire sheet included information about the family and the house, such as family size, number of rooms per house, dwelling type, water sup-

ply, type of toilet, wastewater disposal and solid waste disposal.

Human development index

Standard methods were used for calculating the HDI, which is a simple average of 3 indicators: *life expectancy at birth* (number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life); *adult illiteracy rate* (percentage of adults ages 15+ years who cannot, with understanding, read and write a short, simple statement about their everyday life); *gross domestic product (GPD) per capita* (GDP divided by mid-year population growth calculated from constant price GDP data in local currency) [5].

Environmental index

We calculated an environmental index using some important environmental indicators which affect the human development index: access to safe water, access to sanitation and environmental conditions surrounding the houses [3].

Three environmental indicators were defined:

- *Safe water.* A household is considered to have access to improve water supply, if it has sufficient amount of water for family use, at an affordable price, available to household members without being subject to extreme effort especially to women and children.
- *Sanitation.* A household is considered to have adequate access to sanitation if an excreta disposal system, either in the form of a private toilet or a public toilet shared with a reasonable number of people is available to household members.
- *Environmental context.* The environmental conditions surrounding the houses.

The environmental index was calculated by assuming that *safe water* represents 25% of the environmental indicators, *sanitation* (type of toilet) represents 25% of the environmental indicators and *environmental context* represents 50% of the environmental indicators. Thus the environmental index was calculated to be: $1/4$ (safe water indicator) + $1/4$ (sanitation indicator) + $1/2$ (environmental context indicator).

The adjusted HDI was calculated from the formula: $(\text{HDI} + \text{environmental index})/2$.

Results

Table 1 shows the distribution of households in El-Prince village according to the 3 environmental variables. From this we calculate:

- *Safe water indicator* = $(97.7-0.0)/(100-0.0) = 0.98$
- *Sanitation indicator* = $(99.4-0.0)/(100-0.0) = 0.99$
- *Environmental context indicator* = $(14.9-0.0)/(100-0.0) = 0.149$

From the logical weightings of the items, the environmental index is calculated to be: $1/4(0.98) + 1/4(0.99) + 1/2(0.149) = 0.245 + 0.248 + 0.037 = 0.568$.

Thus the adjusted human development index (including environmental indicators) for El-Prince village becomes: $(0.622 + 0.568)/2 = 1.19/2 = 0.595$.

This compares with the original human development index for El-Prince village of 0.622 [5].

Discussion

By adjusting the HDI using an environmental index, the HDI for El-Prince village

Table 1 Distribution of households in El-Prince village according to environmental variables [4]

Variable	No. of households (n = 349)	%
<i>Water supply</i>		
Tap water inside the house	324	92.8
Shared tap water	17	4.9
From neighbour	8	2.3
<i>Type of toilet</i>		
Eastern	248	71.1
European	86	24.6
Eastern and European	13	3.7
No sanitation facility	2	0.6
<i>Environmental context</i>		
Dry area	118	14.9
Morass or moor	153	19.3
Domestic waste water	99	12.5
Solid wastes	154	19.4
Animals and birds	214	27.0
Other	55	6.9

n = total number of households.

decreased from 0.622 to 0.595. This decrease of only 5% shows the link between the environmental indicators and the other indicators: education, longevity and GDP. It is expected that an increase in the previous indicators would improve the human environmental index, consequently improving the overall health of the people.

This case study highlights the importance of including environmental indicators when calculating the HDI.

References

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2. *Alexandria human development report 2003*. Cairo, Egypt, United Nations Development Programme, 2003.
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4. *Environmental demographical and hygiene survey report*. Alexandria, Egypt, High Institute of Public Health, 2003.
5. *World development indicators 2002*. Washington DC, USA, World Bank, 2002.

Note of appreciation

We would like to draw our readers' attention to the list of reviewers at the end of this issue. The scientific integrity and standard of the information disseminated through EMHJ depends greatly on the critical judgement of our reviewers. We would like to extend our sincere thanks and gratitude to them all for giving voluntarily of their time so willingly.