

Health impact assessment needs in south-east Asian countries

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Abstract A situation analysis was undertaken to assess impediments to health impact assessment (HIA) in the South-East Asia Region of WHO (SEARO). The countries of the region were assessed on the policy framework and procedures for HIA, existing infrastructure required to support HIA, the capacity for undertaking HIA, and the potential for intersectoral collaboration. The findings show that environmental impact assessment (EIA) is being used implicitly as a substitute for HIA, which is not explicitly or routinely conducted in virtually all countries of the Region. Therefore, policy, infrastructure, capacity, and intersectoral collaboration need strengthening for the routine implementation of HIA.

Keywords Environment; Environmental health; Health status; Development; Environmental monitoring; Public policy; Risk assessment; Cross-sectional studies; South-East Asia (*source: MeSH, NLM*).

Mots clés Environnement; Hygiène environnement; Etat sanitaire; Développement; Surveillance environnement; Politique gouvernementale; Evaluation risque; Etude section efficace; Asie Sud-Est (*source: MeSH, INSERM*).

Palabras clave Ambiente; Salud ambiental; Estado de salud; Desarrollo; Política social; Medición de riesgo; Estudios transversales; Asia Sudoriental (*fuentes: DeCS, BIREME*).

الكلمات المفتاحية: البيئة، صحة البيئة، الوضع الصحي، التنمية، التطور، الرصد البيئي، السياسة العامة، تقييم الخطر، دراسة مستعرضة، جنوب شرق آسيا (المصدر: رؤوس الموضوعات الطبية، المكتب الإقليمي لشرق المتوسط).

Bulletin of the World Health Organization 2003;81:439-443.

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يمكن الاطلاع على الملخص بالعربية على الصفحة ٤٤٣.

Introduction

Health is inextricably linked to the environment, which, in turn, is influenced by development projects. These projects have substantial benefits on the environment and the community. However, development projects are invariably accompanied by a range of unintended impacts on human health that can potentially amplify the pre-existing high prevalence of hazardous conditions in the countries of the South-East Asia Region of WHO (SEARO). Structurally, SEARO is one of the six administrative regions of WHO. It encompasses a population of almost 1.9 billion, spans several geographic zones, and comprises 10 Member States — namely, Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, and Thailand. Diversity is manifested both in literacy rate and in economic growth: not all countries have yet reached the target of 70% literacy for its population and the gross domestic product per capita varies from US\$ 1341 to US\$ 6810 purchasing parity power for the period 1975–99. Overall in the region, a significant burden of disease is associated with the environmental and occupational risk factors related to unsafe water, unsanitary conditions, and air and noise pollution produced as a result of development. *The World Health Report 2000: reducing risks, promoting healthy life* estimated this burden of disease to be approximately 1.6 million deaths and 44.8 million disability-adjusted life years in 2000 (1). Actual observations from the present survey show that 30–40 million cases of morbidity due to environmentally linked diseases in nine

countries of south-east Asia were annually reported for the period 1994–98.

Hence, to promote sustainable development, there is an urgent need to develop and apply a tool such as health impact assessment (HIA) that can inform policy-makers and decision-makers so they can help to maximize the benefits of development and minimize the negative impacts on health. Following the World Summit of the United Nations Conference on Environment and Development, and the creation of Agenda 21, each WHO region developed its own framework for implementing HIA. The WHO Regional Office for South-East Asia also addressed this issue during a multidisciplinary Regional Inter-country Consultation in 1999 (2). However, since then, the number of HIAs of development projects has not increased. Therefore, a systematic situation analysis in nine out of ten countries in SEARO was undertaken to explore which factors could be impeding the implementation of HIA.

Methods

A cross-sectional survey was conducted using a structured questionnaire to assess the specific components of HIA in Bangladesh, Bhutan, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, and Thailand to gather data for a cumulative period of five years ending with the year 2000. The questionnaire consisted of 56 questions and was administered either to environmental health scientists in their respective ministries or to private consultants in this area. Both

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quantitative and qualitative information were collected on each of the following four parameters: first, the existing policy framework and procedures; second, the existing institutional infrastructure; third, the capacity-building mechanisms for undertaking HIA of development projects; and fourth, the potential for intersectoral collaboration for successful HIA implementation.

To objectively review and rate each parameter, we used a set of indicator variables similar to the method of Morris Schaefer (3). The selection of indicator variables, shown in Box 1, was based on previous publications on HIA (4–8) (see also Table 1, available at www.who.int/bulletin). Briefly, each indicator variable was scored on a four-point scale as follows: 0 = no requirements met; 1 = few requirements met; 2 = some requirements met; and 3 = most requirements met. The indicator scores were aggregated using a simple arithmetic mean, thus assigning equal weights to all the indicators. The number of indicators was not evenly distributed per parameter or criteria; in such instances a matrix system was used to calculate the indicator score, which was then expressed as a fraction of 10 to enable a comparison of the parameters across the countries to be made.

The first parameter on existing policy and procedures was assessed on the following criteria: the presence of a National Environment and Health Action Plan (NEHAP) or Policy that addresses all environmental media; the availability of project guidelines for HIA within subsectors of the agriculture, energy, industry, and infrastructure sectors; and the presence and use of HIA and licensing procedures in the preparation of HIA reports.

The parameter of existing institutional infrastructure was assessed on the following three criteria: the presence of an environment-monitoring network and reference laboratories for monitoring all environmental media; the extent of a surveillance network for monitoring environmentally linked diseases; and the role of the government in such monitoring.

The parameter of capacity to undertake HIA was assessed on the following three criteria: the development of human resources through education and training; the existence of research institutes and the role played by them; and the outcome of research in terms of publications and activities to disseminate the research findings.

The parameter of potential for intersectoral collaboration in HIA was assessed on the following three criteria: the presence of central authorities or special task force for the coordination of HIA activities; the requirements for involvement of government and donor agencies, and the existence of public participation to induce stakeholder participation.

Results

For the purpose of comparison, the composite score on each parameter was broadly classified into a four-tiered system as follows: a score of 0–24% indicates that limited or no target indicators were met; 25–49% indicates that few target indicators were met; 50–74% means that some target indicators were met, and 75–100% indicates that most target indicators were met. The summary scores for each of the four parameters are pictorially presented in Fig. 1.

On the basis of the four-tiered score for policy framework and procedures for HIA, the countries could be broadly categorized into three classes. Indonesia, Sri Lanka and

Box 1. Summary of indicators for assessing health impact assessment (HIA) in the countries of the South-East Asia Region

Parameter: existing policy framework and procedures

- National plan: policies detailed in a national environmental health plan
- Project guidelines: project size requirements within the agricultural, industry–energy (I&E), and infrastructure sectors
- Implementation: procedures followed in HIA
- Licensing: licensing procedures for parties to prepare HIA reports

Parameter: institutional infrastructure

- Environment-monitoring network: presence of fixed, mobile, and reference laboratories at the central, peripheral, and intermediate levels for each medium (air, water, noise, and food)
- Disease surveillance network: presence of surveillance units and laboratories at the central, peripheral, and intermediate levels for each medium (air, water, noise, and food)
- Role of government: presence of government agencies at the central, peripheral, and intermediate levels for monitoring each medium (air, water, noise, and food)

Parameter: capacity building mechanisms for HIA of development projects

- Education: coverage in educational curricula
- Research: research in the areas of epidemiology, quantitative risk assessment, and environmental monitoring
- Training: training programmes
- Trained manpower: personnel trained and engaged in HIA
- Research outcome: presence of publications and dissemination activities

Parameter: potential for intersectoral collaboration for successful HIA implementation

- Central authority: presence of a central authority and/or special task force
- Role of government: functions carried out by government agencies in HIA
- Role of donors: involvement of donors
- Participatory methods: methods to induce stakeholder participation

Thailand, exemplified one type, in which some criteria relating to HIA policies and procedures were met. Another type was exemplified by Bangladesh, India, and Nepal, where few criteria on this parameter were met. Bhutan, Maldives, and Myanmar represented a third category, where limited or no criteria on the policy were met.

Using the composite score for infrastructure for HIA, only India and Indonesia met some criteria and in almost all of the remaining countries only a few criteria were met. In Bhutan, limited criteria for this parameter were met.

Five of the nine countries — namely India, Indonesia, Myanmar, Sri Lanka, and Thailand — met some criteria in the capacity to conduct HIA, whereas in Bangladesh, Maldives, and Nepal only a few criteria were met. Finally, in Bhutan, limited criteria were met in its ability to undertake HIA.

Interestingly, despite the variation in the preceding parameters, with respect to the potential for intersectoral collaboration, most of the countries showed a high potential for intersectoral collaboration. Bangladesh, India, Indonesia, Nepal, Sri Lanka, and Thailand met most criteria of this parameter; Maldives and Myanmar met some criteria. However, in some countries there was an apparent duplication or redundancy for the task forces of the coordinating committee, and in others such committees were virtually absent at the central levels.

Fig. 1. Summary score for health impact assessment (HIA) for each country, based on four parameters. Each parameter was assessed by set criteria of Box 1 and a score computed as described under the Methods section of the text

Country	Parameter			
	Policy and procedures for HIA	Infrastructure for HIA	Capacity for HIA	Potential for intersectoral collaboration
Bangladesh				
Bhutan				
India				
Indonesia				
Maldives				
Myanmar				
Nepal				
Sri Lanka				
Thailand				

 0–25% of criteria met
  26–50% of criteria met
  51–75% of criteria met
  76–100% of criteria met

WHO 03.86

Discussion

The survey shows that development projects are associated with adverse outcomes in several countries of the region. For example, water supply projects, including dams and reservoir projects, have created favourable conditions for the breeding of disease vectors; road projects have increased the rate of road accidents and injuries and exposure of local communities to sexually transmitted diseases, and industrial wastewater discharge into rivers has affected the health of the people dependent on the river as a source of water. Environmental impact assessment (EIA) has been traditionally used to evaluate the impact of these development projects. However, most EIA procedures are confined to environmental impact at the project level and have a narrow focus on assessment of health impact, which generally does not fall within the scope of EIA (8). The HIA method provides an interdisciplinary tool that can be shared by policy-makers and implementers from

the health and non-health sectors alike to mitigate the negative health impact of development projects — be it at the policy, project, or programme levels (9). Although the concept of HIA was introduced in the region in 1999 (2), the limited number of HIAs of development projects in this region prompted us to investigate which of the following factors could be responsible for this state of affairs: weak or non-existent policy and procedures on health impact assessment; varying degrees of infrastructure; absence of capacity; and the lack of intersectoral mechanisms or lack of political commitment.

One of the major requirements for HIA is the existence of a firm policy on HIA. Ideally, such policies should encompass legislation, guidelines and procedures, environmental standards, a well-formulated action plan, and mechanisms for monitoring and implementing HIA. However, in almost all the countries that were surveyed, explicit legislation pertaining to HIA does not exist nor does the routine implementation of HIA occur. In some countries, HIA is

promoted as a part of EIA using the legislation, guidelines, and methods of EIA. For instance, the existence of a national plan of action or specially designated departments for conducting the health component within EIA is present in countries such as India, Indonesia, and Thailand, but not in others. Hence, formulating policy on HIA in countries will certainly provide an impetus for implementing HIA.

Existing policy without an enabling infrastructure has a limited application in HIA. An integrated and functioning network provides a ready source of hazard levels and associated diseases as parameters for HIA. In most SEARO Member States, surveillance of environmentally linked diseases and injuries is not routinely done unless they form part of an investigation into environmental outbreak. In the absence of baseline data on environmental hazards and health risks, it becomes plausible for developers and policy-makers alike to argue that development projects are not associated with a concomitant increase in disease burden. Thus, it is very important for countries to strengthen the infrastructure in order to facilitate the wider use of HIA in development projects.

Regular undertaking of HIA requires a critical capacity of trained manpower. Although there is a fair number of research institutes involved in HIA research, the number of publications is limited. This indicates either that there is a need for an enabling environment for HIA research or that there should be better incentives to publish.

HIA is an exercise that cannot be done in isolation. One of the key issues identified in this survey is that many development projects are outside the scope of the health ministries and there is often little or no intersectoral collaboration with the non-health ministries, or vice versa. A clear understanding of the role of each of the sectors and private organizations is required. This should ideally start with a central multidisciplinary task force composed of environmentalists, policy-makers, engineers, epidemiologists, and assessors, who are licensed to use standard methods. The observation of the present study shows that there is a great potential for intersectoral collaboration in most countries. This potential can be tapped once an underlying policy, infrastructure, and capacity are in place.

Two aspects of the methodology used in this study warrant further discussion:

- The analysis of the situation in the region is based on available published information or informal communication from the Member States and will, by selection, not include any information that is not published officially or documents that are still in the formulation stage. This may change the current assessment of those countries that had limited data.
- To avoid any systemic bias, we developed a system of indicator variables to quantify the target indicators, and the indicators were broadly classified into four equal classes for the purpose of consistent comparison.

It must be remembered that not all of the target indicators were easily quantifiable. Thus, the indicators comprising each of the

parameters mainly reflect potential for HIA and not necessarily implementation of HIA. The difference could be significant. For example, some countries whose potential for HIA was rated high were not effective in implementation, as evidenced by the existing pollution problems and disease burden associated with development projects. Thus, a high rating of a country in a particular parameter versus the low rating of the same parameter in a different country may not reflect that one country is better at implementing HIA, or vice versa.

Conclusions

It is clear that the implementation of HIA in SEARO is currently at a rudimentary stage. Several gaps in policy and practice were identified that explain why HIA has not been used in the region. The main issues that need to be addressed for strengthening HIA include the following:

- Developing at the country level healthy public policy that explicitly focuses on HIA as a tool to develop a more integrated approach to policies and programmes.
- Developing simplified tools and guidelines at the regional level for conducting HIA to facilitate the implementation of HIA at the country level.
- Developing regional databases for site-specific diseases associated with particular development projects for use by local researchers and policy-makers.
- Building capacity within each Member State to provide a critical mass of skilled people for undertaking research in HIA and promoting HIA in all sectors.
- Creating within the region and within Member States, an enabling environment for enhancing intersectoral collaboration of researchers, practitioners and policy-makers for the successful implementation of HIA. ■

Acknowledgements

We thank those involved in conducting this survey and, in particular: Dr Md Abdul Bari, Department of Community Medicine, Sikder Medical College, Dhaka, Bangladesh; Dr Rinchin Dorji, Programme Officer, Health Department, Thimpu, Bhutan; Dr Arti Chitkara, Consultant, Flat No. A-31, Swarnajayanti Rail Nagar, Sector 50, Noida (UP), India; PT Eco Bumi Nusantra, Jalan Pulo Raya IV No. 22, Jakarta 12170, Indonesia; Mr Ahmed Sadiq, Ministry of Health, Republic of Maldives, Maldives; Dr Phone Myint, Deputy Director (Occupational Health), Department of Health, No. 11(A), Lower Kyimyindine Road, Ahlone Township, Yangon, Myanmar; Professor Hari Bansh Jha, Team Leader, Nepal Health Research Council, Katmandu, Nepal; Ms LP Batuwitage, Director/Environment, Ministry of Transport and Environment, "Parisara Piyasa", No. 104, Robert Gunawardana Mawatha, Sri Lanka; Dr Kanchanasak Phoonboon, EH Programme, Health Systems Research Institute, 5th Floor, Mental Health Building, Tiwanon Road, Nonthaburi 11000, Thailand.

Conflicts of interest: none declared.

Résumé

Besoins en matière d'évaluation de l'impact sur la santé dans les pays d'Asie du Sud-Est

Une analyse de situation a été entreprise pour évaluer les obstacles à la réalisation d'études d'impact sur la santé dans la Région OMS de l'Asie du Sud-Est (SEARO). Ont été examinés pour les différents pays de cette Région le cadre politique et les procédures pour la réalisation d'études d'impact sur la santé, l'infrastructure existante nécessaire pour appuyer de telles études, la capacité à entreprendre des études d'impact et le potentiel de collaboration

intersectorielle. Il est ressorti de cette analyse que les études d'impact sur l'hygiène du milieu remplaçaient en fait implicitement les études d'impact sur la santé qui n'étaient expressément ou systématiquement effectuées dans pratiquement aucun des pays de la Région. Il est donc nécessaire de renforcer le cadre politique, l'infrastructure, la capacité et la collaboration intersectorielle pour pouvoir effectuer couramment des études d'impact sur la santé.

Resumen

Necesidades de evaluación del impacto sanitario en los países de Asia Sudoriental

Se emprendió un análisis de la situación para evaluar los obstáculos a la evaluación del impacto sanitario (EIS) en la Región de Asia Sudoriental (SEARO) de la OMS. Los países de la SEARO fueron evaluados en lo relativo al marco de política y los procedimientos de EIS, la infraestructura existente necesaria en apoyo de la EIS, la capacidad de emprender EIS y el potencial de colaboración

intersectorial. Los resultados indican que la evaluación del impacto ambiental (EIA) se está utilizando tácitamente en sustitución de la EIS, que no se lleva a cabo explícita o sistemáticamente en casi ningún país de la Región. Por consiguiente, es necesario reforzar la política, la infraestructura, la capacidad y la colaboración intersectorial para aplicar sistemáticamente la EIS.

ملخص

احتياجات تقييم التأثير الصحي في بلدان جنوب شرق آسيا

الموجودات أن تقييم التأثير البيئي يستخدم ضمناً كبديل لتقييم التأثير الصحي، وأن تقييم التأثير الصحي لا يجري بشكل روتيني وواضح وفعلي في جميع بلدان الإقليم؛ مما يجعل الحاجة ماسة لتعزيز الاستخدام الروتيني لتقييم التأثير الصحي لتحقيق التعاون بين القطاعات وفي بناء القدرات والبنية التحتية وفي رسم السياسات.

أجري تحليل للوضع لتقييم المعوقات التي تقف أمام تقييم التأثير الصحي في إقليم جنوب شرق آسيا لمنظمة الصحة العالمية. وقد تناول التقييم للبلدان إطار السياسات والإجراءات المتبعة في تقييم التأثير الصحي، والبنية الأساسية المطلوبة لتقديم الدعم لتقييم التأثير الصحي. والمقدرة على إجراء تقييم التأثير الصحي، وإمكانية التعاون بين القطاعات. وقد أظهرت

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Table 1. Summary of indicators for assessing HIA^a in the countries of the South-East Asia Region

Parameter	Indicator	Criteria
Existing policy framework and procedures	National plan: policies detailed in a national environmental health plan	(0) not present; (1) in preparation; (2) present and limited coverage of environmental risk factors; (3) present and covers all the environmental risk factors
	Project guidelines: project size requirements within the agricultural, industry–energy (I&E), and infrastructure sectors	(0) not present; (1) present for one subsector within agriculture sector; (2) present for more than one subsector within agriculture sector; (3) present for all subsectors within the agriculture sector (0) not present; (1) present for one subsector within I&E sector; (2) present for more than one subsector within I&E sector; (3) present for all subsectors within I&E sector. (0) not present; (1) present for one subsector within infrastructure sector; (2) present for more than one subsector within infrastructure sector; (3) present for all subsectors within infrastructure sector
	Implementation: procedures followed in HIA	(0) no requirements met; (1) few requirements met; (2) some requirements met; (3) most requirements met
	Licensing: licensing procedures for parties to prepare HIA reports	(0) none; (1) present for EIA ^b ; (2) present and limited for HIA; (3) present and adequate for HIA
Institutional infrastructure	Environment monitoring network: presence of fixed, mobile, and reference laboratories at the central, peripheral, and intermediate levels for each medium (air, water, noise, and food)	Criteria for each medium: (0) fixed laboratory does not exist; (1) fixed laboratory exists at one level; (2) fixed laboratory exists at two levels; (3) fixed laboratory exists at all three levels. (0) reference laboratory does not exist; (1) reference laboratory exists at one level; (2) reference laboratory exists at two levels; (3) reference laboratory exists at all three levels
	Disease surveillance network: presence of surveillance units and laboratories at the central, peripheral, and intermediate levels for each medium (air, water, noise, and food)	Criteria for each medium: (0) surveillance unit does not exist; (1) surveillance unit exists at one level; (2) surveillance unit exists at two levels; (3) surveillance unit exists at all three levels (0) laboratory does not exist; (1) laboratory exists at one level; (2) laboratory exists at two levels; (3) laboratory exists at all three levels
	Role of government: presence of government agencies at the central, peripheral, and intermediate levels for monitoring each medium (air, water, noise, and food)	(0) agencies do not exist; (1) agencies exist at one level; (2) agencies exist at two levels; (3) agencies exist at all three levels
Capacity building mechanisms for HIA of development projects	Education: coverage in educational curricula	(0) no requirements met; (1) few requirements met; (2) some requirements met; (3) most requirements met
	Research: research in the areas of epidemiology, quantitative risk assessment, and environmental monitoring.	(0) none; (1) present in one area; (2) present in two areas; (3) present in all the three areas
	Training: training programmes	(0) no requirements met; (1) few requirements met; (2) some requirements met; (3) most requirements met
	Trained manpower: personnel trained and engaged in HIA	(0) none trained; (1) at least one trained. (0) none working in HIA; (1) at least one working in HIA
	Research outcome: presence of publications and dissemination activities	(0) no requirements met; (1) few requirements met; (2) some requirements met; (3) most requirements met
Potential for inter-sectoral collaboration for successful HIA implementation	Central authority: presence of a central authority and/or special task force	(0) not present; (1) present and no intersectoral coordination; (2) present and limited intersectoral coordination; (3) present and adequate intersectoral coordination
	Role of government: functions carried out by government agencies in HIA	(0) no requirements met; (1) few requirements met; (2) some requirements met; (3) most requirements met
	Role of donors: involvement of donors	(0) none; (1) 2 to 4 donors involved; (2) 5 to 6 donors involved; (3) all key donors involved
	Participatory methods: methods to induce stakeholder participation	(0) no requirements met; (1) few requirements met; (2) some requirements met; (3) most requirements met

^a HIA = health impact assessment.

^b EIA = environmental impact assessment.