아태지역 및 유럽지역의
건강영향평가동향 및 정책과제

Health Impact Assessment in Asia-Pacific and European Region

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아태지역 및 유럽지역의 건강영향평가 동향 및 정책과제
건강영향평가의 과제는 국가내에서의 역할과 더불어 국제적인 교류가 필요한 과제이다. 기후변화와 관련된 건강영향, 환경오염의 문제 등의 분야에서 이미 국제적인 교류가 활발하게 진행되고 있다. 영국을 비롯한 유럽지역은 1990년대 후반부터 본격적인 건강영향평가의 네트워크를 가동하고 국제적인 협력을 하고 있다. 세계보건기구와 유엔환경계획에서 공동으로 추진하고 있는 동남아시아 및 동아시아지역 환경보건조직포럼에서는 2010년 건강영향평가의 Thematic Working Group(TWG)을 승인하여 활동을 지원한 뒤 2010년 건강영향평가의 Thematic Working Group(TWG)을 승인하여 활동을 지원하고 있다. 아시아 지역의 저개발국가는 해외의 대기업들이 지역개발을 시도하기 때문에 더욱 건강영향평가가 중요한 이슈로 부상하고 있으며, 국제적인 정보와 기술지원을 더 많이 필요로 한다.

우리 연구원이 의장기관으로 활동하고 있는 TWG on HIA를 주축으로하여 2012년 10월에 아시아태평양국제학술대회와 회원국의 연례회의를 개최하였다. 이 행사에 해외 전문가의 참여와 더불어 국내의 연구자들이 참여하여 의견과 정보를 교류하였다. 특히 건강영향평가의 과제가 세계보건기구의 만성질환예방정책(Non Communicable disease policy)과 연결되면서 예방적인 국민건강증진차원에서도 건강영향평가는 중요성이 더욱 커진다는 것을 확인하는 기회가 되었다.

본 연구에 대한 귀중한 조언을 아끼지 않으신 이영수 환경정책평가연구원 선임연구위원, 김진희 서울대학교 보건대학원 연구원, 한국보건사회
연구원의 정영철 연구위원, 김정선 연구위원께 감사의 뜻을 표한다. 마
지막으로, 본 연구결과는 우리 연구원의 공식적인 견해가 아니라 연구진
의 개별적 연구 활동의 결과임을 밝힌다.

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Health Impact Assessment in Asia–Pacific and European Region

Health Impact Assessment (HIA) is a new emerging tool that measures the positive and negative health effects of prospective policies, programs and projects. Determinants of health such as biological factors, socio-economic factors, environmental factors, and individual lifestyle are fully considered in HIA process. These determinants of health greatly influence a population’s health, especially in vulnerable populations, which ultimately impact society as a whole. In consequence, HIA considers all determinants of health and is therefore able to identify any hidden potential health effects, both positive and negative from the prospective project. If decision makers consider these potential health effects when they plan for any prospective projects, it will bring extensive progress in the population’s health.

Throughout the decades, the field of HIA has improved in many ways with European countries being pioneers to this process. Consequently, efforts have expanded to other parts of the world including North America, Asia and Australia to figure out HIA’s
best application in the respective regions. HIA professionals have tried to apply HIA in various fields across different sectors. Regardless of all these efforts, advances in research and development are needed. To date there are not many researches that examine the current trends in HIA research.

The purpose of this study is to examine the current trend in HIA research and support international network for HIA capacity building. This study incorporated activities of the Thematic Working Group on HIA under the Regional Environment and Health forum of the South-East and East Asian countries, which is supported by the World Health Organization Western Pacific Office and the United Nations Environment Programme. This study also incorporated the 4th Asia-Pacific HIA conference in Seoul.

The study will provide scientific evidence based reference to many HIA practitioners and researchers. Research methods include systematically reviewing various journal databases search engines to identify the most recent HIA research articles from January, 2008 to June, 2012 published in Europe US, Australia, Asia, Canada and other countries. As a result, 148 research articles including peer-reviewed journals, policy reports, dissertation papers, commentaries, book reviews, debate and letters to editors are found from 14 different data bases and 78 journals. Of those selected articles, Europe has the most number of articles published, then US, Australia, and Canada, respectively. The number of articles published from 2009 to 2012 has increased over years. Of the selected articles, the most emphasized research focuses on the
environment. Then, the next most emphasized focuses are HIA capacity building, HIA method, HIA policy development, HIA evaluation, city development and housing and health and social welfare, respectively. Other focus areas that were emphasized are health equity, transportation, agriculture, nutrition and food safety and general public policy. The field of HIA research should continue to improve. More varied approaches are needed such as evidence-based approach and improving quantification of changes in the social determinants of health. Various topics for case study research are needed, instead of focusing mainly on environment.
요약

1. 연구의 목적 및 내용

1. 연구목적

본 연구의 목적은 아시아태평양 및 유럽지역의 건강영향평가 법제도의 추진동향을 분석하고, 관련전문가 및 관계자의 역량을 강화하려는 데 있음. 세부적인 연구목표는 아래와 같음.

○ 환경보건포럼 산하의 TWG활동 추진
  - WHO 서태평양지역사무소와 유엔환경계획(UNEP)에서 추진하는 건강영향평가 TWG의 의장기관 업무를 수행
  - TWG의 Workplan(2010-2013)에 있는 기관별 업무를 수행함. 우리 원에서는 건강영향평가 영문웹사이트를 구축하여 회원기관간의 정책정보 수집 및 정보공유를 담당하고 있기 때문에 웹사이트를 구축할 의무가 있음.
  - 2012년 10월에 인도네시아에서 개최하는 제6차 환경보건고위급회의에 건강영향평가작업반의 경과보고를 하였음.
  - 아태지역 건강영향평가의 국제학술회의서울에 유치하여 관련 정보를 교류하고 역량을 강화함.
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○ 유럽 건강영향평가의 네트워크를 활용하고 교류하여 국내 건강영향평가의 역량을 강화함.
  - 아태지역 건강영향평가의 국제학술세미나에 유럽지역의 인사를 참여시키 유럽 건강영향평가제도 관련 사업 사례에 관한 정보를 공유함.
  - 학술적 교류를 통하여 건강영향평가의 기법과 역량을 개발함.

2. 연구의 내용 및 방법

□ 본 연구를 추진하기 위한 연구의 내용은 크게 네가지로 구분됨.
  - 첫째, 국내외 건강영향평가의 연구동향고찰
  - 둘째, 학술교류를 위한 아시아 태평양 건강영향평가 국제학술대회 학술발표자료수집
  - 셋째, TWG 회원국 회의 및 활동보고 1)
  - 넷째, 건강영향평가 영문웹사이트 구축

○ 최근의 건강영향평가의 연구동향 고찰
  - 2009년부터 2012년 6월초까지 발표된 학술 논문고찰
  - 선진국 및 다른 해외 국가들의 건강영향평가 연구 동향분석

○ 아시아 태평양 건강영향평가 국제학술대회 학술발표자료수집
  - 건강영향평가 제도화 방안에 관한 학술발표자료
  - 건강위험 평가의 과제
  - 개발사업에서의 건강영향평가의 도전과제

○ TWG on HIA의 활동경과 보고
  - 건강영향평가 활동계획의 주요성과 분석
  - 도전과 기회의 과제

1) 2012년 10월 23-24일 인도네시아 반둥에서 개최된 환경보건포럼고위급회의
요 약

○ 건강영향평가 영문웹사이트 구축
  – 건강영향평가 영문웹사이트에 국내 및 해외정책등향의 자료공개

3. 기대효과 및 활용방안

□ 연구의 기대효과
  ○ 근거에 기반한 건강영향평가의 기술개발
  ○ 건강의 다양한 결정요인에 대한 인식제고
  ○ 건강영향평가의 연구과제개발에 활용

□ 정책활용방안
  ○ 국가별 취약성에 따른 건강영향평가의 정책대안에 활용
  ○ 환경정책과 보건정책의 협력적 추진정책에 활용
  ○ 국민건강증진을 위한 공공정책 개발에 활용
  ○ 지자체의 건강영향평가 역량강화에 기초자료로 활용

II. 주요 연구결과

1. 논문고찰 결과

가. 개요

  ○ 2009년부터 2012년 6월초까지 발표된 학술 논문은 연도가 지남에 따라 점점 증가함.
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○ 검색된 논문의 건수가 가장 많은 나라는 유럽, 특히 영국임. 그 다음으로 미국, 호주, 뉴질랜드, 아시아 및 캐나다 순으로 많았음.
○ 건강영향평가 연구를 분야별로 분류한 결과, 건강영향평가 방법, 역량 강화, 정책 개발 및 건강영향평가의 평가 분야의 연구가 가장 많았음.
○ 건강영향평가 사례 연구에서는 환경에 관한 연구가 가장 많았음. 그와 반대로 농업, 교통, 영양, 식품안전 및 건강 평등에 관한 연구는 극소수했음.

나. 시사점

□ 전체적으로, 건강영향평가의 연구는 유럽, 특히 영국에 치중되어 있었고, 연구 분야 또한 제한적이었음. 건강영향평가 연구의 역량을 개발하고 다양한 분야에 걸쳐 연구를 할 수 있도록 지원하는 것이 중요함. 건강영향평가 연구를 발전시키기 위하여 지역에 맞는 건강영향 평가 도구 및 방법을 개발하고, 시범사업을 늘리며, 보건 분야 내에 뿐 아니라 그 이외 다른 분야에도 건강영향평가를 인식시켜야 함. 건강영향평가 연구의 질을 높이고 다양성을 추구하기 위하여 모든 분야 에서의 노력이 필요함. 그러므로 현재 건강영향평가 연구자들은 건강 영향평가를 더 많이 알리고, 더 많은 전문가들을 훈련시킴으로써 점차적으로 건강영향평가 연구 발전에 기여해야 할 것임. 또한, 보건 분야 외에 다른 분야에도 건강영향평가의 중요성을 알리 공공정책이 건강에 미치는 영향을 인식하도록 도와주어야 하겠음.
2. 제4차 아시아태평양국제학술대회 결과

☐ 제목 : 건강수명연장과 웰빙을 위한 건강영향평가

☐ 일시 및 장소
○ 2012년 10월 9일(화) 오전 9시 30분
○ 한국보건사회연구원 대회의실

☐ 주관 : 한국보건사회연구원

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○ Genandrialine L. Peralta(아시아개발은행 ADB)
○ Richard Morgan (뉴질랜드 오타고 대학)
○ Ben Harris-Roxas (호주 뉴사우스웨일즈대학)
논의 결과

○ 국가별 건강영향평가제도의 법제도 현황 점검결과
  - 건강영향평가 법제도는 조직적인 문화에 따라 다르게 나타나는 데, 협력적이거나 저항적인 경향이 있음.
  - 정책결정자의 조직에서 건강영향평가의 인식은 건강의 결정요 인에 대한 이해도에 따라 달라지며 정책이 공중보건에 어떤 영 향을 미치는 지에 대한 이해도에 따라 달라짐.

○ 건강영향평가의 제도화 성공을 위한 조건
  - 핵심적인 조직개발
  - 다른 부처의 관련 담당자 확보
  - 민간과의 연계체계구축 : 시민사회, 대학, 연구원 등

○ 지속적인 건강영향평가 지원을 위한 조건
  - 동남아시아 및 동아시아의 지원 네트워크 유지 및 활성화
  - 태국이 ASEAN의 건강영향평가를 지원하는 것은 좋은 사례임

○ 역량개발을 위한 조건
  - 건강영향평가 실시자의 역량개발을 위한 프로그램 보급
  - 정책결정자를 위한 역량개발프로그램 보급.

주요 발표자 및 발표내용

○ 10월 9일 화요일
  - 세계보건기구 Michaela Pfeiffer 박사 : 국제건강영향평가정책동향
  - 아시아개발은행 Genandrialine Peralta 박사 : 건강영향평가 정책 추진의 도전
  - 서울대학교 보건대학원 백도영 교수 : 건강영향평가도입의 문제점 분석
요약 - 11

영국 정부 자문위원 John Kemm 박사: 영국의 건강 영향 평가 정책
미국 워싱턴대 Andrew L. Dannenberg 교수: 미국의 건강 영향 평가 정책 발전 동향
덴마크대 Gabriel Gulis 교수: 건강 위해 평가 지침과 건강 영향 평가 도입 방안 모색
서울대 보건대학원 이기영 교수: 노출 과학과 위해 평가의 도입 방안
태국 Tanita Suwanakitti 박사: ASEAN 지역의 건강 영향 평가 현황

○ 10월 10일 수요일
뉴질랜드 오타고 대학 Richard Morgan 교수: 통합적 건강 영향 평가 도입 방안
호주 뉴사우스웨일즈대 Ben Harris-Roxas 교수: 효율적인 건강 영향 평가 정책을 위한 과제
환경정책평가연구원 이영수 박사: 댐 건설에 대한 건강 영향 평가
한양대의대 김윤신 교수: 노인인구에 대한 기후변화의 건강 영향
한국보건사회연구원 김동진 박사: 건강도시에서의 건강 영향 평가
순천향대 강은정 교수: 자살에 대한 사회환경적 영향 분석
가톨릭대 조진준 교수: 아르바이트 청소년의 자살 영향 요인 분석
고신대의대 고광욱 교수: 소규모 지역 개발 사업의 건강 영향 평가
경북대의대 김건엽 교수: 진주시 건강 영향 평가 사례
Ⅲ. 결론 및 시사점

본 연구를 통하여 수렴된 의견과 논의결과를 볼 때 다음과 같은 제언을 할 수 있음.

○ 건강영향평가의 제도화를 통해 의사결정자들에게 건강영향평가를 알릴 수 있도록 의사소통을 발전시킬 수 있음. 의사결정자들이 건강에 대한 인식이 클수록 건강이 다양한 공공정책에 반영되며, 이에 따라 국민건강증진에도 기여할 수 있음.
○ 지난 10월 인도네시아 반동에서 개최된 동남아시아 및 동아시아 지역환경보건포럼의 고위급회의에서는 환경과 보건정책의 파트너 쉽을 강조하였고, 이를 위해 개별분과의 TWG가 활성화되기 위한 지원이 필요하다는 것을 확인하였음.
○ TWG는 기존의 관련 국제기구나 단체와 협력할 수 있는 여지가 많기 때문에 이를 위한 환경보건포럼사무국의 역할 또한 강화되어야 할 필요성이 제기되었음.
○ 국제적인 활동은 국가간 협력의 기회도 제공하고, 자국내의 환경과 보건정책의 역량강화에 기여하고 있는 것으로 나타나고 있음.
○ 이번 건강영향평가 학술대회와 TWG 활동의 성과는 향후 동남아시아 및 동아시아지역 내 다양한 요구도와 문화를 반영하여 새로운 협력과 지원을 놓는 계기가 될 것으로 전망함.
○ 건강영향평가와 관련하여 개발된 다양한 도구 및 가이드라인이 각 국가에 적용할 때의 방법에 대한 기술적 지원이나 새로운 방법개발이 필요함.
○ 이를 위해서 국제적인 차원에서 시범사업의 사례, 정책사례를 연구할 수 있는 기회가 확대되어야 함.
○ 각 국가들이 법제도를 정착하기 위하여 고민하는 부분에 대한 지속적인 consulting과 역량강화가 필요함.
○ 국제적인 협력의 활성화를 위해 지역 환경보건포럼의 역할이 보다 구체화되고 강화되어야 함.
○ 다양한 건강결정요인의 분야들에 대해 근거생산을 할 수 있도록 연구지원이 필요함.
○ 사회적 건강결정요인에 대한 영향평가의 수량화 방법을 발전시킴. 생물학적, 환경적 건강결정요인 등 다른 건강결정요인은 그 영향을 측정하는 도구가 많이 개발되어 있으나 주거환경, 소득수준, 교통 또는 여가활동의 접근성 등 사회 결정요인을 수량적으로 측정할 수 있는 도구는 많지 않음. 그러므로 이에 대한 측정도구 연구를 발전 시켜 좀 더 다양한 분야의 접근을 촉진할 수 있도록 해야 함.
○ 기존의 건강영향평가 용어를 공통된 용어로 통일하여 연구의 질을 높임. 현재 건강영향평가의 용어는 여러 가지로 사용되고 있음. 그러므로 하나로 통일된 용어를 정리하여 모든 연구자들이 같은 용어를 사용할 수 있도록 함. 특히 국내의 경우, 번역된 용어들이 많기 때문에 번역에 따라 같은 용어가 다르게 번역되어 사용될 수 있고, 그 의미가 달라질 수 있음. 그러므로 통일하는 것이 필요함.
○ 환경 이외의 다양한 분야의 건강영향평가 연구 접근이 필요함. 환경 분야에 집중된 연구를 좀 더 다양한 분야로 발전시켜 연구의 질과 다양성을 높이도록 함. 특히 농촌지역이나 농업, 제 3 세세 지역의 정책 및 프로젝트의 건강영향평가가 필요함.
○ 시행된 건강영향평가의 성과에 대한 평가가 필요함. 평가를 함으로써 부족한 부분이 무엇인지를 파악하고 필요에 따라 도구 및 방법을 수정함.
○ 보건 분야 외에 다른 분야에도 건강영향평가의 중요성을 알리 공공정책이 건강에 미치는 영향을 인식하게 하도록 홍보해야 함.
이로써, 건강영향평가의 근본 개념인 “건강한 공공정책”을 촉진시켜 국민건강을 증진시켜야 할 것입니다.

*주요용어: Health Impact Assessment, Asia-Pacific and European Region
서론
제1장 서론

제1절 연구의 배경 및 목적

1. 연구의 배경 및 연구목적

가. 연구의 배경

1) 건강한 공공정책을 위한 건강영향평가의 필요성

지역주민의 건강에 영향을 주는 요인은 다양하다. 일반적으로는 식습관, 신체활동, 흡연, 음주 등 개인의 건강생활실태에 관심을 둔다. 이러한 요인들은 건강행동의 영역에 속하며 건강의 결정요인의 한 부분이다. 건강의 결정요인에 대한 라론데(M. Lalonde)의 보고서에서는 바이오메디칼 요인, 환경요인, 라이프스타일, 보건의료시설 등으로 구분하였다. 이중 라이프스타일의 요인은 개인이 통제가능한 요인이다. 라론데의 보고서에 있는 건강의 장(Health field concept)을 의미한다. 예를 들어 교통사고 사망의 원인에 기여하는 요인은 개인의 라이프스타일 요인이 75%, 환경요인 20%, 보건의료시설요인이 5%라는 분석이 있다. 즉 개인의 건강행동의 중요성을 의미한다.

개인의 건강행동요인은 개인의 발달단계, 욕구, 신념, 의지, 사회심리적 요인 등 다양한 사회적 요인에 의해 많은 영향을 받는다(표 1-1 참조). 최근의 연구들에서 개인의 건강행동이 사회적인 불평등의 영향을 받는 것으로 보고되고 있다. 교육수준이 낮은 계층에서 흡연율이 높게 나타나는 것이 대표적인 건강불평등의 사례이다.3)

중앙정부와 지방자치단체 등 공공부문에서는 개인의 건강수준을 저해하는 요인을 최소화하여 국민의 건강권을 보호하기 위한 노력을 해오고 있다.

### 표 1-1 건강행동의 이론적 근거

<table>
<thead>
<tr>
<th>이론</th>
<th>저자</th>
<th>심리사회적 요소들</th>
</tr>
</thead>
<tbody>
<tr>
<td>발달이론</td>
<td>Ericson, 1963</td>
<td>개인의 단계적인 발달과정 개발: 초기아동기(0-6세), 중기아동기(6-12세), 사춘기(12-18세), 초기성년기(18-35세), 중년기(36-60세), 말년기(60세이후)</td>
</tr>
<tr>
<td>인간의 기본적인 욕구</td>
<td>Maslow, 1968</td>
<td>5가지 단계의 욕구: 생리적 욕구, 안전에 대한 욕구, 소속감과 예정에 대한 욕구, 존경에 대한 욕구, 자아실현에 대한 욕구</td>
</tr>
<tr>
<td>건강신념모형</td>
<td>Becker, 1974</td>
<td>질병에 대한 인지된 민감성, 인지된 심각성, 이익점, 장애요인, 자기확신감(self-efficacy)</td>
</tr>
<tr>
<td>사회화 학습이론</td>
<td>Bandura, 1963, 1977</td>
<td>관찰적인 학습, 예측, 환경과 상황, 강화, 정서적 적용기 전, 자기확신감 등</td>
</tr>
<tr>
<td>변화의 단계이론 (Transtheoretical model)</td>
<td>Prochaska, 1994</td>
<td>행동변화의 의지가 없는 precontemplation, 변화의 필요성을 느끼는 contemplation, 변화를 계획하는 planning, 실행의 action, 유지단계maintenance 등</td>
</tr>
<tr>
<td>사회적 마케팅이론</td>
<td>Kotler, 1984</td>
<td>새로운 건강행동의 양식(product), 건강행동을 수행하기 위해 포기해야 하는 심리사회적 요인(price), 정보의 확산전략(promotion), 교육내용전달의 경로(place),</td>
</tr>
</tbody>
</table>


3) 건강행동학회 건강불평등 동계성명, 한국의 건강불평등, 건강행동학회 본 학술대회자료집, 건강불평등과 중재연구, 2012.
다양한 건강결정요인을 평가하여 사전에 보완된 정책을 추진할 수 있도록 하는 건강영향평가는 건강한 공공정책의 개발에 필수적인 도구이다(그림 1-1 참조).

[그림 1-1] 보건정책과 건강의 결정요인과의 관계

건강증진분야에서 건강의 결정요인 제고를 위하여 건강한 공공정책의 중요성을 세계보건기구에서도 강조해 왔다. 1986년 제1차 세계건강증진 대회의 오타와선언문에서 건강한 공공정책의 필수성을 강조하였고, 질병과 사고를 예방하기 위한 정책을 결정하는 데 건강영향평가가 중요한 수단이 된다고 하였다.4)

한편 건강영향평가는 국제적인 협력과 정보교류를 필요로 하는 과제이다. 왜냐하면 건강영향평가의 대상이 주로 개발사업이고, 해외지역개발 프로젝트가 많아지고 있기 때문이다. 개발사업으로 인한 건강영향평가의

4) http://www.who.int/healthpromotion/conferences/previous/ottawa/en/
요구도가 높으며, 국제적인 지식과 정보를 공유해야 하는 필요성이 증가하고 있다. 국가간의 건강영향평가지식, 역량 등이 차이가 나기 때문에 지속적인 역량강화를 위해 국제적인 협력이 필요하다. 세계보건기구 및 유엔환경계획에서 아시아태평양지역의 환경보건포럼을 추진하게 된 것도 이러한 배경에 의한 것이다.

2) 환경정책과 보건정책의 협력과제

세계보건기구와 유엔환경계획에서는 동남아시아 및 동아시아지역의 환경정책과 보건정책의 협력을 도모하고자 환경보건장관포럼을 추진하고 있다. 2007년 태국의 방콕에서 첫 번째 장관회의가 개최되었고, 환경부처와 보건부처의 정책적 협력방안이 논의되었다. 특히 2007년에서 2013년간에 집중적인 환경보건정책개발을 추진하려는 핵심분야가 7가지가 선정되어 추진되고 있다. 공기질(Air quality), 식수와 위생(Water, sanitation and hygiene), 폐기물(Solid and hazardous substances), 기후변화 및 오존층파괴와 생태계변화(Climate change, ozone depletion and ecosystem changes), 환경보건위기대응계획(Contingency planning, preparedness and response in environmental health emergencies), 건강영향평가(Health Impact Assessment) 등이다.

나. 연구의 목적

본 연구의 목적은 아시아태평양 및 유럽지역의 건강영향평가 법제도의 추진동향을 분석하고, 관련전문가 및 관계자의 역량을 강화하려는 데 있다. 세부적인 연구목표는 다음과 같다.
제1장 서론

○ 환경보건포럼 산하의 TWG활동 추진
- WHO 서태평양지역사무소와 유엔환경계획(UNEP)에서 추진하는 건강영향평가 TWG의 의장기관 업무를 수행한다.
- TWG의 Workplan(2010-2013)에 있는 기관별 업무를 수행하였다. 우리 원에서는 건강영향평가 영문웹사이트를 구축하여 회원기관간의 정책정보 수집 및 정보공유를 담당하고 있기 때문에 웹사이트를 구축할 의무가 있다.
- 2012년 10월에 인도네시아에서 개최하는 제6차 환경보건고위급회의에 건강영향평가작업반의 경과보고를 한다.
- 아태지역 건강영향평가의 국제학술세미나를 서울에 유치하여 관련 정보를 교류하고 역량을 강화한다.

○ 유럽 건강영향평가의 네트워크를 활용하고 교류하여 국내 건강영향평가의 역량을 강화한다.
- 아태지역 건강영향평가의 국제학술세미나에 유럽지역의 인사를 참여시켜 유럽 건강영향평가제도 관련 사업 사례에 관한 정보를 공유한다.
- 학술적 교류를 통하여 건강영향평가의 기법과 역량을 개발한다.

제2절 연구의 개요 및 기대효과

1. 연구의 내용 및 방법

본 연구를 추진하기 위한 연구의 내용은 크게 네가지로 구분된다.
첫째, 국내외 건강영향평가의 연구동향고찰
둘째, 학술교류를 위한 아시아 태평양 건강영향평가 국제학술대회 학술발표자료수집
셋째, TWG 회원국 회의 및 활동보고5) 
넷째, 건강영향평가 영문웹사이트 구축 등이다.

○ 최근의 건강영향평가의 연구동향 고찰
  - 2009년부터 2012년 6월초까지 발표된 학술 논문고찰
  - 선진국 및 다른 해외 국가들의 건강영향평가 연구 동향분석

○ 아시아 태평양 건강영향평가 국제학술대회 학술발표자료수집
  - 건강영향평가 제도화 방안에 관한 학술발표자료
  - 건강위험 평가의 과제
  - 개발사업에서의 건강영향평가의 도전과제

○ TWG on HIA의 활동경과 보고
  - 건강영향평가 활동계획의 주요성과 분석
  - 도전과 기회의 과제

○ 건강영향평가 영문웹사이트 구축
  - 건강영향평가 영문웹사이트에 국내 및 해외정책동향의 자료공개

2. 기대효과 및 활용방안

○ 연구의 기대효과
  - 근거에 기반한 건강영향평가의 기술개발
  - 건강의 다양한 결정요인에 대한 인식제고
  - 건강영향평가의 연구과제개발에 활용

5) 2012년 10월 23-24일 인도네시아 반동에서 개최된 환경보건포럼고위급회의
○ 정책활용방안
  - 국가별 취약성에 따른 건강영향평가의 정책대안에 활용
  - 환경정책과 보건정책의 협력적 추진정책에 활용
  - 국민건강증진을 위한 공공정책 개발에 활용
  - 지자체의 건강영향평가 역량강화에 기초자료로 활용
건강영향평가의 연구동향고찰
제2장 건강영향평가의 연구동향고찰

제1절 건강영향평가의 개념고찰

1. 건강영향평가의 개념과 목적

가. 개념

건강영향평가(Health Impact Assessment, HIA)는 계획 단계에 있는 정책, 프로그램 및 사업 등에 영향을 미치는 긍정적, 부정적 건강결정요인들을 평가하는 도구이다. 그동안 수많은 연구자들이 건강영향평가의 정의를 내려왔다. 현재까지 발표된 정의를 살펴보면 언어 표현방식 및 문장 구성의 차이만 있을 뿐 근본 의미는 모두 같다(表 2-1). 여러 정의 중 가장 보편적으로 많이 사용되고 있는 건강영향평가의 정의는 세계보건기구의 정의이다. 세계보건기구는 “Gothenburg Consensus Paper”에서 건강영향평가(Health Impact Assessment)를 “정책, 프로그램 또는 프로젝트가 어떤 특정한 인구집단의 건강에 미치는 잠재적 효과와 그 인구집단 내에서 영향의 분포를 판단하게 하는 절차(procedures), 방법(methods), 그리고 도구들(tools)의 조합”이라고 정의 하였다6).

6) Gothenberg Consensus Paper, 1999
### 건강영향평가의 정의 (Definitions of HIA)

<table>
<thead>
<tr>
<th>문서</th>
<th>정의</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHO Gothenburg Consensus Paper</td>
<td>&quot;A combination of procedures, methods and tools by which a policy, a program or project may be judged as to its potential effects on the health of a population and the distribution of effects within the population&quot;</td>
</tr>
<tr>
<td>BMA Board of Science Education</td>
<td>&quot;A methodology which enables the identification, prediction and evaluation of the likely changes in health risk, both positive and negative, (single or collective), of a policy, programme plan or development action on a defined population. These changes may be direct and immediate or indirect and delayed&quot;</td>
</tr>
<tr>
<td>Scott Samuel</td>
<td>&quot;The estimation of the effects of a specified action on the health of a defined population&quot;</td>
</tr>
<tr>
<td>Scottish Office</td>
<td>&quot;Health impact assessment is a method of evaluating the likely effects of policies, initiatives and activities on health at a population level and helping to develop recommendations to maximize health gain and minimize health risks. It offers a framework within which to consider, and influence the broad determinants of health&quot;</td>
</tr>
<tr>
<td>National Assembly for Wales</td>
<td>&quot;A combination of procedures or methods which enable a judgement to be made on the effect(s) - positive or negative of policies, programmes or other developments on the health of a population or on parts of the population where health are concerned&quot;</td>
</tr>
<tr>
<td>National Research Council of the National Academies</td>
<td>&quot;Systematic process that uses an array of data sources and analytic methods and considers input from stakeholders to determine the potential effects of a proposed policy, plan, program, or project on the health of a population and the distribution of those effects within the population. HIA provides recommendations on monitoring and managing those effects&quot;</td>
</tr>
</tbody>
</table>

참고자료: 각주 참고

7) Kemm, Parry and Palmer, 2004
제2장 건강영향평가의 연구동향고찰

〈표 2-1〉의 정의를 비교해보면, 건강영향평가는 인구집단의 건강과 아직 도입되지 않은 건강결정의 미래 결과를 예측하는 것이 집중하고 있다. 그리고 건강영향평가 내의 “건강”의 의미는 좀 더 포괄적인 의미를 가지고 있는데, 건강이란 “단순히 질병(disease) 또는 질환(infirmity)의 부재를 말하는 것 뿐 아니라 온전한 육체적, 정신적, 사회적 웰빙(well-being) 상태”를 말한다. 이같이 건강영향평가는 잠재적 건강영향을 의사 결정자들(decision makers)에게 주목받게 함으로써 의사 결정 과정에 가치를 부여한다.

초기 건강영향평가는 시행 시기와 목적에 따라 회고적(retrospective), 동시적(concurrent), 그리고 예상적(prospective) 건강영향평가로 분류된다. 그리고 형태(type)에 따라 간이 건강영향평가(Rapid HIA), 중간 건강영향평가(intermediate HIA), 포괄적 건강영향평가(comprehensive HIA)로 나뉜다. 회고적 건강영향평가(retrospective HIA)는 이미 결정되어진 사업 및 프로그램들의 결과를 평가하는 것이고, 예상적 건강영향평가(retrospective HIA)는 어떠한 사업이나 프로그램이 결정되기 전에 그 영향을 평가하는 것이다. 회고적 건강영향평가는 결과 평가(outcome evaluation)와 같은 맥락으로 형성되었다고 볼 수 있었다. 동시적 건강영향평가(Concurrent HIA)는 현재 진행되고 있는 사업 및 프로그램의 상황을 모니터링하고 그에 따른 영향을 설명하며 발견하는 것이다. 동시적 건강영향평가는 모니터링과 감시(surveillance)와 같은 맥락으로 설명할 수 있겠다. 회고적 건강영향평가는 개입(intervention)과 그에 따른 영향(consequences)의 관계를 이해하도록 도와주는 데, 이는 예상적 건강영향평가에서도 필수적인 것이다. 동시적 건강영향평가는 결과

9) Preamble WHO Constitution, 1948
11) Chilaka, 2011
과 또는 영향이 예상되나 그 결과나 영향의 정도가 불분명할 때 사용되는 것이다. 그래서 이러한 예측 불가능한 결과들을 미리 모니터링함으로써 예방법을 미리 도입하거나 진행되고 있는 사업을 수정할 수 있도록 도와준다. 하지만 Parry and Kemm(2004)는 지금까지 보았던 건강영향평가의 정의를 생각해 볼 때, 건강영향평가가 예측(prediction)을 고려하는 작업이라면 모든 건강영향평가는 예상적(prospective) 건강영향평가여야 한다고 주장하였다. 그리고 회고적 건강영향평가와 동시에 건강영향평가의 분류는 건강영향평가에 대한 근본적 개념에 혼란을 야기하므로 더 이상 사용하지 말아야 한다고 주장하였다.

건강영향평가는 광범위한 분야에 접근하지만 중요한 개념적 근원은 다음과 같이 분류할 수 있었다.

○ 환경영향평가(Environmental Impact Assessment)와 사회 영향평가(Social Impact Assessment)에 기초한 영향평가(Impact Assessment)
○ 정책 평가(policy appraisal)와 건강한 공공정책 홍보

환경영향평가에 대한 시행과 관심이 높아짐에 따라, 환경영향평가 내 건강문제가 충분히 검토되고 있지 않다는 여러 연구자들의 목소리가 높아졌다. 이에 따라, 건강영향평가를 따로 시행하거나 함께 병행해서 시행하게 되는 사례가 많아졌다. 그리고 사회 영향 평가(social impact assessment)에서 고려되는 건강에 미치는 영향 또한 건강영향평가의 근원이라고 볼 수 있었다. 그러므로 건강영향평가의 개념적 근원은 환경 및 사회 영향평가를 중심으로 발전되었다고 볼 수 있었다. 그리고 건강영향평가를 포함한 모든 영향평가 발달의 근본 원인은 정책에 대한 평가와 건강한 공공정책의 시행을 위해 형성되었다고 볼 수 있었다.
건강영향평가의 두 가지 중요한 구성 요소는 다음과 같다.\(^{12}\)

- 서로 다른 정책 대안들의 건강에 미치는 영향의 정확한 예견
- 정책 결정 과정에서 건강에 대한 영향이 고려되도록 함

나. 건강의 결정요인


![표 2-2] 건강결정요인\(^{13}\)

<table>
<thead>
<tr>
<th>건강결정요인의 범주</th>
<th>구체적인 건강 결정 요인</th>
</tr>
</thead>
<tbody>
<tr>
<td>사회경제적, 문화적, 환경적 조건</td>
<td>- 공공정책 (경제, 보건, 근로, 교육, 국방, 교통, 주거, 외교, 복지 등)</td>
</tr>
<tr>
<td></td>
<td>- 인구집단에 기초한 정책 (에너지요소, 경제, 보건 및 사회적 돌봄, 교육, 교통, 복지, 육아, 여가)</td>
</tr>
<tr>
<td></td>
<td>- 사회/문화적 가치 및 규범 (자본, 다른 계층에 대한 태도, 정의, 형평성)</td>
</tr>
<tr>
<td></td>
<td>- 국가와 시민간의 관계</td>
</tr>
<tr>
<td></td>
<td>- 안전</td>
</tr>
<tr>
<td></td>
<td>- 교육 상태</td>
</tr>
<tr>
<td></td>
<td>- 교육수준</td>
</tr>
<tr>
<td></td>
<td>- 소득</td>
</tr>
</tbody>
</table>

\(^{12}\) 강은정, 김효진, 임성은, 김승현, 노정미, 박미란, 2008.
\(^{13}\) 강은정, 김동진, 박현진, 2011.
아태지역 및 유럽지역의 건강영향평가 동향 및 정책과제

<table>
<thead>
<tr>
<th>건강결정요인의 범주</th>
<th>구체적인 건강 결정 요인</th>
</tr>
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- 수질, 대기, 토양의 질  
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- 폐기물 처리  
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| 사회 및 지역사회의 영향 | - 사회적지지 및 연대  
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| 생물학적 요소 | - 나이, 성, 유전적 요소 |

이렇듯 건강결정요인은 개개인 및 사회의 건강에 영향을 미친다. 또한 건강결정요인들은 여러 가지 특성을 지닌다고 연구자들은 말한다.14) 첫째, 건강결정요인들은 각각 건강에 긍정적 혹은 부정적 효과를 미친다. 둘째, 대부분의 요소들은 시간의 흐름에 따라 그 효과가 점진적으로 증가 혹은 감소한다. 셋째, 건강결정요인들은 질병을 발생시키는 “상대적 위험(relative risk)과 절대적 위험(absolute risk)”을 나타내는 정도에 따라 약능을 달리할 수 있다. 넷째, 건강결정요인들은 만성퇴행성질병과 그 합병증의 지속과 예후에도 영향을 미칠 수 있다. 다섯째, 개인의 사회 활동과 참여방법에도 영향을 미칠 수 있다. 이에 따라 많은 연구들이 “건강결정요인은 정부에서 시행하는 다양한 정책에 의해 영향을 받기 때문에 정책, 프로그램 및 사업이 건강결정요인에 미칠 영향을 예측

제2장 건강영향평가의 연구동향고찰

하는 데 건강영향평가는 적합한 도구이다라고 설명하고 있다.\(^7\) 그러므로 정책, 프로그램 및 사업을 개발할 때 건강에 미칠 영향을 최대한 고려한다면 국민건강에 상당한 증진을 가져올 것으로 보인다.

다. 목적\(^6\)

건강영향평가는 민주주의(Democracy), 평등(Equity), 환경 친화적 개발(Sustainable Development) 그리고 윤리적 증거 사용(Ethical Use of Evidence)의 4가지 가치에 기반을 두고 있다. 첫 번째로 민주주의(Democracy)는 국민들이 자신의 삶에 영향을 미치는 정책 또는 프로그램 개발 및 도입에 참여할 수 있도록 기회를 주는 것을 의미한다. 두 번째로 평등(Equity)은 건강영향평가가 정책 및 프로그램의 제안이 모든 인구집단에게 미칠 영향을 평가하는데, 특히 나이, 성별, 인종 및 사회경제적 상태 면에서 인구취약집단에게 미칠 영향을 평가하는 것을 의미한다. 세 번째, 환경 친화적 개발(Sustainable Development)은 예측 가능한 명백한 영향과 소규모 영향을 고려하는 것과 동시에 장기적, 단기적 영향을 고려하는 것을 의미한다. 마지막으로, 윤리적 증거 사용(Ethical Use of Evidence)은 건강영향평가를 시행할 때 최적으로 이용 가능한 질적(qualitative) 자료와 양적(quantitative) 자료를 인식하고 사용해야 한다는 것을 의미한다. 그리고 최적의 방법을 사용하여 광범위하고 다양한 증거자료를 수집해야 한다.

세계보건기구는 건강영향평가를 사용해야하는 목적을 다음과 같이 정의하였다.

○ 교차 집단 간의 협력(Cross-sectional working)을 강조한다.

\(^{15}\) Cole and Fielding, 2007; Dannenberg et al, 2006; Harris, 2011
\(^{16}\) The World Health Organization, 2012.
○ 지역사회 관점에 중점을 둔 참여적 접근(Participatory approach that values the views of community)을 강조한다.
○ 건강을 증진시키고 불평등을 감소시킨다.
○ 건강영향평가가 긍정적 접근을 한다.
○ 시기적절하다 (Timeliness)
○ 환경 친화적 발달(sustainable development)과 자원 관리(resource management)과 연관성이 있다.
○ 누구나 건강영향평가를 사용할 수 있다.

이와 같이 건강영향평가는 정책 혹은 프로그램이 주는 예측 가능한 또는 불가능한 건강 영향에 대한 지식을 향상시키고, 여러 집단의 이해 관계자들과 지역 사회의 참여를 유도하며, 부정적 영향을 최소화함과 동시에 긍정적 영향을 부각시킴으로써 제안된 정책 및 프로그램을 수정하여 국민 건강을 증진시킬 목적이 있다. 이에 따라, 최근 세계 각국에서 그 나라의 사회, 정책 및 개발사업 등에 건강영향평가를 도입하는 움직임이 확산되고 있다.17)

2. 건강영향평가의 역사 및 발전 과정

건강영향평가는 1990년대 후반부터 정확한 개념과 다양한 시행 방법이 세워지며 새로운 정책 도구로 사용되었다. 그러나 이미 1970년대부터 건강영향평가와 비슷한 개념을 가진 연구가 진행되었다. 1970년대에는 "공통 측정법(common metric)을 이용하여 비교할 수 있는 여러 정책들의 결과"와 같은 개념으로 이해되는 정책의 비용-이익분석(cost-benefit analysis of policies)이 사용되어졌다.18) 이 같은 방식은

17) Cole et. al, 2004; Harris, 2011; Lhachimi et. al, 2010; Tamburrini, Guilhuly and Harris-Roxas, 2011)
정책 결과에 따른 기대 이익을 추산하는 데 많은 발전을 가져다주었다. 그리고 원자력 산업, 석유 산업, 항공 운송 사업 등의 크고 복잡한 사업들의 빠른 발전에 따라 이를 발전시키기 위한 막대한 시설과 건물을 건축하게 되었다. 이러한 발전은 위험요소를 최대한 줄이기 위한 안전 시스템 방법을 발전시키는데 기여하게 되었다. 그리고 원자력 산업, 석유 산업등과 같은 막대한 공학(engineering) 사업은 예측 할 수 없었던 제3세계국가들의 환경 파괴 문제로 번지게 되었다. 이에 따라 세계은행(The World Bank)은 이와 같은 프로젝트의 제안서를 제출할 때 사업이 환경과 지역 사회에 어떻게 영향을 미치는지에 대해서 의무적으로 보고하도록 정하였다. 그리하여 여러 사회학자들과 인류학자들은 환경영향평가(Environmental Impact Assessment) 및 사회영향평가(Social Impact Assessment)를 제의하기 시작하였다.


노력은 대부분 환경영향평가의 시행 또는 통합에 기반을 두었다. 이 시기에는 여러 의료보건학자들은 환경영향평가가 가장 영향력 있고 연관성 있는 도구로 지각하였고, 건강영향평가는 건강 결과를 평가하는데 있어 이를 연장하는 의미로 사용되었다.


20) Kemm, Parry and Palmer, 2004
럼비아(British Columbia) 보건당국이 처음으로 건강영향평가 도구(toolkit)를 개발하였다. 그 이후 1993년부터 브리티시컬럼비아(British Columbia)에서는 내각(cabinets)이 정부에 제출한 모든 정책제안서에 건강영향평가를 시행하도록 하는 법이 시행되었다<sup>21</sup>). 그 결과, 정부가 이에 대한 지침서를 발행하였다.


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<sup>21</sup) Mindell and Jaffe 2003, 108
<sup>22</sup) Kemm, Parry and Palmer, 2004
지원하면서 미국 내 건강영향평가의 시행이 급속도로 이루어지기 시작하였다. 아시아의 경우 세계보건기구 서태평양지역 사무소(WPRO)를 중심으로 건강영향평가가 발전하였으며, 그 중 한국은 2008년 ‘환경영향평가 가발’이 제정되면서 환경영향평가의 대상이 되는 계획, 사업으로 인해 발생하는 환경유해인자로 인한 국민건강에 미치는 영향을 추가하여 평가할 수 있도록 하였다. 또한, 2010년 1월 1일 부터 3년 동안 기존에 실시된 환경영향평가 내에서 건강영향 항목을 포함하여 평가하게 되었다. 또한, 한국보건사회연구원을 중심으로 건강영향평가 연구 및 지원 사업을 시행하고 있다.

앞에서 보듯이 건강영향평가는 그 범위가 광범위하고 각 지역별로 시행 절차와 방법이 모두 다르며, 발전 속도와 그 정도도 다양하다. Hebert, K., Wendel, A., Kennedy, S., and Dannenberg, A. (2012)는 현재까지 발표된 45개국의 지방자치단체, 국제 건강영향평가 지침서 내용을 비교, 분석하였다(부록 1 참고). 이 연구에 따르면, 모든 지침서가 건강영향평가 절차에서 건강영향평가의 정의, 스크리닝, 스크포링, 평가를 언급하였고, 76%의 지침서가 추천(recommendation)을 절차에 포함하였으며, 73%의 지침서가 리포트(reporting)을 포함하였고, 91%의 지침서가 평가와 모니터링을 포함하고 있었다고 결론지었다. 또한 98%의 지침서가 건강영향을 확인하는데 있어 지역사회 참여를 유도하고 있고, 96%가 모든 인구집단에 걸쳐 건강불평등을 줄이고 참여에 있어 평등함을 고려하였다고 결론지었다. 그리고 87%가 건강영향평가 예시, 사례 연구, 자료 및 도구를 포함하였고, 80%가 다양한 레벨의 건강영향평가를 권고하였으며, 73%가 건강영향평가가 모든 정책, 프로젝트 및 프로

24) 서미경, 박윤형, 문옥륜 외, 2008, 강은정, 김동진, 박현진, 2009
그림에 적용될 수 있다고 설명하였다. 또한, 76%가 사회 인구통계 및 보건 데이터를 포함한 지역사회 프로파일을 권고하였고, 의사결정이 내려지기 전에 시행되는 예상적(prospective) 타입의 건강영향평가를 설명하고 있다고 결론지었다. 연구결과를 살펴보면, 현재까지 세계 각국에서 개발된 건강영향평가의 지침서에 많은 공통된 절차 및 지침 내용 또는 비슷한 건강영향평가의 개념 및 정의를 발견할 수 있었다. 따라서 저자는 모든 지침서를 하나로 묶어 보편적인 건강영향지침서를 개발하는 것이 가능할 것이라고 제언하였다. 그리하여 건강영향평가 시행자들이 이 분야에 좀 더 쉽게 접근할 수 있도록 하고, 연구자들이 제안서를 제출할 때 과학적 근거를 제시할 수 있고, 평가자들은 건강영향평가 시행의 평가 및 발전성을 비교할 수 있을 것이라고 주장하였다. 하지만 이러한 통일된 건강영향평가 지침서는 지역적 한계, 특정 장소성(site-specific) 및 문화적 적절성 그리고 건강영향평가 절차의 지방 소유권(local ownership) 등을 제공해 줄 수 없는 한계점도 있음을 강조하였다.

3. 건강영향평가 연구 동향 고찰의 목적과 방향

현재 미국, 유럽과 아시아에서 계속해서 건강영향평가 제도를 도입하고 관련 도구를 개발하고 있으며 관련 연구 범위를 넓혀가는 추세이나 최근 연구 동향을 분석한 연구는 많지 않다. 현재 대부분의 건강영향평가 연구는 건강영향평가 자체 방법론이나 문제점들의 제시하는 연구 또는 건강영향평가 사례 연구가 주를 이루고 있다고 볼 수 있었다. 그리고 정책, 프로그램 및 사업이 건강에 미치는 영향을 예측하는데 있어 접근하는 방법은 연구자마다 각기 다르다. 또한, 건강영향평가에서 정량적 분석(quantification)은 거의 시도되어 지고 있지 않으며 이러한 연구를 하기 위한 기준 도구(standard tool)도 부족한 현실이다. 하지만 합리적인
의사 결정(rational decision making)은 건강 영향에서의 비용과 이익을 추정하도록 요구하고 있다.26) 따라서 현재 시점에서 최근 건강영향평가 연구 동향을 분석하는 것은 시범적으로 시행되고 있는 건강영향평가 사례 및 건강영향평가 연구의 현황을 파악하게 한다. 그리고 정책에서 건강 영향으로 인한 비용과 이익을 추정할 수 있도록 하는 기준 도구 및 정량적 분석의 개발을 할 때 근거로 사용될 수 있음을 동시에 앞으로 국내외 다양한 건강영향평가 연구가 이루어질 수 있도록 도와주는 중요한 역할을 할 것이다. 그리고 현재 시행되고 있는 건강영향평가 방법 및 연구는 과학적 근거 바탕(scientific evidence based)이 부족하다.27) 이에 따라 최근 연구 동향을 파악함으로 건강영향평가 연구진들에게 과학적 근거를 제시하고 근거를 바탕으로 한 연구를 하여 연구의 질적 개선을 하도록 돕는다.

앞서 언급한 연구의 필요성을 바탕으로 이 연구의 목적은 다음과 같다.
○ 건강영향평가를 시행할 때 근거를 바탕으로 한 증거(evident-based) 제시한다.
○ 선진국 및 다른 해외 국가들의 건강영향평가 연구 동향 및 교훈(lessons learned) 파악한다.
○ 건강영향평가 연구의 앞으로 나아갈 방향 제시한다.

제2절 외국의 건강영향평가 연구

본 연구에서 해외 국가들과 한국의 건강영향평가 연구 동향을 파악하고자 한다. 해외 국가는 유럽, 미국, 캐나다, 호주, 아시아, 그 외의 다른 국

26) Lhachimi, 2010
27) Mindell, 2010

〈표 2-3〉 분야별 관련 범주

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1. 국가별 건강영향평가 연구 동향


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<td><strong>합 계</strong>                                                             <strong>148</strong></td>
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가별 논문 발표 동향을 살펴보면 유럽의 연구가 미국, 캐나다, 호주, 아시아 및 다른 국가들에 비해 많은 비중을 차지하는 것을 볼 수 있다(그림 2-2). 유럽 여러 나라의 연구는 전체 논문의 절반 이상 (59.5%)을 차지하고 있다. 이 중 영국이 32건으로, 유럽 논문의 36.3%를 차지
하고, 모든 나라와 비교했을 때 전체의 21.6%를 차지함으로, 지난 4년간 영국은 유럽 뿐 아니라 전 세계적으로 가장 많은 논문을 발표한 것으로 나타났다. 그 다음으로 미국이 21건 (21.6%), 그 다음 호주가 15건 (11.5%)의 순서로 가장 많은 논문을 발표하였다. 그 외 스페인, 이탈리아, 네덜란드, 캐나다도 각각 13건, 10건, 9건, 6건을 각각 발표하였다.

[그림 2-2] 나라별 논문 분포도


데이터를 연도에 따라 각 국가별로 분류하여 연구 동향을 분석해 보았다. 국가별 분석표는 다음과 같다 (표 2-5). 모든 연도에 걸쳐 유럽, 특히 영국이 가장 많은 논문을 발표하였고, 2011년의 경우 호주 및 뉴질랜드의 논문 건수가 미국의 논문 건수보다 많았다. 미국, 호주, 뉴질랜드 및 아시아의 논문 발표 건수가 2009년과 2012년에 걸쳐 계속해서 증가하는 양상을 보였다. 유럽의 경우 2012년에 논문 건수가 감소한 것을
볼 수 있었는데, 2012년 데이터가 상반기에만 국한 되어 있는 것을 감안할 때 전년도 대비 논문 건수가 감소했다고 말할 수 없다.

〈표 2-5〉 해외 국가별, 연도별 연구 논문

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2. 분야별 건강영향평가 연구 동향

결과를 또한 분야별로 분석해 보았다. 논문을 분야별로 분류할 때 논문의 키워드 및 논문 내용을 보고 논문을 분류하였다. 분야별 분석표는 다음과 같다(표 2-6).

〈표 2-6〉 분야별 건강영향평가 논문

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2009년부터 2012년 상반기까지 발표된 논문은 환경과 관련된 내용이 주를 이루었고, 그 다음으로 건강영향평가 역량강화(capacity building)와 관련 내용, 건강영향평가 방법(HIA methodology), 건강영향평가 평가, 도시개발 및 주거환경관련 그리고 보건 및 복지 관련 내용 순서로 주를 이루었다(표 2-3, 그림 2-3). 그 외의 논문은 여행관련 정책의 건강영향평가 사례와 전제적인 국가 정책에 건강영향평가를 도입해야 한다는 내용이 있었다. 환경과 관련된 내용을 세분화 하면 공기오염, 기후변화, 위험물질관리, 폐기물관리, 수도 시설 관리의 건강영향평가 사례 연
구로 분류할 수 있었다. 또한 보건 및 복지 관련 내용은 보건 및 복지 정책의 건강영향평가 사례 연구, 노동 위생, 신체 활동, 정신 건강에 관련된 것이었다. 또한 총 148건의 논문 중 9건의 논문이 국제 보건에 관련된 것이었다. 예를 들어, 독일에서 중국의 주강삼각주(Pearl River Delta) 내 도시들의 대기오염에 관한 건강영향평가 연구를 발표한 것, 호주에서 아시아 태평양의 건강영향평가 시행에 관해 평가하는 것 등이 있다.

[그림 2-3] 논문의 분야별 분석표

논문의 분야를 연도별로 분석해 본 그래프는 다음과 같다(그림 2-4). 2009년에는 건강영향평가 방법, 역량강화 및 환경관련 건강영향평가 사례 연구가 많았다. 2010년에는 건강영향평가 정책 개발, 역량강화 그리고 보건 및 복지관련 분야 건강영향평가 사례 연구가 많았다. 그 외 건강영향평가 방법과 정책 개발 연구가 다음 순서로 많았다. 2011년에는
환경관련 건강영향평가 사례 연구가 다른 부분의 연구에 비해 훨씬 많은 비중을 차지하였고, 건강영향평가 방법, 역량강화와 건강영향평가의 평가 연구가 그 다음으로 많은 부분을 차지하였다. 2012년 상반기까지 발표된 논문은 도시개발 및 주거환경 그리고 환경 관련 건강영향평가 사례 연구가 주를 이루고 있다. 이에 따라, 최근 4년간 건강영향평가 연구는 환경관련 건강영향평가의 사례 연구가 가장 많은 비중을 차지하고, 건강영향평가 방법 및 역량 강화가 그 다음으로 많은 비중을 차지하고 있으며, 건강영향평가 정책 개발 및 평가, 도시 개발 및 주거 환경과 환경 그리고 보건 및 복지 관련 건강영향평가 사례 연구가 다음으로 많은 비중을 차지하고 있다. 이와 반대로, 교통, 농업, 건강 평등에 관련된 건강영향평가의 연구는 앞에 언급된 주된 연구에 비해 많이 부족한 것으로 나타났다.

[그림 2-4] 연도별 연구 분야 분석표

각 나라의 분야별 연구 동향 또한 살펴보았다(부록1). 지난 4년간, 연구 논문이 가장 많은 유럽은 가장 다양한 연구 분야를 보이고 있다. 그 중 환경에 관한 건강영향평가 사례연구를 가장 많이 하였고, 그 다음으로 건강영향평가 방법 (14%), 건강영향평가 역량강화 (13%), 보건 및 복지에 관련 (11%) 순서로 논문을 찾을 수 있었다. 그 외에 건강영향평가 정책 개발, 도시 개발 및 주거 환경, 교통, 영양 및 식품안전, 농업 관련 연구 및 그 이외 다른 연구도 찾을 수 있었다. 또한 건강영향평가의 평가에 관한 논문도 전체 유럽 논문의 10%를 차지하고 있었 다. 하지만 반대로, 건강 평등에 관한 논문은 없었던 것으로 나타났다 (그림 2-5).

[그림 2-5] 유럽의 분야별 연구 동향

유럽 다음으로 미국에서 발표된 연구 논문이 가장 많았는데, 미국의 논문을 분야별로 분석한 것을 그래프로 나타내었다(그림 2-6). 미국의 연구 논문 중 가장 많은 분야는 건강영향평가 역량 강화(38%)로 나타났으며 건강영향평가 방법 (19%), 건강영향평가의 평가 (19%), 영양 및 식품안전 관련 연구(10%)로 각각 나타났다. 그리고 도시 개발 및 주거 환경 관련 연구도 9%로 나타났다. 반대로, 건강영향평가 정책 개발, 환경, 농업, 보건 및 복지, 교통과 건강 평등에 관련된 논문은 없었다.

[그림 2-6] 미국의 분야별 연구 동향

호주의 분야별 연구 동향을 그래프로 나타내었다(그림 2-7). 호주와 뉴질랜드는 건강 평등에 관한 연구 논문이 가장 많이 차지하였고 (23%), 그 다음으로 환경 (18%), 건강영향평가 방법 (17%) 순으로 나타났다. 그리고 건강영향평가 정책 개발, 영양 강화, 도시 개발 및 주거 환경 관련 연구가 각각 12%를 차지했으며, 보건 및 복지 관련 연구가 6% 차지하였다. 반대로, 건강영향평가의 평가, 농업, 영양 및 식품 안전과 교통 관련 연구 논문은 없었다.

[그림 2-7] 호주와 뉴질랜드의 분야별 연구 동향

아시아의 경우, 건강영향평가 정책 개발 관련 연구가 가장 많았고 (42%), 그 다음으로 보건 및 복지, 환경 관련 연구가 각각 17%로 나왔다. 그 외에 건강영향평가 방법, 건강영향평가 역량 개발과 도시 개발 및 주거 환경 연구가 각각 8%를 차지하였다. 하지만 건강영향평가의 평가, 농업, 건강 평등, 영양 및 식품 안전, 교통관련 연구 논문은 없었다(그림 2-8).

[그림 2-8] 아시아의 분야별 연구 동향


캐나다는 6건의 학술지논문 밖에 검색되지 않았는데, 그 중 절반이 건강영향평가 역량강화에 관련된 논문이었고, 그 중 건강 평등과 보건 및 복지와 관련된 건강영향평가 논문이 각각 17%를 차지하였다. 나머지는 도시 개발 및 주거환경 관련 논문이었다.

그 외의 다른 나라는 케냐에서 보건 및 복지 관련 건강영향평가 논문 을, 이스라엘에서 건강영향평가의 평가와 관련된 논문 2건을, 나이지리아에서 환경 관련 건강영향평가 연구 사례를 발표하였다.
제3절 국내 건강영향평가 연구

1. 분석개요


2. 국내 건강영향평가 연구 동향

한국은 2007년부터 본격적으로 건강영향평가 연구가 주목받기 시작했다. 이미 수년전에 몇 몇 전문가들이 건강영향평가에 관한 연구를 하였지만, 그 수가 매우 적었다. 국내에서 건강영향평가가 관심을 받기 시작한 2007년부터 조금씩 연구 활동이 증가했다고 본다. 2007년부터 2011년까지 출판된 총 42건의 논문을 자료유형별로 분류해본 결과, 국내학술지논문이 26건 (62%), 단행본이 13건 (31%), 학위논문 2건 (5%) 그
리고 학술대회포스터발표가 1건 (2%)으로 나타났다(그림 2-9). 2007년부터 2011년까지 국내에서 발표된 건강영향평가 연구는 국내학술지논문이 가장 많았고, 단행본이 그 다음으로 많았다. 단행본은 정책보고서와 연구보고서로 나뉘져 있었다.

[그림 2-9] 자료유형별 분포도

선정된 건강영향평가 연구 논문들이 발표된 발행지를 분석해 본 결과, 총 14종류의 발행지를 발견할 수 있었다. 이 중 세 종류는 학술대회발표 논문집이었고, 14종류에 포함되지 않은 논문 2건은 발행자가 표시되어 있지 않았다. 총 14종류의 발행지 중, 한국보건사회연구원 연구보고서의 논문 건수가 13건으로 가장 많았다. 그 다음으로, 보건복지포럼이 10건으로 많은 건수를 차지하였다(표 2-7). 국내 건강영향평가 연구가 한국보건사회연구원을 중심으로 발전하였기 때문에 한국보건사회연구원의 건강영향평가 관련 연구보고서 및 정책보고서가 많은 것으로 보이
며, 보건복지포럼 또한 대표적인 국내 보건 학술지이기 때문에 논문 게재가 많은 것으로 보인다. 그 외에 환경영상평가 학술지에 5건의 논문이 발표되었고, 나머지는 건수가 매우 적다.

〈표 2-7〉 건강영상평가 논문이 발표된 발행지 종류

<table>
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<td>국토: planning and policy</td>
<td>1</td>
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<tr>
<td>대한산업의학회지</td>
<td>2</td>
</tr>
<tr>
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<td>1</td>
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<tr>
<td>보건교육 건강증진 학회지</td>
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<tr>
<td>표시 없음</td>
<td>2</td>
</tr>
</tbody>
</table>

해외지역의 인구에 대한 건강영향을 평가하도록 시행하였다. 이로 인해, 건강영향평가의 관심과 정부의 지원이 늘어나고 이에 따른 연구도 증가하였을 것이라 추측한다.

[그림 2-10] 연도별 국내 학술지 현황 (2007-2011)

선정된 논문을 분야별로 분류해 보았다(그림 2-11). 그 결과, 건강영향평가 정책 개발 연구가 가장 많은 비중 (24%)을 차지하였다. 그리고 환경 관련 연구가 21%로 그 다음으로 많았고, 건강영향평가 역량강화 연구가 17%로 세 번째로 많았다. 그 외에 건강영향평가의 평가가 12%, 보건관련 건강영향평가 사례 연구가 9%, 건강영향평가 방법과 도시 개발 및 주거환경 관련 연구가 각각 5%, 교통시설 관련 건강영향평가 사례 연구가 2% 그리고 그 이외 다른 분야의 연구가 5%를 차지했다. 국내의 경우, 아직까지도 농업, 교통, 영양 및 식품 안전, 건강 평등과 같은 분야의 사례 연구가 없었다.

28) 서미경외, 2008
제2장 건강영향평가의 연구동향고찰


제4절 소결

1. 소결 및 시사점

건강영향평가에 관한 연구는 지난 수십 년간 계속해서 발전되어왔다. 환경영향평가 내 건강 영향을 평가 하는 것으로 시작하여 최근 사회적 건강 결정요인을 고려하는 건강영향평가까지 다양한 모습으로 발전되고 있다. 이에 따라, 건강영향평가 방법의 다양화, 건강영향평가 역량강화, 건강영향평가의 평가에 관한 연구도 증가하고, 환경 관련 건강영향평가 사례연구 외에 교통, 농업, 보건 및 복지 관련 건강영향평가 사례연구들도 시간이 지남에 따라 점점 증가하는 추세다.
하지만 2009년에서 2012년 상반기까지 발표된 논문을 보면, 아직까지도 건강영향평가의 연구 분야 및 지역의 폭이 넓지 않은 것을 볼 수 있다. 본 연구에서 조사된 해외 논문 중의 대다수가 유럽, 특히 영국에서 발표되었다. 모든 나라 중 영국이 가장 많은 논문 수를 가지고 있고, 미국, 호주, 스페인, 이탈리아가 그 다음으로 많은 논문 수를 가지고 있다. 또한 독특한 점은 아프리카의 케냐와 나이지리아에서 각각 1건의 연구를 발표하였고, 이스라엘에서도 1건의 논문 수가 발견되었다. 여기서 시사할 수 있는 점은, 논문의 나라별 분포의 폭이 매우 작다는 것이다. 앞에서 언급한 나라들을 제외하고 다른 나라들은 연구의 건수가 10건을 넘지 못하고 있다. 선진국들의 연구 강세에 비해, 취약 국가들은 연구가 미흡하다. 그러므로 국제적으로 건강평등을 지향하는 차원에서 기반을 갖춘 선진국이 취약 국가에게 건강영향평가를 도입하고 연구할 수 있도록 지원해 주는 것이 필요하다. 그리고 국제적인 연구 네트워크의 형성이 활발해져서 건강영향평가 연구가 선진국 뿐 아니라 취약국가에서도 활발히 진행되도록 지원해야겠다.

전체 검색된 논문 건수도 다른 보건 분야의 연구에 비해 그 수가 매우 적은편이다. 예를 들어, 환경영향평가와 관련된 논문이 아직까지도 건강영향평가 관련 논문보다 많이 검색되었고, 다른 보건 분야의 검색 결과가 함께 검색되는 현상을 보였다. 연구 분야 또한 건강영향평가의 방법, 역량강화, 정책개발 및 건강영향평가의 평가가 대다수를 이루었다. 국내 연구와 해외 연구 모두 이와 같은 비슷한 현상을 보이고 있다.

그리고 전체 선정된 연구 논문에서 건강영향평가 방법, 역량강화, 정책 개발 및 건강영향평가의 평가가 대다수를 이루는 것을 보면, 건강영향평가에 대한 관심이 점점 높아지고 있어 건강영향평가를 더욱 개발하고 고차 하는 움직임이 있음을 알 수 있다. 해외 연구 분야에서는 건강영향평가의 역량강화가 가장 많았고, 국내 연구 분야는 건강영향평가의 정책
개발이 가장 높은 비율을 차지하였다. 이와 같은 결과는 해외 국가, 특히 유럽의 경우, 한국보다 건강영향평가의 시행 및 개발이 먼저 시작되어 현재 어느 정도 정책 개발 및 방법의 연구가 중간 단계 혹은 고급 단계에 있으므로 건강영향평가의 개발 및 방법 연구보다 한 단계 앞서 건강영향평가의 역량을 강화시키고자 하는 움직임이 더 많다는 것을 시사한다. 그리고 이미 많은 건강영향평가의 사례들이 발표되어서 건강영향평가를 어떻게 더 효과적으로 다양한 분야에 접근하고, 부족한 부분을 채우는 것이 중점이 두고 있다. 반대로, 한국의 경우 건강영향평가에 대한 관심과 개발이 유럽, 호주, 캐나다, 미국보다 늦게 시작되었으므로 아직 건강영향평가를 구축하고 개발하고 있으며, 현재 여러 건강영향평가가 시범 단계에 있음을 볼 수 있다. 그래서 연구 분야도 건강영향평가 구축 및 개발에 초점이 더 맞춰져 있다고 볼 수 있다. 또한, 전체 국내 연구 논문의 수도 해외 논문 수에 비해 절반도 되지 않는 것으로 나타난다.

건강영향평가 사례 연구 논문에서는 해외와 국내 모두 환경관련 건강영향평가의 사례 연구가 많은 부분을 차지하고 있다. 게다가 환경 관련 사례 연구의 대부분이 공기오염에 관한 것이었고, 나머지는 기후 변화, 유휴물질관리, 폐기물 관리, 수도 관리로 나뉘어 있었다. 하지만 나머지 연구들은 공기오염 관련 건강영향평가 사례 연구에 비해 아주 적은 숫자를 보였다. 여기서 중요하게 볼 것은, 해외 및 국내 연구 모두 농업, 건강 평등, 교통, 영양 및 식품안전 등 다양한 분야에서의 접근이 아직까지도 미흡하다는 점이다. 또한 도시 개발 및 거주 환경 관련 건강영향평가 사례 연구도 대도시에 집중되어 있고, 농촌 지역을 목표로 한 연구는 찾아볼 수 없었다. 또한 농업 관련 건강영향평가 사례 연구도 거의 찾아볼 수 없었다. 건강 평등과 같은 경우, 연구의 사회적 결정 요인의 고려가 더욱 필요하다는 것을 많은 연구자들이 건강 결정 요인 관련 연구
구에서 보여주고 있지만, 실제 건강영향평가 사례 연구는 많지 않았다. 이 분야는 호주와 캐나다만이 사례 연구를 하였다. 호주의 경우 영국과 더불어 건강영향평가 초기 개발에 기여한 나라 중에 하나이다. 그러므로 건강영향평가의 개발 및 시행이 다른 나라에 비해 앞서 있다고 볼 수 있었다. 그에 따라, 건강영향평가의 취약점인 사회적 결정 요인의 고려가 더 접근하려는 것으로 본다. 영양 및 식품 안전 관련 연구의 경우, 미국을 제외한 대부분의 나라가 건강영향평가 사례 연구를 하지 않았다. 식당 음식에 영양 표시제도를 도입하는 것과 나트륨 성분 함량을 제한시키는 정책에 대한 건강영향평가 사례를 발표하였다. 이와 같이 미국이 영양 및 식품 안전 분야에 건강영향평가로 접근한 것은 현재 비만문제가 미국 전체 국가적 문제로 대두되고, 연방정부의 큰 관심 과제로 떠오르고 있기 때문이라고 본다. 오바마 대통령과 영부인이 비만에 대한 관심이 높아, 영부인이 직접 참여하는 비만 감소 프로젝트를 설립하였다. 이에 따라, 연방정부의 막대한 자금 지원 및 정부 지원 프로그램이 늘어났고, 각 주정부 및 지방단체에서 비만 관련 정책을 보건 정책 내에서 선두로 내세우고 있다.

2. 연구분석의 제한점

본 연구를 시행할 때 학술지 검색 데이터베이스 접근에 많은 어려움이 있었다. 대부분의 학술지 검색 데이터베이스는 유료로 사용하도록 되어있기 때문에 더 많은 종류의 데이터베이스를 검색하지 못하였다. 또한 본 연구의 결과는 선정된 학술 논문 결과를 집중으로 분석하였기 때문에 본 연구의 결과가 모든 건강영향평가 연구를 대표하는 것이라고 보기 어렵겠다. 특히, 건강영향평가 사례 연구의 경우, 학술지에 발표된 것으로 제한되었기 때문에 각 나라별, 기관별로 시행되어 기관 웹사이트에
출판한 건강영향평가 리포트는 포함하지 않았다. 그러므로 실제 건강영향평가 사례수보다 학술지의 사례 연구가 더 적게 나타났을 수 있다. 또한 각 나라별로 언어가 달라, 각 나라별 언어로 된 학술지에 더 많은 연구 논문이 발표되었을 수도 있다. 하지만 본 연구는 영어와 한국어로 논문을 제한하였다.

3. 제안

건강영향평가는 정책이나 프로그램의 긍정적 또는 부정적 영향을 미리 파악하여 건강 유효을 줄일 수 있는 가장 적절한 도구이다. 그러므로 건강영향평가 연구의 역량을 개발하고 다양한 분야의 연구에 접근할 수 있도록 지원하는 것이 중요하다. 미국의 Andrew Dannenberg는 Dannenberg et al. (2006)의 연구에서 계속 성장하고 있는 건강영향평가 분야 연구에 관한 지침서 및 시사점을 제시하였다. Dannenberg의 연구 결과와 본 연구 결과를 기반으로 저자는 앞으로 건강영향평가 연구의 나아갈 방향 및 가치를 제시한다. 제시한 항목들 중 국내에서 현재 이미 시행되고 개발된 것이 있을 수도 있다.

○ 현재 개발된 건강영향평가 도구 및 방법을 검토해야 한다. 각 나라 또는 지역마다 건강영향평가의 도구 및 방법이 다를 수 있다. 꼭 모든 건강영향평가의 방법이 통일되어야 하는 것은 아니다. 지역 특성에 따라 도구를 지역별로 개발할 수 있다.
○ 건강영향평가의 시범 사업을 계속해서 추진하고 늘려나가야 한다. 시범 사업을 통해 건강영향평가의 연구를 더욱 활성화할 수 있다.
○ 보건 분야 이외의 교통, 주거환경과 같은 다른 분야의 건강영향평가 시행 시 사용되는 증거자료에 대한 체계적인 검토가 필요하다.
과학적 근거를 바탕으로 한 증거 사용을 지원한다.
○ 다른 공공분야에 보건 분야에 대한 인지도를 높일 수 있는 소셜 마케팅 전략을 개발 한다. 보건 분야의 인지도를 높임으로 공공정책이 미치는 건강에 대한 영향 및 그 중요성을 인식 시킬 수 있다.
○ 의사결정자들에게 건강영향평가를 알릴 수 있도록 의사소통을 발전시킨다. 의사결정자들이 건강에 대한 인식이 클수록 건강이 다양한 공공정책에 반영되며, 이에 따라 국민건강증진에도 기여할 수 있다.
○ 사회 건강결정요인에 대한 영향의 수량화 방법을 발전시킨다. 생물학적, 환경적 건강결정요인 등 다른 건강결정요인은 그 영향을 측정하는 도구가 많이 개발되어 있으나 주거환경, 소득수준, 교통 또는 여가활동의 접근성 등 사회 결정요인을 수량적으로 측정할 수 있는 도구는 많지 않다. 그러므로 이에 대한 측정도구 연구를 발전 시켜 좀 더 다양한 분야의 접근을 돕는다.
○ 건강영향평가 데이터베이스를 구축하여 건강영향평가 도구, 가이드, 사례 등에 한 번에 접근할 수 있도록 한다. 이를 통하여 건강 영향평가 연구자들의 자료 접근성을 높을 수 있다.
○ 기존의 건강영향평가 용어를 공동된 용어로 통일하여 연구의 질을 높인다. 현재 건강영향평가의 용어는 여러 가지로 사용되고 있다. 그러므로 하나로 통일된 용어를 정리하여 모든 연구자들이 같은 용어를 사용할 수 있도록 한다. 특히 국내의 경우, 번역된 용어들이 많기 때문에 번역에 따라 같은 용어가 다르게 번역되여 사용될 수 있고, 그 의미가 달라질 수 있다. 그러므로 통일하는 것이 필요하다.
○ 환경 이외의 다양한 분야의 건강영향평가 연구 접근이 필요하다. 환경 분야에 집중된 연구를 좀 더 다양한 분야로 발전시켜 연구
의 질과 다양성을 높이도록 한다. 특히 농촌지역이나 농업, 제 3세계 지역의 정책 및 프로젝트의 건강영향평가가 필요하다.
○ 건강영향평가 시행자와 전문 연구자의 다양한 교육이 필요하다.
○ 시행된 건강영향평가의 평가가 더 많이 필요하다. 평가를 함으로써 부족한 부분이 무엇인지를 파악하고 필요에 따라 도구 및 방법을 수정한다.
○ 건강영향평가 연구의 지원을 늘린다. 현재 제한된 건강영향평가의 지원을 늘리고, 특히 대학 및 보건 교육 훈련에 건강영향평가 커리큘럼을 넣어 더 많은 연구자와 시행자가 배출되도록 한다.

이와 같이 건강영향평가의 연구의 질을 높이고 다양성을 추구하기 위해서는 모든 분야에서의 노력이 필요하다. 특히 건강영향평가의 경우 보건 분야 내에서도 다른 보건 분야 주제에 비해 많이 알려지지 않았다. 그러므로 현재 건강영향평가 연구자들은 건강영향평가를 더 많이 알리고, 더 많은 전문가들을 훈련시킴으로써 점차적으로 건강영향평가 연구 발전에 기여해야 할 것이다. 또한 보건 분야 외에 다른 분야에도 건강영향평가의 중요성을 알리 공공정책이 건강에 미치는 영향을 인식하게 하도록 도와주어야 하겠다. 이로써, 건강영향평가의 근본 개념인 “건강한 공공정책”을 촉진시켜 국민건강을 증진시켜야 하겠다.
건강영향평가 영문웹사이트 구축
제3장 건강영향평가 영문웹사이트 구축

제1절 건강영향평가 영문웹사이트 구축개요

건강영향평가 영문웹사이트(이하 HIA 영문웹사이트) 구축의 목적은 우리 연구원이 의장을 맡고 있는 서태평양지역의 건강영향평가 TWG(Thematic Working Group) 활동과 관련하여 건강영향평가정책의 자료를 공유하기 위함이다. 또한 건강영향평가에 대한 정보를 확산시키고 국제적인 교류를 확대하기 위하여 영문홈페이지를 개발하여 자료공유 및 원활한 유지관리를 하고자 하였다.

영문홈페이지 구축의 내용은 다음과 같다.

○ 웹 기획, 디자인
○ 온라인 컨텐츠 업로드, 제반 프로그램 및 DB 유지 운영,
○ 홈페이지 접속로그분석, 시스템(H/W 및 Application) 관리 등 홈페이지 기술 운영에 필요한 제반 업무 일체와 추가 보완 및 신규개발
○ 웹사이트 취약점 분석 및 보안 강화
  - 웹사이트 취약점(국정원 8대 취약점 및 OWASP 10대 취약점) 분석 및 점검
  - 입력 데이터 필터링 점검
  - 개발완료 후 테스트페이지 등 사용하지 않는 페이지 삭제 등 점검
제2절 HIA영문웹사이트 구축 결과

HIA영문웹사이트구축내용은 메인페이지, 인사말, 건강영향평가국제학술대회, 건강영향평가관련제도, 한국보건사회연구원의 건강영향평가연구결과, 알림마당, 문의처, 관리자용 뉴스형업데이트 개편 등이다(표 3-1 참조). 건강영향평가영문웹사이트의 사이트맵은 [그림 3-1]과 같다. 영문웹사이트의 메인화면에는 관련 외국사이트를 바로 링크할 수 있도록 하였다(그림 3-2 참조). 국내외 건강영향평가 관련 법제도와 정책에 관한 웹페이지를 별도로 제작하였다(그림 3-3 참조).

### 표 3-1. HIA영문웹사이트의 구축내용

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</tr>
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[그림 3-1] HIA영문웹사이트의 사이트맵구조
아태지역 및 유럽지역의 건강영향평가 동향 및 정책과제

[그림 3-2] HIA영문웹사이트의 메인화면

[그림 3-3] HIA영문웹사이트의 법제도 및 정책 웹페이지
건강영향평가의 국제학술대회를 홍보하기 위하여 학술대회 웹페이지를 별도로 제작하였다(그림 3-4 참조). 학술대회 웹페이지는 건강영향평가 학술대회를 알리고 초록접수와 등록방법에 대하여 공지하였고, 프로그램을 다운로드 받을 수 있게 하였다. 각종 문의사항은 관리자의 이메일로 직접 보내도록 하였다.

건강영향평가 업무 웹사이트는 2012년 7월말에 개발이 완료되어 오픈하였다. 웹사이트의 공지사항, 행사안내 등은 연구원직의 관리자가 직접 운영하였다. 웹사이트 내용을 수정하거나 업데이트 하는 부분은 관계회사와 협력하여 운영하였다. 건강영향평가의 온라인 데이터베이스에는 건강결정요인별 근거자료와 한국보건사회연구원에서 연구한 건강영향 평가 사례보고서가 포함되어있다. 사례연구보고서는 국문과 영문 홈페이지에서 동시에 볼 수 있도록 조정하였다.
4장
아시아태평양 건강영향평가 국제학술대회
제4장 아시아태평양 건강영향평가
국제학술대회

제1절 제4차 건강영향평가 국제학술대회의 개요

1. 배경 및 목적

아시아태평양 건강영향평가 국제학술회는 2007년 호주 시드니에서 처음 개최되었다. 2007년 11월 7-9일간 개최되었다. 주요 참여국가는 동남아시아 국가와 태평양지역국가였다. 제2차 국제학술회는 2008년 12월 8-10일간 태국 방콕에서 개최되었다. 이때의 주요 주제는 “Empowering people ensuring health”였다. 주요 참석자의 분야는 공중보건, 건강증진 및 보건교육, 영향평가, 건강한 공공정책개발, 도시계획 등을 포함하였다. 제3차 국제학술회는 2010년 11월 17일-19일간 뉴질랜드 더니든의 오타고 대학에서 개최되었다. 제3차 학술대회의 주제는 Health, wellbeing and HIA: working better, working smarter였다. 개인의 건강은 문화적, 경제적 활동과 직결되고, 삶의 질과 많은 관련이 있다는 것을 강조하였다. 이때의 주요 관심사는 건강영향평가를 제도화하는 과제였고, 평가의 과정, 제도화하기 위한 추진체계, 건강영향평가 과정의 관리 등이었다. 2010년의 학술대회때에는 환경보건포럼의 건강영향평가 TWG의 워크숍을 공동추진하였고, 회원국 회의(제2차)도 오타고 대학에서 개최하였다.
제4차 아시아건강영향평가 국제학술대회를 서울에서 개최하기로 합의한 후 2012년 10월 9일-11일 한국보건사회연구원에서 개최하게 되었다. 핵심주제는 ‘HIA for increasing healthy life expectancy and well-being”이었다. 이번 학술대회도 국제학술대회와 더불어 건강영향평가 TWG의 워크숍과 회의(제4차)를 공동추진하였다. 이번 행사는 다음과 같다.

○ 아시아 태평양 지역의 급속한 환경변화에 대응하기 위하여 국가 보건문제를 다학문적으로 재검토하고, 지속가능한 건강영향평가의 정책기반을 개발하기 위함임.
○ 보건 및 비보건분야에서 산발적으로 추진되고 있는 건강영향평가의 학문적 검토와 전문적 기술교류를 강화함.
○ 근거기반의 건강영향평가기법을 재평가하고 효율적인 적용방안을 모색함.

기대효과는 다음과 같다.

○ 건강영향평가 TWG 의장기관으로서 Workplan(2010-2013) 결과 보고서작성의 기초자료로 활용
○ 아태지역 건강영향평가 학술적 향상에 기여
○ 전문가 정보교류 및 향후 역량강화를 위한 사례로 활용

이번 국제회의의 추진을 위하여 세계보건기구의 서태평양지역사무소로부터 지원금을 받았다. 이 지원금은 건강영향평가 TWG회원기관의 참석을 지원하기 위한 예산이었다.

 이번 국제행사를 추진하기 위하여 국제회의 준비위원회를 구성하였다.
순천향 대학교의 강은정 교수, 한국환경정책평가연구원의 이영수 선임연구위원, 서울대학교 보건대학원의 김진희 연구원, 세계보건기구 서태평양 사무소의 정현미 박사, 뉴질랜드 오타고 대학의 Rechard Morgan 교수, 호주 뉴사우스웨일즈대학의 Ben Harris-Roxas 등이다.

2. 추진내용

제4회 아시아태평양 국제학술대회의 로고를 개발하였고, HIA영문웹사이트에 국제학술대회 웹페이지를 개설하였다. 행사내용에 대한 공지는 국문 건강영향평가 웹사이트에도 소개하였다. 이 행사의 핵심 주제를 발표할 외빈은 세계보건기구, 아시아개발은행, 미국, 영국, 덴마크, 호주, 뉴질랜드 등에서 초청하였다.

○ Dr. Michaela Pfeiffer(Technical Officer, WHO)
○ Dr. Hisashi Ogawa (Former Regional advisor, WPRO, WHO)
○ Dr. Genandrialine L. Peralta (Senior Safeguards Specialist, Asian Development Bank)
○ Dr. John Kemm (Public Health Consulting Ltd.)
○ Dr. Gabriel Gulis(Univ. of Southern Denmark)
○ Dr. Katrin Engelhardt(Health Promotion Company)
○ Dr. Andy Dannenberg(CDC)
○ Dr. Ben Harris-Roxas(Harris-Roxas Health)
○ Dr. Richard Morgan(Univ. of Otago)

행사의 홍보와 논문초록 공모를 위해서 International Impact Association의 온라인 소식지에도 글을 올렸다. 국내 환경보건 및 보건학 관련 학회,
대학교에 공지하였고, 전국의 시도 및 시군구 보건소 등에 공지하였다. 국제학술대회의 불펜, 가방 등을 제작하였다.

[그림 4-1] 국제학술대회 행사 로고와 포스터
그림 4-2 국제학술대회 행사 비품 사례

볼펜

가방

현수막
아태지역 및 유럽지역의 건강영향평가 동향 및 정책과제

그림 4-3 국제학술대회 초청장
### [그림 4-4] 국제학술대회의 주요 논문

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제2절 건강영향평가 TWG 회의의 개요

1. 배경 및 목적

세계보건기구 서태평양지역사무소(WPRO)와 유엔환경계획(UNEP)에서 공동으로 주도하는 동남아시아 및 동아시아의 제2차 환경보건장관포럼이 2010년 7월 제주도에서 개최되었고, 건강영향평가에 대한 국제적 공조체제추진(Thematic Working Group; TWG on HIA)을 승인한 제주선언문이 채택되었다. 우리 원(KIHASA)에서는 2010-2013년까지 TWG on HIA 회원국의 의장기관을 맡고 있고, 2013년 7월 말레이시아에서 개최되는 제3차 환경보건장관회의에 제출할 활동계획 성과보고서(2010-2012)를 개발을 추진하고 있다.


건강영향평가 TWG의 Business meeting의 주요 내용은 Workplan (2010-2013)의 추진을 위한 협의가 대부분이다. 이 작업계획은 2010년 4월에 개발된 후 같은 해 11월 2차 회의때 수정되었다. 주요 수정사항은 각 계획별 분담기관의 역할을 좀 더 분명하게 하는 것이었다. 2010-2013년의 기간동안의 Workplan의 목표는 관련된 가이드라인, 도구, 정책 및 계획에 대한 지식을 확대하고 공유하며 동남아시아 및 동아

29) 회원국 8개국(캄보디아, 베트남, 라오스, 태국, 필리핀, 몽골, 중국, 한국) 10개 기관의 건강영향평가 담당자, 국제 파트너 3명(일본, 호주, 뉴질랜드), WHO 서태평양지역 사무소, WHO 동남아시아지역사무소, UNEP의 관계자 4명
시아의 의사결정과정에 HIA를 필수적인 요소로 포함시키려는 노력을 포함한다. 이 Workplan의 주요 산출물은 정책자료의 수집, 웹사이트 구축, 훈련자료의 수집 등이 있다.


2. 추진결과

우리 원에서 개최한 제4차 건강영향평가TWG의 회의에는 세계보건기구 고베센터에서도 참여하여 적극적인 토론을 벌였다. 그 이유는 건강영향평가가 만성질환예방을 위한 건강도시 정책에서 중요한 역할을 할 수 있다는 평가 때문이다. 이번 회의에서는 그동안 주요 이슈가 된 각국의 제도화 방안에 대한 검토결과를 Richard Morgan 교수가 발표하였다. 그는 각국의 건강영향평가 제도화경험을 자료를 기반으로 하여 고찰하였고, 다음과 같은 결과를 발표하였다.

○ 태국은 정책과 프로젝트면에서 선진화된 면모를 갖추고 있다. National Health Commission이 big player 역할을 하고 중앙정부(보건부)에서 협력하기 때문에 추진기반이 견고하고 시민사회의 참여도 활발하다.

30) 환경보건포럼 산하에는 7개의 TWG가 있고 건강영향평가TWG는 그 특성상 다른 주제의 TWG와 협력적인 위크숍의 필요성이 제기된 바 있다.
○ 캄보디아는 아직 National Committee for Environment and Health로부터 건강영향평가 정책을 승인받는 단계에 있으며 환경 영향평가에 건강부문을 넣으려는 노력을 하는 중이다.
○ 몽고는 아직 환경영향평가를 도입하는 단계이고 건강위험평가를 도입하려는 시도가 있는 정도이다.
○ 라오스는 정부차원에서 2006년에 정책적으로 도입한 사례이다.
○ 필리핀은 일찍이 1997년에 환경보건영향평가를 도입하였으나 구체적인 정책적 성과는 알려진게 없는 상황이다.
○ 베트남도 환경보호법에 보건분야를 넣으려는 노력이 있는 중이다.
○ 대한민국은 환경보호법에서 건강영향평가를 일부 다루고 있다. 국민건강증진종합계획2020에도 건강영향평가를 포함하고 있다.

2010년부터 TWG의 활동을 통하여 각국의 정부부처 기관에서는 정책적 도입을 위한 노력을 꾀하고 있는 것으로 평가할 수 있었다. 그러나 각국의 정책적 상황이 다르기 때문에 성과를 위해서는 개별적인 역량과 지원이 필요한 상황이다. 제도화를 위해 관리해야 할 요소는 다음과 같다.

○ 공공부문에서 조직문화를 개선해야 한다. 보건문제를 위한 협력분위기 조성
○ 관료조직에서 건강의 결정요인에 대한 인식개선의 노력이 단계별로 필요하다.
○ 조직내에서 건강영향평가를 촉진하는 촉진자(조직)이 필요하다.
○ 자원개발(가이드라인, 인력개발)을 위한 투자가 필요하다.
○ 실무자와 정책결정자들 위한 역량강화 프로그램이 있어야 한다.
이 회의를 통해 제안된 과제로는 다른 동남아시아 국가에 대한 회원 가입을 독려해야 하는 것과 역량강화를 위한 노력과 지원이 지속되어야 하는 부분이었다.

3. 제6차 환경보건포럼 회의

인도네시아 반둥에서 2012년 10월 23-24일간 환경보건포럼고위급회의가 개최되었다. 이에 앞서 22일에는 TWG의장기관이 위원인Advisory Board Meeting이 개최되었다. 이번 회의에서는 회원국들의 환경보건정책개발현황을 보고받고 7개 TWG의장의 토론을 듣는 시간을 가졌다.

Thematic Working Group의 활동성과는 아래와 같다.

○ TWG on Air quality는 ASEAN Agreement on Transboundary Haze Pollution Forum과 협력하였다.

○ TWG on Toxic Chemicals and Hazardous substances는 Strategic Approach to International Chemicals Management(SAICM)의 지 역협력체와 연계하였다.

○ TWG on Solid and hazardous waste는 Tokyo 3R statements와 관련 폐기물감소, 재활용 등에 대한 정보교류의 역할을 하고 있다.

그 외에 Malinla Declaration on Sanitation and Hygiene in East Asia는 Water supply에 대한 TWG를 요청하였다. Task Force에 대한Advisory board의 검토 및 권고사항으로는 환경보건포럼의 역할을

31) 회원국 현황 (14개국) : Brunei Darussalam, Cambodia, China, Indonesia, Japan, Republic of Korea, Lao People's Democratic Republic, Malaysia, Mongolia, Myanmar, Philippines, Singapore, Thailand, Viet Nam
구체화할 필요성이 있다는 점과 TWG 활동의 수준이 다양하여 강화할 필요가 있는 TWG에 대해서 지원이 필요하다는 것이다. TWG Workplan을 제대로 추진하려면 재원이 필요하다.

2013년에 개최될 예정인 환경보건장관포럼을 위한 Task Force report의 권고안의 주요 내용은 다음과 같다.

○ 거버넌스
   - Regional Forum의 목적, 목표, 전략의 수정 필요성 : 방콕현장을 수정보완
   - TWG의 연례회의를 정례화함.
   - TWG의 업무와 역할을 구체화함.
   - TWG 의장의 임기, 보고절차 등 구체화 필요
   - 환경보건포럼 의장 및 부의장의 책임을 구체화하고 순환임기 중을 구체화함.
   - 환경보건포럼의 회원가입에 대한 절차 구체화
   - 환경보건포럼사무국이 정보교류 등 자원 활성화 역할을 해야함.
   - Advisory meeting의 결과를 회원국에 공유함.
   - 환경보건포럼의 지역적인 협력을 확대하여 국제기구, 다른 정부, 다른 부문과 협력하도록 함.
   - 환경보건포럼사무국 전담직원 필요

○ 파트너십
   - 현재 세 가지 종류의 파트너십이 존재: 일개국 또는 일개 기관이 주관하는 독립적인 파트너십, TWG의 협력, 환경보건포럼 전체의 파트너십 등이며. 이중 TWG 협력이 기능활성화를 위해 가장 중요함.
다른 국제기구들과 협력 필요
다른 부문의 기관(에너지, 농업, 교통 등)과 협력 필요
UENP와 WHO의 지원 필요

○ 환경보건포럼의 영향
  - 국가환경보건정책계획(National Environment and Health Action Plan:NEHAP) 마련이 증가하여 환경보건을 위한 국가적 역량이 향상되고 있음.
  - 지역적 국가적 협력의 기반이 되고 있음.
  - 국경간 정보교환강화를 위한 매커니즘 필요
  - 기존의 환경 및 보건관련 국제적 정책과 사업에 대한 환경보건 포럼의 입장정리 필요
  - Scientific conference의 결과를 보다 효과적으로 확산시킬 필요가 있음.

이 결과보고서에는 국제적인 활동을 위한 재원마련 방안에 대한 대안이 세 가지 제안되었다. 3개년간 1,000,000USD 소요예상되며 분배방안은 다음과 같다.

○ UN assessment scale에 따라 지원액 결정
○ 사무국 운영을 위해서는 독립된 액수로 차지하고, 다른 비용은 UN assessment scale에 따라 결정
○ 자발적인 재원지원에 의존

이상과 같은 방안에 대해 회원국의 환경부처와 보건부처로부터의 의견을 모으고 있고, 2013년 환경보건포럼의에서 결정될 예정이다.
제3절 소결

5장
결론 및 정책제언
제5장 결론 및 정책제언

제1절 결론

본 보고서에서는 아시아태평양 및 유럽지역의 건강영향평가 법제도의 추진동향을 분석하고, 관련전문가 및 관계자의 역량강화를 목적으로 하였다. 세부적으로는 환경보건포럼산하의 TWG 활동추진과 국제학술대회를 통한 학술교류를 목적으로 하였다.

본 연구를 위해서 국내외 연구동향을 우선 분석 고찰하였다. 최근 논문을 보면 아직 건강영향평가의 연구분야가 주제나 지역의 폭이 넓지 않다는 것을 알 수 있었다. 해외 논문들은 대부분 미국, 호주, 유럽 등 선진국에서 많이 나오고 있었다. 개발사업으로 인한 건강영향의 취약성이 큰 저소득국가에 대한 논문은 매우 저조한 것으로 나타나 향후 개선을 위해서는 연구를 위한 지원이 필요하다. 연구분야별로는 환경영향평가와 관련된 논문이 아직까지도 건강영향평가 관련 논문보다 많이 검색되었고, 다른 보건 분야의 검색 결과가 함께 검색되는 현상을 보였다. 연구 분야 또한 건강영향평가의 방법, 역량강화, 정책개발 및 건강영향평가의 평가가 대대수를 이루었다. 국내 연구와 해외 연구 모두 이와 같은 비슷한 현상을 보이는 것을 알 수 있었다. 한편 국가별로 각 국가의 주요 보건문제에 따라 건강영향평가의 주제가 다르다는 것을 알 수 있었다.
2012년 10월 9일-11일간 우리 원에서 개최한 제4회 아시아태평양건강 영향평가 국제학술대회는 건강영향평가 TWG의 공개워크숍과 Business meeting을 겸한 회의였다. 이러한 기회를 통해 학술적인 기술과 정책적인 역량강화에 도움이 되었다고 본다. 국내외의 참가자들이 다양한 주제의 논문을 발표하였는데, 이것은 건강영향평가의 대상이 점차 확대되고 있다는 것을 의미한다. 건강의 결정요인이 다양하다는 것을 연구를 통하여 근거를 확보하는 것은 앞으로도 계속 추진되어야 한다.

이번 연구과정에서 국제적인 교류와 정보의 확산을 위하여 영문웹사이트를 구축하여 운영하였다. 국문 웹사이트와 연계되어 있었기 때문에 국내 연구자나 담당자들도 정보를 공유할 수 있게 되었다. 건강영향평가의 분야에서는 새로운 근거를 생산해야 하는 요구도가 높기 때문에 다양한 학계분야와의 접목을 시도하는 계기가 될 수도 있을 것으로 전망한다.

지난 10월 인도네시아 반둥에서 개최된 동남아시아 및 동아시아 지역 환경보건포럼의 고위급회의에서는 환경과 보건정책의 파트너십을 강조하였고, 이를 위해 개별분과의 TWG가 활성화되기 위한 지원이 필요하다는 것을 확인하였다. TWG는 기존의 관련 국제기구나 단체와 협력할 수 있는 여지가 많기 때문에 이를 위한 환경보건포럼사무국의 역할 또한 강화되어야 할 필요성이 제기되었다. 국제적인 활동은 국가간 협력의 기회도 제공하고, 자국내의 환경과 보건정책의 역량강화에 기여하고 있는 것으로 나타나고 있다.

이번 건강영향평가 학술대회와 TWG 활동의 성과는 향후 동남아시아 및 동아시아지역 내 다양한 요구도와 문화를 반영하여 새로운 협력과 지원을 놓는 계기가 될 것으로 전망한다.
제2절 제언

본 연구를 통하여 수렴된 의견과 논의결과를 볼 때 다음과 같은 제언을 할 수 있다.

○ 건강영향평가와 관련하여 개발된 다양한 도구 및 가이드라인이 각 국가에 적용할 때의 방법에 대한 기술적 지원이나 새로운 방법개발이 필요하다.
○ 이를 위해서 국제적인 차원에서 시범사업의 사례, 정책사례를 연구할 수 있는 기회가 확대되어야 한다.
○ 각 국가들이 법제도를 정착하기 위하여 고민하는 부분에 대한 지속적인 consulting과 역량강화가 필요하다.
○ 국제적인 협력의 활성화를 위해 지역 환경보건포럼의 역할이 보다 구체화되고 강화되어야 한다.
○ 다양한 건강결정요인의 분야들에 대해 근거생산을 할 수 있도록 연구지원이 필요하다.
○ 의사결정자들에게 건강영향평가를 알릴 수 있도록 의사소통을 발전시킨다. 의사결정자들이 건강에 대한 인식이 높을수록 건강이 다양한 공공정책에 반영되며, 이에 따라 국민건강증진에도 기여할 수 있다.
○ 사회적 건강결정요인에 대한 영향평가의 수량화 방법을 발전시킨다. 생물학적, 환경적 건강결정요인 등 다른 건강결정요인은 그 영향을 측정하는 도구가 많이 개발되어 있으나 주거환경, 소득수준, 교통 또는 여가활동의 접근성 등 사회 결정요인은 수량적으로 측정할 수 있는 도구는 많지 않다. 그러므로 이에 대한 측정도구 연구를 발전 시켜 좀 더 다양한 분야의 접근을 촉진할 수 있도록 해야 한다.
○ 기존의 건강영향평가 용어를 공통된 용어로 통일하여 연구의 질을 높이다. 현재 건강영향평가의 용어는 여러 가지로 사용되고 있다. 그러므로 하나로 통일된 용어를 정리하여 모든 연구자들이 같은 용어를 사용할 수 있도록 한다. 특히 국내의 경우, 번역된 용어들이 많기 때문에 번역에 따라 같은 용어가 다르게 번역되어 사용될 수 있고, 그 의미가 달라질 수 있다. 그러므로 통일하는 것이 필요하다.

○ 환경 이외의 다양한 분야의 건강영향평가 연구 접근이 필요하다. 환경 분야에 집중된 연구를 좀 더 다양한 분야로 발전시키는 연구의 질과 다양성을 높이도록 한다. 특히 농촌지역이나 농업, 제3세계 지역의 정책 및 프로젝트의 건강영향평가가 필요하다.

○ 시행된 건강영향평가의 성과에 대한 평가가 필요하다. 평가를 함으로써 부족한 부분이 무엇인지 파악하고 필요에 따라 도구 및 방법을 수정한다.

○ 보건 분야 외에 다른 분야에도 건강영향평가의 중요성을 알리 공공정책이 건강에 미치는 영향을 인식하게 하도록 홍보해야 한다. 이로써, 건강영향평가의 근본 개념인 “건강한 공공정책”을 축진시키켜 국민건강을 증진시켜야 할 것이다.
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부록
부록 1.
○ 세계 여러 지역의 45건의 건강영향평가 가이드라인
○ 각 국가의 분야별 연구 동향 (2009년부터 2012년 6월초)

〈부표 1〉 세계 여러 지역의 45건의 건강영향평가 가이드라인

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<td>Introduction to HIA</td>
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<td>GEO Health: methodology for integrated environment and health assessment a focus on Latin America and the Caribbean</td>
<td>International</td>
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부그림 1 각 국가의 분야별 연구 동향

## 부록 2. 건강영향평가국제학술대회 발표자료

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1. World Health Organization

Michaela Pfeiffer
Public Health and Environment Department
World Health Organization
Geneva

Global overview of recent developments in HIA

HIA applications in four contexts

1. Global health arena
2. Sustainable development
3. Development finance
4. Strengthening country systems
HIA in the global health arena

Three defining challenges

1. Need to halt the global epidemic of non-communicable diseases;

2. Need to act on social determinants of health to address health inequities;

3. Need to do more with fewer resources for health.
60% of all deaths due to non-communicable diseases

- Vast majority (80%) of deaths occur in low- and middle-income countries
- 25% of global non-communicable disease related deaths occur before the age of 60;
- Estimated cost to society more than one trillion dollars each year.

UN General Assembly Declaration on Non-Communicable Diseases (2011)

« ...effective non-communicable disease prevention and control require:

- leadership and multi-sectoral approaches for health at the government level, and as appropriate
- health in all policies and whole-of-government approaches across sectors »
Health inequities a major killer and impediment to development

- A child born in a Glasgow, Scotland suburb can expect a life 28 years shorter than another living only 13 kilometres away.
- In Sweden, the risk of a woman dying during pregnancy and childbirth is 1 in 17,400; in Afghanistan, the odds are 1 in 8.
- At least 200 million children globally are not achieving their full development potential.
- 100 million people are impoverished due to paying for health care.
- Four out of five people worldwide lack basic social security coverage.

HIA a key instrument for promoting health equity

Under item 13.8 in the Rio Declaration (2011), countries pledged to:

- “Reach out and work across and within all levels and sectors of government..
- promote mechanisms for dialogue, problem-solving and health impact assessment with an equity focus;
- identify and promote policies, programmes, practices and legislative measures instrumental for the goal pursued by this Political Declaration;
- adapt or reform those harmful to health and health equity;”
Less funds are available for health

ODA contributions for health (disbursed) in relation to total ODA (in %)

Source: Action for Global Health

HIA in the context of sustainable development
Sustainable development policies not harnessing available health opportunities

**EXAMPLE OF CLIMATE CHANGE:**

- Climate mitigation has significant health and social equity co-benefits.
- Opportunities are largely unrecognized by Health and Climate Sectors.
- Health Sector can play unique role in identifying policies with greatest health benefits.
- Implementation/scale up of healthy CC policies require more Health Sector involvement.

---

For example: 'Green' urban transport can reduce chronic disease, injuries and improve health equity

- **Transport reliant on private vehicles increases** congestion, pollution, and physical inactivity.
- **Safe walking/cycling and rapid transit networks can** reduce injury, cardiovascular disease & support healthy physical activity.
- **Cycling to work** reduced premature mortality by 30% among commuter groups in Shanghai & Copenhagen.
- **Rapid transit/NMT improves access to schools, jobs & services** for poor, children, women, elderly & disabled, improving equity.
Health in the context of RIO+20

Three key messages

1. **Health is an important input to sustainable development** – healthy people are better able to learn, work and contribute to their economies and societies.

2. **Sustainable Development can improve health** – smart strategies for transport, housing, energy & agriculture reduce NCDs and diseases of poverty, and enhance health (e.g. physical activity).

3. **Health indicators can measure the success** of sustainable development goals and support governance.

---

Health as a measure of the sustainability of policies and investments

- The world has started to discuss post-2015 development goals...

- This is an opportunity for public health...

- To link policies and investments to sustainable development goals and outcomes through health indicators
Connecting knowledge – making the link to the root causes of disease influenced by sector policies

<table>
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<th>Transport assessment criteria</th>
<th>Effects on health from transport</th>
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</thead>
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<td>Economy Journey times</td>
<td>Economic employment Access to services</td>
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<tr>
<td></td>
<td>Community regeneration</td>
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<td>Biodiversity</td>
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<td>Human mobility</td>
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<td>Integration</td>
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</tbody>
</table>

Factors affecting health

- Fixed
  - Genes, sex, aging
- Access to services
  - Education
  - Health care services
  - Transport
  - Social services
  - Leisure
- Environment / Setting
  - Air quality
  - Social environment
  - Housing / Home
  - Water Quality
  - Work place
- Lifestyle
  - Diet
  - Physical Activity
  - Smoking, alcohol, drugs
  - Sexual behaviour
- Social / Economic
  - Poverty
  - Social Exclusion
  - Employment

Cost benefit analyses: WHO tool for estimating health economic gains from cycling

Download the guidance document, HEAT for cycling and user guide from www.who.int/transportpolicy/2007003.
### Health evidence to promote transparency and accountability

- # of households using solid fuels for cooking and heating
- # coal fired power plants in use
- # number of motorized vehicles
- Indoor air pollution levels × # of people exposed
- Outdoor air pollution levels × # of people exposed
- Pneumonia in children
- Chronic respiratory disease in mothers and children
- Cardiovascular disease
- Respiratory disease

---

**HIA in development finance**
Rationale – why development finance?

- Projects are among those that most significantly affect environmental and social determinants of health
- Banks concerned about the environmental and social impacts of their projects
- Key entry point for influencing “health performance” of large scale development projects, particularly where government systems are weak

What do the safeguards cover?
(example from the International Finance Corporation)

- PS 1: E & S impact management systems
- PS 2: Labour and Working Conditions
- PS 3: Pollution Prevention and Abatement
- PS 4: Community Health, Safety & Security
- PS 5: Land Acquisition and Involuntary Resettlement
- PS 6: Biodiversity Conservation and Sustainable Natural Resource Management
- PS 7: Indigenous Peoples
- PS 8: Cultural Heritage
A major opportunity for health promotion and for health equity

- mainstream health into a range of sector development policies and practices
- expand primary prevention of disease and address many environmental and social determinants of health influenced by sector activities
- influence the health performance of private sector financed projects that use the safeguards and performance requirement model

Application for HIA

- Adapt HIA tools to fit into bank environmental and social performance requirements and processes
  - Capacity building of bank staff
  - Development of tools to support HIA integration into bank project cycle
HIA as an instrument for strengthening country systems

Strategic application of HIA

- generate "bird's eye view" of likely health impacts of sector’s development
  - Not currently captured by project level HIAs

- identify intervention packages, systems, capacities needed to establish sector or industry-level health risk management system

- High-level framework for monitoring and evaluation

- Engagement of relevant stakeholders including industry, government, and affected communities
Many applications for HIA

Policy or Strategy

Public

Urban transport and/or regeneration strategy

Road infrastructure project

Industrial plant

Private

Corporate regional investment strategy

Individual Project

Model for strategic HIA

Analysis of health risks and opportunities associated with different sector development scenarios

- Analysis of impacts of sector development scenarios on health outcomes and health determinants
- Baseline of population health status in affected areas

Gap analysis of core health systems capacities needed to address health impacts associated with the industry

- Occupational health and safety
- Monitoring and surveillance of diseases
- Capacity to respond to specific risks associated with industry
- Capacity to absorb/respond to changes in demand for health services

World Health Organization
### Case example: Mongolia

**Health systems issues vis-à-vis mining sector**

<table>
<thead>
<tr>
<th>Regulatory capacity</th>
<th>Risk management systems</th>
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</table>
| - EIA requirements for consideration of impacts on public health but **NO** guidelines on how to do this  
- Limited capacity for health impact assessment  
- Limited capacity to regulate and monitor working conditions (occupational health and safety) | - Public health capacity to monitor and respond to environmental health hazards associated with mining (e.g. chemical incidents), extremely limited  
- No baseline of existing health status in mining communities  
- Health information system not able to provide baseline data and not ready for use in monitoring |

### Closing remarks
HIA offers a framework for…

- Identifying and implementing inter-sectoral policies that
  - Prevent and address NCDs, and
  - Promote health equity

- Establishing a baseline with appropriate (health) indicators for sustainable development policies,

- Leveraging resources in other sectors to achieve health protection and health promotion

- Strengthening country capacities to respond to the health risks and opportunities posed by a particular industry or economic sector

---

A three point agenda for HIA

1. Generate increased demand for prevention activities;

2. Increase accountability about health impacts of sector policies and investments;

3. Make better and wider use of existing mechanisms, tools, and entry points.
How to implement that agenda?

- Road map and strategy for achieving HiAP Including through strengthened HIA implementation
  - over a 5 to 10 year period.

- Creating mechanisms to support institutionalization of HIA
  - Make it a formal function within the health system
  - Procedures to connect health with other sector processes
  - Mechanisms to promote accountability/transparency
  - Supported by expert groups and exchange of experience

- Need for engagement and support from HIA community
Challenges to implementing HIA: ADB Perspective

G. Peralta and P. Moser
Asian Development Bank
Manila, Philippines

About the Asian Development Bank

- Founded in 1966 based in Manila with 67 member countries and 30 country offices. Mission is to have an Asia and Pacific free from poverty (1.8 billion poor people are in this region).
- With $22 billion in approved financing in 2011, more than 2,900 employees from 59 countries work towards fighting poverty in Asia and Pacific.
ADB Strategy 2020
(2008-2020)

ADB has five core sectors:
- infrastructure
- environment, including climate change
- regional cooperation and integration
- financial sector development
- Education

ADB has 2 non-core sectors:
- Agriculture
- Health

Operational Plan on Health

Support health outcomes through
- Infrastructure (roads, WSS, etc)
- Governance and public expenditure management
- Regional public goods
- Self-standing health projects for MDGs with partners
- Public-private partnerships
- Knowledge, analysis, policy dialogue
Health benefits of a project

- Currently ADB does not take into account all health benefits of a project in the calculation of EIRR, economic internal rate of return.
- Perhaps inclusion of health benefits could raise the EIRR, or make some projects, e.g. clean energy, more attractive.
- How to value health benefits with methodologies that are easy, quick and reliable.
Examples

- Some examples shall be provided on typical ADB-financed public sector infrastructure projects to illustrate the various stages of the project cycle over time, and possibly illustrate how health impacts could be considered at each stage.

Infrastrucure Projects
HIA

- Definition
  There are many definitions

- Methodology
  (i) Qualitative assessment
  (ii) Quantitative assessment

What is ADB doing on HIA?

- ADB published 2 HIA publications:
What is ADB doing on HIA?

- Pilot HIA in Cambodia (Water and Transport sectors)
- HIV Impact Assessment in Infrastructure Projects in Greater Mekong Subregion
- HIA in several EIA for Category A projects
- Climate change and health

Collaborative Approach in Climate Change and Health

1. Sector impacts of CC
   - Climate change
   - Mitigation interventions

2. Health impacts
   - Water Agriculture Disaster
   - Economic expertise

3. Socioeconomic characteristics
   - Development interventions
   - Economic function
   - Adaptation interventions
What is ADB doing on HIA?

- New IPSA (Initial Poverty and social Analysis) template
- Health Impacts in other Communities of Practice other than health
- Climate Change and Health TA, highlighting the importance of available health benefits/impacts when ADB does the economic analysis.

Current approach

- Limited ADB HIA practice is safeguards approach to reducing negative health impacts;
- No HIA guidance for proactive health approaches in infrastructure and other non-health activities to yield better health outcomes.
Safeguard Policy Statement (SPS)

- To comply with the SPS 2009, Borrowers have to follow applicable national and local regulatory requirements, relevant international conventions, as well as identify significant environmental impacts and implement mitigation measures to reduce the potential impacts.

Environmental Safeguards Principles and Requirements

1. Project screening and categorization
2. Environmental assessment
3. Alternatives examination
4. Environmental management plan
5. Consultation and grievance redress mechanism
6. Information disclosure
7. Monitoring and reporting
8. Biodiversity protection and natural resources management
9. Pollution prevention and abatement

10. *Occupational and community health and safety*

11. Physical cultural resources
Policy Principles and Requirements
Occupational Health and Safety

• Provide workers with safe and healthy working conditions (World Bank Group’s EHS)

• Prevent accidents, injuries, and disease by
  (i) hazards identification
  (ii) preventive/protective measures
  (iii) training
  (iv) documenting and reporting
  (v) emergency preparedness/response

Policy Principles and Requirements
Community Health and Safety

(Cont.)

• Identify/assess the impacts/risks to affected communities during the project design, construction, operation, and decommissioning, and establish measures/plans to prevent and address them

• Water quality and availability; structural safety; fire safety; traffic safety; hazardous materials; disease prevention
Policy Principles and Requirements
Community Health and Safety

(Cont.)

- Establish emergency preparedness and response (training, resources, responsibilities, communications, emergency response procedures)
- Provide appropriate information to affected communities
- Engage external experts to assure the safety of communities

There is ESHIA

- The International Finance Corporation already requires ESHIA or Environmental, Social, and Health Impact Assessment. However, evidence based HIAs are still challenging to undertake and this might be the reason why the World Bank and other regional banks including ADB have not followed this approach towards ESHIA.
Which approach?

Varying opinions regarding the best approach to take on HIA whether
1. to incorporate HIA into a safeguards approach or
2. to use HIA to optimize health impacts (upstream stage).

EIA and HIA relationships
Upstream stage HIA

- Consider health impacts with environmental impacts throughout the program/project cycle.
- At the upstream stage, where project or site selection could be undertaken early on for alternatives which have greater potential for producing health outcomes.

Challenges within ADB

- Lack of awareness and appreciation among Bank staff
- The perception that HIA belongs to the health sector
- Poor understanding of HIA among Government and public
- There is not yet clear policy on HIA
Future steps

ADB plans to take the necessary steps to address these challenges:
(i) Provide short training on HIA as part of in-house staff development
(ii) Explore more pilot projects to do HIA
(iii) Review policies to consider health
(iv) Strengthen link with IFIs such as WB & IFC

For more information

Please contact:
- Patricia Moser, Lead Health Specialist
  Email: pmoser@adb.org
- Gene Peralta, Senior Environment Specialist
  Email: gperalta@adb.org
- Acknowledgement: CoP Health
- Vincent de Wit
- Rikard Elfving

Thank you!
Health Impact Assessment, Harnessing Wisdom or Squeezing in Data?

Domyung Paek
School of Public Health
Seoul National University

Talks Covered

1. From Data to Wisdom
2. System Building Process
3. Asbestos Ban, Why? or Why Not?
4. System Failures and Ways Forward
1. FROM DATA TO WISDOM
From data to wisdom

- Data ≠ Information
  - useful

- Information ≠ Knowledge
  - true

- Knowledge ≠ Wisdom
  - enacted
System of H&S Management

- System for Data Generation
- System for Information Dissemination
- System for Knowledge Translation
- System for Action & Learning (Wisdom)

4 Dog Excuses for H&S Failures

<table>
<thead>
<tr>
<th>Excuses</th>
<th>Rationale</th>
<th>H/EIA Impact Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) My dog (product) doesn’t bite.</td>
<td>No Known Toxicity Data</td>
<td>The project has no impacts.</td>
</tr>
<tr>
<td>2) My dog bites, but it didn’t bite you.</td>
<td>Not relevant toxicity information</td>
<td>The project has some potential sources but their impacts are not expected</td>
</tr>
<tr>
<td>3) My dog bit you, but it didn’t hurt you.</td>
<td>Not significant Knowledgeable Risk</td>
<td>The project has impact potentials, but can be safely managed.</td>
</tr>
<tr>
<td>4) My dog bit you, and hurt you, but it wasn’t my fault.</td>
<td>No responsible damage</td>
<td>The project is acceptable, sometime the best among all the alternatives.</td>
</tr>
</tbody>
</table>
2. SYSTEM BUILDING PROCESS

System is ...

- Network of parts ➢ Agents and Roles
- Dynamics of inputs and outputs ➢ Demands and Goals
- Equilibrium ➢ Sustainability
System Change

- Equilibrated System - not easy to disrupt

- Spontaneous Change unlikely unless Unsustainable Contradictions Found

- Unsustainable Contradiction in Delivering its Missions, from demands to goals

System Tricks (Stages)

- Control needs Measurement

- Control needs Management
  - managed but not really controlled

- Management needs Assessment
  - assessed but not really managed

- Assessment needs Measurement
  - measured but not really assessed
### Excuses

<table>
<thead>
<tr>
<th></th>
<th>1) My dog (product) doesn’t bite.</th>
<th>2) My dog bites, but it didn’t bite you.</th>
<th>3) My dog hit you, but it didn’t hurt you.</th>
<th>4) My dog hit you, and hurt you, but it wasn’t my fault.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Real Situation</strong></td>
<td>No meso data</td>
<td>no epi studies</td>
<td>Gray area of evidence</td>
<td>Value area, Narrow alternative</td>
</tr>
<tr>
<td></td>
<td>Toxicity not measured</td>
<td>Confounding not studied</td>
<td>Medicalization of social problem</td>
<td>Capturing by Prevailing Power</td>
</tr>
<tr>
<td></td>
<td>Inadequate measurement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access to toxicity not addressed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bias against Problem</strong></td>
<td>Chaos</td>
<td>coworker’s fault</td>
<td>Not enough Dose</td>
<td>Your free will to choose (assumption of risk)</td>
</tr>
<tr>
<td></td>
<td>Variation</td>
<td></td>
<td>contributory negligence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Random Error</td>
<td></td>
<td>malingering, secondary gain</td>
<td></td>
</tr>
<tr>
<td><strong>Asbestos Distortion</strong></td>
<td>Safe white asbestos</td>
<td>Blame Tremolite</td>
<td>Controlled Use</td>
<td>Toxic Fiberglass</td>
</tr>
</tbody>
</table>

---

### 3. ASBESTOS BAN, WHY?/WHY NOT?
Banning Asbestos Status

- 122 countries with asbestos production or consumption during 1950s’ to 1980s’

- Only 54 countries banned asbestos as of 2011 (44%)

- Why have some, but not all, countries banned asbestos?

Why (not) Ban/Change?

- Hypothesis 1
  - High and Ever Rising Mesothelioma Mortality

- Hypothesis 2
  - High Health Care
  - Safety Net Coverage
  - Human Rights Standing and H&S System Ranking

- Hypothesis 3
  - Alternative Examples from Neighboring Countries
Study Methods

- Published Database
  - WHO Mortality DataBase (MDB)
    - ICD 8, 9, and 10
  - U.S. Geological Survey
  - International Ban Asbestos Secretariat (IBAS)
  - World Social Security Report, ILO, 2010
  - Human Right Achievements, Foreign Policy, 2007
- Ban versus No-Ban Differences in Database

3.1 ASBESTOS DISEASE BURDEN
Level of Mesothelioma Burden

Mesothelioma Incidence (2000)
and Year of Asbestos Ban in Europe

- Denmark (1986)
- Norway (1981)
- Switzerland (1989)
- Germany (1993)
- Belgium (1998)
- Finland (1992)
- France (1996)
- Italy (1992)
- Spain (2002)
3.2 HEALTH AND SAFETY INFRAS
Ranks in Health Care & Ban Status

Ranks in Health Care & Year of Ban

$R^2$: Health care > Social Security Net > Human Rights Ranking
3.3 ALTERNATIVES
FROM THE NEIGHBORHOOD

Intra & Inter Region Effects on Ban

\[ Ban_{ijt} = Intra_{jt} + Inter_{jt} + \varepsilon \]

- \( i: \) country (122)
- \( j: \) region (14)
- \( t: \) 1983~2010

- Repeated Measure Analysis of each country over 28 years
Distribution of Asbestos Ban Year

Geographical Spread in Europe
Intra & Inter Region Effects on Ban

<table>
<thead>
<tr>
<th>Variables</th>
<th>Intercept</th>
<th>Estimate</th>
<th>Lower</th>
<th>Upper</th>
<th>Standard Error</th>
<th>t Value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model1</td>
<td>intra</td>
<td>0.000</td>
<td>0.349</td>
<td>0.327</td>
<td>0.371</td>
<td>0.011</td>
<td>30.97</td>
</tr>
<tr>
<td></td>
<td>inter</td>
<td>0.042</td>
<td>0.206</td>
<td>0.181</td>
<td>0.231</td>
<td>0.013</td>
<td>16.38</td>
</tr>
<tr>
<td>Model2</td>
<td>intra</td>
<td>-0.026</td>
<td>0.322</td>
<td>0.296</td>
<td>0.347</td>
<td>0.012</td>
<td>25.88</td>
</tr>
<tr>
<td></td>
<td>inter</td>
<td>0.063</td>
<td>0.038</td>
<td>0.088</td>
<td>0.103</td>
<td>0.013</td>
<td>4.92</td>
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<tr>
<td>Model3</td>
<td>intra</td>
<td>0.264</td>
<td>0.245</td>
<td>0.216</td>
<td>0.273</td>
<td>0.014</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>inter</td>
<td>0.048</td>
<td>0.019</td>
<td>0.077</td>
<td>0.015</td>
<td>0.015</td>
<td>3.28</td>
</tr>
</tbody>
</table>

4. SYSTEM FAILURES
AND WAYS FORWARD
System Failure

- No Feed-back Loop
  - not really equilibrated
  - not really delivering its mission
  - not really connected

- The management system of H&S should integrate four different functions,
  - generating measurement data,
  - organizing data into information for dissemination,
  - translating data into actions, and then
  - accommodating data requests in return, thus having a full cycle of feedback system.

OSH Culture Change Stages

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Stage</th>
<th>Chaotic</th>
<th>Technical</th>
<th>Managerial</th>
<th>Cultural</th>
<th>Post-Cultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why (Objective)</td>
<td>Self-Interest Based</td>
<td>Politics Based</td>
<td>Economy Based</td>
<td>Health Based</td>
<td>Human Right Based</td>
<td></td>
</tr>
<tr>
<td>Who (Key Role Players)</td>
<td>No (Every) Body</td>
<td>Government Employers</td>
<td>Professional Unions</td>
<td>Victims NGOs</td>
<td>Every Body</td>
<td></td>
</tr>
<tr>
<td>What Content</td>
<td>Self-care</td>
<td>Input Dominant</td>
<td>Process Dominant</td>
<td>Output Dominant</td>
<td>Input to Output</td>
<td></td>
</tr>
<tr>
<td>Risk Handling</td>
<td>Innate Heuristics</td>
<td>Assessment</td>
<td>Management</td>
<td>Communication</td>
<td>Continuous Cycle</td>
<td></td>
</tr>
<tr>
<td>How Politics</td>
<td>None</td>
<td>National Legislation</td>
<td>Corporate Guideline</td>
<td>Court Cases</td>
<td>Open Mass Media</td>
<td></td>
</tr>
<tr>
<td>Enforcement</td>
<td>Self-Discipline</td>
<td>Code Based</td>
<td>Labor Based</td>
<td>System Based</td>
<td>Precautionary Way</td>
<td></td>
</tr>
</tbody>
</table>
System Building

- not Building, but Connecting new parts with old ones
- not Incremental, but Stepwise
  - Control needs Management
    - managed but not really controlled
  - Management needs Assessment
    - assessed but not really managed
  - Assessment needs Measurement
    - measured but not really assessed
- not Random, but Directional
  - Technical → Institutional → Cultural
  - Health Care > Social Security Net > Human Rights
- Should be Strategic
  - Change Agents

H&S System Guarding Against 4 Dogs

<table>
<thead>
<tr>
<th>Excuses</th>
<th>Data Measurement</th>
<th>Information Assessment</th>
<th>Knowledge Validation</th>
<th>Wisdom Embodiment</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Guard</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) My dog (product)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>doesn’t bite.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) My dog bites,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>but it didn’t</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hurt you.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) My dog bit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>you, but it didn’t</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>hurt you.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4) My dog bit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>you, and hurt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>you, but it wasn’t</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>my fault.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What’s Needed

- Technical Capacity
- Funds earmarked
- Human Resource
- Managerial Rationalization
- Accessibility
- Logistics
- Cultural Openness
- Participation
- Active Agents/Advocacy
- Post-cultural Cross-talk
- Wide Fusion
- Back to Basics/Feedback
References
Why some, but not all, countries have banned asbestos. IJOEH 2012 Accepted
A model for system change in occupational health and safety. 2012 submitted

THANKS
paekdm@snu.ac.kr
Health Impact Assessment Practice in England

John Kemm
9/10/12

Plan

- What is HIA
- Benefits of HIA
- Steps in HIA
- Types of evidence
- Participation
- Scoping
- Causal paths
- Recommendations
- HIA of Policy
Health Impact Assessment

“Health Impact Assessment is a combination of procedures, methods and tools by which a policy, program or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population.”

WHO European Centre for Health Policy:
Gothenburg consensus paper 1999

What is HIA?

• It is intended to inform a decision.
• It seeks to predict the health consequences of implementing different options.

• A decision support tool
• NOT a decision making tool
HIA: The case against


HIA forecast: cloudy with sunny spells later

- Fails to influence decision makers
- Fails to acknowledge uncertainty
- Inadequately based on evidence

Reasons for Wanting an HIA

- To inform a decision
- To obtain recommendations
- To demonstrate that a decision already taken is correct
- To stop something happening
- To support the case for doing something (eg business case for a new hospital)
The Purposes of HIA

• Informing
  – Inform decision makers
• Predicting
  – Predict consequences of different options
• Participation
  – Make decision more open and involve stakeholders
• Other
  – Foster interagency working
  – Increase awareness of health in community
  – Increase awareness of health in decision makers

Added value of HIA

• Better informed decision – better for health
• Better trade offs
• Able to justify decision
• Increased acceptance of decision
• Improves cooperation between agencies
• Increase decision makers understanding of health
• Increase community’s understanding of health
• Increase health community’s understanding of policy
A rose by any other name would smell as sweet
W. Shakespeare – Romeo and Juliet

• The important thing is that health consequences of decisions are considered.
• The precise process by which this is done and the name given to it do not matter.

Contexts for HIA

• HIA of Policy
• HIA of Project
  – Input to formal planning process
  – Input to IPPC process
  – Informal assessments
• Health in Other impact assessments
  – EIA, SEA Sustainability assessment etc
Roles in HIA / EIA

• Proponent
  – pushing for proposal

• Assessor
  – assesses impacts

• Decision maker
  – uses impact report & decides if proposal will be allowed

• Stakeholders
  – Everyone affected by the decision

Approaches to prediction

• Epidemiology / Toxicology
• Social sciences (Participatory)
USNRC
Risk Assessment Model

Hazard Identification

Exposure Assessment

Risk Characterisation

- Risk Management
- Risk evaluation
- Regulatory options
- Evaluate Consequences

Dose Response Assessment

The limits of science

If residents are concerned about a possible health hazard
And you demonstrate with sound science that it does not pose any risk to health
It remains a problem because residents think it is a problem
i.e. So long as someone thinks it is a health problem it is a health problem
Reasons for Participation in HIA

Because it is a good thing?

- Source of evidence
- Transparency - right to know
- “Little democracy”
- Conflict management
- Social learning

HIA - Another definition

‘Health impact assessment is a process through which evidence (of different kinds), interests, values and meanings are brought into dialogue between relevant stakeholders (politicians, professionals and citizens) in order imaginatively to understand and anticipate the effects of change on health and health inequalities in a given population’

Gareth Williams, South East Asian and Oceania Regional Health Impact Assessment Conference, Sydney, Australia, November 2007
Lay knowledge

- Issues of power
- Conventional science not always right
- Conventional science allied with establishment
- Dealing with uncertainty
- Meanings within stories
- Always listen respectfully

HIA Determinants and Outcomes

- Epidemiology
- Toxicology
- Sociology
- Determinants / Intermediate factors

Outcomes

Well Defined

Poorly Defined

Determinants / Intermediate factors

JK PUBLIC HEALTH CONSULTING

HIA 2012
Scoping
- Timeframe and resources

- To be useful when is report required?
- Who is available to do work (person hours)
- What skills/expertise is available?
- Where are other resources coming from?
Scoping - Issues

• What are the options?
• What has already been decided?

Scoping - Stakeholders

• Who are the decision makers?
• Who are the other stakeholders?
  – Health & Local authority officers, Politicians, Experts, Pressure groups, Locals, Employees, Business etc etc
• How to involve stakeholders?
• How to manage expectations.
• How to feed back
Scoping - boundaries

- Geographical
- Time
- Causal pathways
- Inequalities assessment
- Expertise

Scoping
Sources of evidence

- Routine statistics
- Literature searching
- Primary data collection
- Experts
- Key informants
- Participative
- Modelling
- Subject specialists
Choice of HIA type

RAPID ← COMPREHENSIVE

- Decision under consideration
- Decision making context
- Resources available

Causal Paths

Intermediate factor
- Air pollution
- Income
- Employment
- Housing
- etc, etc.

Health Impact
- Mortality
- Hospital admissions
- etc, etc.

Intervention
- New road
- New policy
- etc, etc.
Sections of HIA Report

- Brief description of Project
- Stakeholders & people affected
- Background situation
- Intermediate factors
- Summary Table of Impacts
- Effect on Equity
- Further studies (monitoring)
- Recommendations
- Reflections on HIA process

How HIA recommendations can help

- Rarely an entirely new insight
- Bring problem into focus
- Recommend action they already want to take
Recommendations

- Purpose to maximise positive impacts and minimise negative impacts and advise on monitoring
- Evidence based
- Within competence of assessors
- Arising from the analysis
- Recommendations for all options
- ?? No bottom line

Policy Maker’s Requirement of HIA

- Policy relevant
- Time frames
- Proportionate
- Impartial (not advocacy)
- Confidential ???
- Admit uncertainty
- Best Judgement
Informing policy making

Do we want to

“Speak truth unto power” and influence decision
Inside the policy tent

or

Maintain ideological purity and role as “champion of the people”
Outside the policy tent

Policy Maker’s Checklist

www.cabinet-office.gov.uk/regulation/1999/checklist

Step 1 Establish clear policy objectives
Step 2 Consider in relation to government objectives and key issues
Assess relevant impacts
Step 3 Consult on proposals and options
Step 4 Make proposals to ministers
For policy analysis to have any political impact.....

it should be able somehow to continue speaking truth
– to political elites ..........
– to elites of administrators, managers, professionals and experts who vie for power in the jungle of organisations .........
– to a broader audience of .... citizenry


Politicians and civil servants need to be aware that in many fields there are no unequivocal answers to the question “what works?”

Macintyre S et al BMJ 322 (2001) 222-225

And so do people attempting HIA
“There is nothing a government hates more than being well informed, for it makes the process of arriving at decisions much more complicated and difficult.”

John Maynard Keynes
Policy Health Trade-offs

- Internal
  - Health vs. income, amenity and other benefits
  - Present vs. future
- External
  - Health of one vs. health of another
  - Health of one vs. Income, amenity etc of another

Incremental policy making

- Political context important
- Existing policies and structures
- Only marginal adjustments possible
- Negotiation with interest parties
- Based on value judgements
- Dependent on personal and group skills
- Knowledge of world is incomplete
Reasons for not wanting HIA

- Silo thinking
  – Not invented here, Health imperialism
- Adds to complexity of process / work load
- HIA not cost effective
- HIA not practical
- HIA not intellectually coherent
- HIA community does not understand policy making / management
Growing the Field of HIA in the United States: A Status Report

Andrew L. Dannenberg, MD, MPH
Affiliate Professor, University of Washington, Seattle
Consultant, Healthy Community Design Initiative, U.S.
Centers for Disease Control and Prevention, Atlanta

4th Asia Pacific Regional
Health Impact Assessment Conference
Seoul, 9 October 2012

Why Do We Need HIA in the United States?

Will 23 lanes be enough?

Proposal would put I-75 among country’s biggest

It’s wider than an aircraft carrier. Far wider than the carving on Stone Mountain. Wider than the White House stretched end to end, twice. It’s the planned I-75, all 23 lanes, coming soon to Cobb County. As currently envisioned it’s 388 feet across, wider than a football field is long.

23 LANCES: The state Department of Transportation is planning to expand I-75 (above) and I-95 in Cobb and Cherokee counties. The 23-lane stretch would be between Delk and Windy Hill roads on I-75.

Source: Atlanta Journal-Constitution, March 10, 2006
A Vision of Health Impact Assessment

- Planners and elected officials will request information on potential health consequences of projects and policies as part of their decision-making process.

- Local health officials will have a tool to facilitate their involvement in these decisions.

- Public health will be at the table.

### Brief History of HIA in the United States

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1969</td>
<td>National Environmental Policy Act (NEPA) requires study of environmental &amp; health effects</td>
</tr>
<tr>
<td>1999</td>
<td>First HIA in United States (San Francisco Living Wage HIA)</td>
</tr>
<tr>
<td>2004</td>
<td>RWJF/CDC workshop on advancing the field of HIA</td>
</tr>
<tr>
<td>2007</td>
<td>HIA on proposed Alaska North Slope Oil Lease (first integrated HIA into federal EIA)</td>
</tr>
<tr>
<td>2009</td>
<td>RWJF/Pew Health Impact Project founded, providing HIA funding</td>
</tr>
<tr>
<td>2011</td>
<td>National Research Council report on HIA released</td>
</tr>
<tr>
<td>2012</td>
<td>Inaugural National HIA Conference, Washington DC, attracts &gt;400 participants</td>
</tr>
<tr>
<td></td>
<td>45 local, regional, national &amp; international HIA guidelines reviewed</td>
</tr>
<tr>
<td></td>
<td>208 HIAs completed or in progress in U.S. as of September 2012</td>
</tr>
</tbody>
</table>
Topics of HIAs in US – 1999-2012

62  Built environment
43  Transportation
23  Natural resources and energy
16  Agriculture and food
16  Housing
11  Labor and employment
  8  Education
  5  Climate change
  5  Other

Source: Health Impact Project

Number of HIA Publications with US Authors by Year
Journals that Published HIA papers with US authors

**Public Health**
- American Journal of Preventive Medicine
- American Journal of Public Health
- Annual Review of Public Health
- Environmental Justice
- Journal of Epidemiology and Community Health
- Public Health Reports

**Public Policy**
- Health Affairs (Milwood)
- Journal of Health Politics, Policy and Law
- Journal of Law, Medicine and Ethics

**Medicine**
- JAMA
- Lancet

**Environment**
- Ecohealth
- Environmental Research
- Environment International

**Impact Assessment**
- Environmental Impact Assessment Review
- Impact Assessment and Project Appraisal

**Community Planning**
- Community Development
- Health and Place
- Journal of Planning Literature
- Places

HIA of Trinity Plaza Housing Redevelopment
San Francisco Health Department

- 360 unit low-income apartments to be demolished to build new 1400 unit market-rate condominiums
- HIA found effects on housing affordability, stress, displacement of residents, food insecurity, and segregation
- After negotiation, developer received building permit and agreed to build one-for-one replacement units for low-income families being displaced
HIA of Housing Rental Voucher Program
Child Health Impact Working Group, Boston

- Examined impact of changes to Massachusetts housing rental assistance program for families who would be homeless or live in substandard houses
- Qualitative and quantitative assessment
- Findings: Program alterations may lead to reduced program eligibility, increased housing instability, and adverse effects on children’s health
- Results contributed to state’s decision to not further restrict program eligibility

HIA of Coal-Fired Power Plant
McLeod and Simmons, Healthy Development, Inc.

- Examined health impacts of proposed 800 megawatt coal-fired power plant in Florida
- Findings: Fine particulate matter pollution containing SO₂ will decrease life expectancy by 2 days after 16 years of plant operation
- HIA recommended hiring local minority workers to improve local economic and health conditions
- Project proponent accepted HIA recommendations but project subsequently cancelled due to climate change concerns
HIA of Proposed Redirection of Mass Transit Funding in California
UCLA School of Public Health

- Examined health impacts of loss of mass transit funds through legislative reallocation
- Findings
  - Identified multiple links between transit funding and obesity, CVD, respiratory conditions, and injuries
  - Reallocation could improve health if used for health care for uninsured children
- Impact: Legislature approved reallocation of funds prior to completion of HIA

Institutionalization: National policies that encourage use of HIA

**National Prevention Strategy, 2011**

“…. Assessments and audits (e.g., health impact assessments) can be used to help decision makers evaluate project or policy choices to increase positive health outcomes and minimize adverse health outcomes and health inequities.”
National policies that encourage use of HIA

White House Task Force on Childhood Obesity, 2010

“Communities should be encouraged to consider the impacts of built environment policies and regulations on human health [and] .. should consider integrating Health Impact Assessments into local decision-making processes….”

National policies that encourage use of HIA

CDC Recommendations for Improving Health through Transportation Policy, 2011

“…. Health impact assessments and safety audits may be a useful tool to identify the impact of a new policy, program or major transportation project on community and individual health.”
National policies that encourage use of HIA

National Research Council, Committee on Health Impact Assessment, 2011

“HIA is a particularly promising approach for integrating health implications into decision-making….”

National Research Council Definition of HIA

• HIA is a systematic process that uses an array of data sources and analytic methods and considers input from stakeholders to determine the potential effects of a proposed policy, plan, program, or project on the health of a population and the distribution of those effects within the population. HIA provides recommendations on monitoring and managing those effects.

National Academies Committee on HIA, 2011

- Encourage use of HIA
- Use peer review to ensure quality of HIA
- **Incorporate HIA into Environmental Impact Assessment process**
- Provide quantitative information when possible
- Engage stakeholders
- Evaluate impacts of HIA
- Promote cross-disciplinary training
- **Manage expectations of what HIA can do**

http://www.nap.edu/catalog.php?record_id=13229

National Environmental Policy Act and HIA

- Over 500 EIAs done per year under NEPA
- Applies to wide range of activity such as housing and land use decisions, natural resource extraction
- NEPA purpose includes “to…stimulate the health and welfare of man”
- Most NEPA EIAs ignore health impacts, such as discussing change in air pollution level but not change in asthma rates
Integration of HIA and EIA

- HIA can be conducted independently and submitted as a comment letter on a draft EIA
- HIA can be integrated into EIA or included as an appendix to EIA
- Alaska state health department HIA program participates on team conducting EIAs in state

Alaska HIA Program: Background

- 2004: HIAs on NPR-A oil/gas lease and Red Dog mine expansion
- Interest in HIA; need for coordination
- 2008: 1st HIA workshop with key players
- 2010: HIA program began work
- 2011: HIA toolkit published
- 2012: HIA work on 12 major projects
HIAs in Alaska

• HIA considered best practice for responsible development, not required by state law
• Most Alaska HIAs relate to resource development, such as oil, gas, coal, gold, and copper
• Permit fees provide funding for HIAs

Alaska HIA Program: Key Activities

• Maintain HIA toolkit: http://www.epi.alaska.gov/hia/toolkit.htm
• Perform HIAs
• Collaborate on HIAs
• Refine scientific approach
• Identify best practices
HIA Level of Complexity

- **Qualitative** – describe direction but not magnitude of predicted results
  - Easy to predict; hard to use in cost/benefit models
  - Example: Build a sidewalk and people will walk more

- **Quantitative** – describe direction and magnitude of predicted results
  - Difficult to obtain data; useful for cost/benefit models
  - Hypothetical example: Build a sidewalk and 300 people who live within 200 meters of location will walk an average of 15 extra minutes per day

Public Transit and Physical Activity

- Transit users walk a median of 19 minutes daily to and from transit
- 29% of transit users exceed 30 minutes of walking daily to and from transit

Besser LM, Dannenberg AL

USDOT 2001 National Household Travel Survey; 3312 transit users
Can we predict how many people will use a pedestrian/bike pathway?

Cooper River Bridge, Charleston, South Carolina

Voluntary vs. Regulatory Approach to Using an HIA

- **Voluntary** (a tool used by a health officer to inform a planning agency)
  - Simpler, less expensive, less litigious
  - Less likely to be used if not required
  - More politically acceptable

- **Regulatory** (modeled on a required environmental impact statement)
  - More complex, more expensive, more litigious
  - More likely to be used if required
  - May be less politically acceptable
First Mandated HIA in US: Seattle SR 520 Bridge Replacement

- Washington State DOT decided old bridge needed to be replaced and capacity added
- Legislature mandated an HIA as part of funding process
- Local health department conducted HIA

SR520 Bridge HIA: Subsequent Events

- HIA recommendations supported by project mediation team and by city council
- HIA greatly raised awareness about health issues in relation to the project
- Final bridge design still in negotiation
- Seattle Dept of Transportation is educating its staff about health issues
- HIAs may be used in future projects
**Required HIAs: Massachusetts**

- Massachusetts legislature adopted Healthy Transportation Compact in 2009
- Requires state agencies to “implement HIAs for use by planners, transportation administrators, public health administrators and developers”
- Details being worked out through collaboration between Departments of Transportation and of Health

**HIA Legal Provisions in 35 Jurisdictions**

James Hodge, Arizona State University, 2012
Impact of HIAs on Subsequent Decisions

- Documentable impacts evident for some HIAs
  - Urban road corridor plans improved (Lowry corridor)
  - Health professional added to project’s decision making team (Atlanta BeltLine)
- Some HIAs encourage projects or policies that would be health-promoting as designed (Walk to school)
- Most HIAs raise awareness of health issues for some audiences

HIA Evaluation Project
RWJF/Group Health, 2011-2014

| Literature review | • Trajectory of HIA  
|                   | • HIA success factors & best practices  
|                   | • Evaluation of HIAs |
| In depth case study | • 26 site visits; half completed to date  
|                     | • 3-7 key informants at each site  
|                     | • HIA practitioners, decision-makers, stakeholders |
| Web Survey | • Will survey HIA practitioners in 2013  
|           | • Details under development |
**Advocacy**
- Some HIAs more academic; others used as advocacy tool for health

**Timeliness and timing**
- Specific policies are moving targets, making timing and scope of the HIA challenging

**Scope of the policy or project**
- A rapid HIA with a smaller scope can sometimes be sufficient

**Stakeholder engagement**
- HIA team needs relevant skills including managing expectations and providing return for participation
- Some stakeholders want long term engagement

**Interpersonal relationships**
- Relationships matter, especially between HIA team and decision-makers

**Reporting and dissemination approaches**
- HIA teams vary in extent of dissemination efforts
Teaching HIA in Universities

- Increasing demand for HIAs and capacity to conduct them
- Graduate level courses on HIA now at eight US universities
  - Indiana University
  - Johns Hopkins University
  - Portland State University
  - Univ. of California at Berkeley
  - Univ. of Pennsylvania
  - Univ. of Virginia
  - Univ. of Washington
  - Univ. of Wisconsin

National HIA meetings – U.S.

- Inaugural National HIA conference, Washington DC, April 2012
- HIA of the Americas conferences, Oakland CA, ~ every 18 months
- RWJF/Pew grantee conferences – annual
Society of Practitioners of Health Impact Assessment

- SOPHIA is an organization serving the needs of HIA practitioners in North America and worldwide
- Goal: provide leadership and promote excellence in the practice of HIA
- www.hiasociety.org

Future of HIA in the US

- **Challenges**
  - Funding
  - Quantitative vs qualitative analyses
  - Need for more evaluation
  - Anti-regulatory environment
  - Capacity to conduct HIA (need to balance demand and supply)
Future of HIA in the US

- **Opportunities**
  - Growing interest
  - Support in major national documents
  - Evidence of successes
  - Addresses social equity/health disparities

Health Impact Assessment can be used to promote healthy public policy and project decisions

[www.cdc.gov/healthyplaces](http://www.cdc.gov/healthyplaces)
[www.healthimpactproject.org](http://www.healthimpactproject.org)
6. 덴마크대학 Gabriel Gulis 교수: 건강위해평가지침과 건강영향평가 도입방안 모색

Risk Assessment from Policy to Impact Dimension

Funded by
the European Commission Health & Consumer Protection Directorate-General
via Executive Agency for Health and Consumers
Grant agreement no 20081105

Background

- Policies and strategies influence the wider determinants of health. These determinants have their impact on a range of different risk factors which then directly affect human health.

- RAPID grew-out from a previous project “Health impact assessment in new member states and accession countries” (HIA NMAC). HIA NMAC identified a lack of risk assessment methods for conducting policy health impact assessments across areas of broad determinants of health.
General objectives

• The main objective of RAPID project is to develop methodologies for conducting "full chain" risk assessment (policy-determinants of health-risk factors-health effect), and implement them on case studies and on a selected EC policy.

Full chain methodology

• Liver Cirrhosis
  • Risk assessment, perception, communication, management
  •→ ⊳
  • Different population

• Alcohol consumption
  • Risk assessment, perception, communication, management
  •→ ⊳
  • Different determinants

• Social determinants
  • Risk assessment, perception, communication, management
  •→ ⊳
  • Different sectors and policies

• Policy
Methods and means

• Each partner chose a policy in the country and conducted assessment using two approaches:
  • The top-down approach analysed the impact of the policy on determinants of health, and the subsequent impact on prevalence of risk factors and on health effects.
  • The bottom-up approach conducted the assessment starting from an health effect and processing up to policies.
Methods and means

• Based upon the experience developed, a merged assessment guidance document was developed and tested on a European Commission policy: the EU Health strategy.
• National workshops are conducted to train experts in participating countries on the developed method.
• Policy analysis, questionnaire survey (on risk perception), project meetings, focus group discussions, database searches, workshops are the main methods used to conduct the project. All those instruments will contribute to build grounded and shared products.

RAPID National Workshops

• Introduce RAPID
• Provide examples
• Discuss the assessment checklist (tool, method, guidance)
• Provide feedback
A policy risk assessor database was organised and can be used and fostered

- 359 records
- Policy oriented risk assessors – 25/359
- Public health – 169/359
- Policy and public health – 6/359
- Research on risk assessment, policy & law, – 71/359

Model methodologies for bottom-up risk assessment in a range of themes

- Osteoporosis, SDU, Denmark
- Prevention of deaths and injuries related to traffic accidents EASP, Spain
- Chronic liver disease and cirrhosis, UD MHSC, Hungary
- Road traffic injuries, LIGA.NRW, Germany
- Primary healthcare sector, MUS, Poland
- Liver cirrhosis, RUVZ, Slovak Republic
- Asthma, TU, Slovak Republic
- Chronic obstructive pulmonary disease, IVZ RS, Slovenia
Model methodologies for top-down risk assessment in a range of themes

- Tobacco policy, UD MHSC, Hungary
- Energy policy of Denmark, SDU, Denmark
- Housing subsidy program, LIGA.NRW, Germany
- Air pollution legislation, MUS, Poland
- National alcohol problem plan, RUVZ, Slovak Republic
- Road safety and injuries, TU, Slovak Republic
- Wine production, IVZ RS, Slovenia
- Computer tomography for cancer risk, IFC-CNR, Italy
- Road traffic safety policy, VASC, Lithuania
- National pandemic influenza plan, UBB, Romania

A policy assessment case study developed on a EU policy

- Assessment of the EU Health strategy
- DG SANCO employees interviewed
- Comments on the merged RAPID guidance tool
- Modifications of the guidance
- Target groups for implementation of policy and impact of policy
- Monitoring and evaluation
Outcomes

- A policy risk assessor database was organized and can be used and fostered.
- Pilot tested model methodologies are produced for bottom-up and top-down risk assessment in a range of the full chain between policy-health effects.
- Based upon them, a general assessment methodology is presented for full-chain approach.
- A policy assessment case study was developed on the EU Health strategy.
- During the national workshops a set of national experts are trained on the developed methods.

Contribution to the EU public health programme and strategic relevance

RAPID addresses the following areas of the health program and annual work plan:
- Risk assessment thematic networks and training of risk assessors. The thematic network addresses the "full-chain" approach on broad field of determinants of health including all the elements of a risk management cycle.
- Public health capacity building. The research partners team contribute to improvement of the public health curricula.
- The strategic relevance is guaranteed by the full-chain approach itself and by the geographical distribution of partners.
Full chain methodology

- Top-down – relevant for impact assessment and starts by a policy
- Bottom-up – relevant for putting health on agenda and start by a relevant health issue

Top-down methodology

- Policy
  - Identify the problem, policy analysis, context, target population, time course...
- Determinants of health
  - Model, identify major determinants influenced, strength of evidence, causality, severity of impact, interactions among determinants, ...
- Risk factors
  - Identify those influenced by determinants, qualitative/quantitative assessment, strength of association, evidence, causality, loops among risk factors and determinants, population, ...
- Health outcome – ICD codes, direction of change
Bottom-up methodology

- Health outcome
  - ICD codes, relevance, population...
- Risk factors
  - Identify those influencing the health outcome, qualitative/quantitative assessment, strength of association, evidence, causality, ...
- Determinants of health
  - Model, identify major determinants influencing the risk factors, strength of evidence, causality, severity of impact, interactions among determinants, loops among risk factors and determinants, ...
- Policy
  - Identify policies, policy analysis, context, target population, time course...

Conclusions

- RAPID guidance is a qualitative tool to support policy HIA – published soon
- Quantification is an important issue especially on policy-determinant and determinant-risk factor levels
- Testing of guidance is necessary including quantification
- Book on “Population health impact of policies” under preparation, expected fall 2013
7. 서울대학교 보건대학원 이기영 교수 : 노출과학과 위해평가의 도입방안
Future plan?

Health Impact Assessment (HIA)

- A combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population

Purpose/function of HIA

- Inform and influence the decision maker
- Help address inequalities in health
- Promote joined-up working
- Place public health on the agenda
- Reduce conflict between stakeholders
- Encourage sustainable development

HIA Procedure

1. Screening: Quickly establishes ‘health relevance’ of the policy or project. Is HIA required?
2. Scoping: Identifies key health issues & public concerns, establishes ToR, sets boundaries.
3. Appraisal: Rapid or in-depth assessment of health impacts using available evidence – who will be affected, baseline, prediction, significance, mitigation
4. Reporting: Conclusions and recommendations to remove/mitigate negative impacts on health or to enhance positive
5. Monitoring: Action, where appropriate, to monitor actual impacts on health to enhance existing evidence base
Characteristics of HIA

- Predictive process
  - Lack of certain information
  - Uncertainty
- Risk-based approach
  - Affected by scenario (exposure)
- Could avoid or reduce impact on population
  - Various population

Many factors impact on your health

- social and economic environment
- physical environment
- person’s individual characteristics and behaviours.

For example, income and social status - higher income and social status are linked to better health. The greater the gap between the richest and poorest people, the greater the differences in health.

For example, education - low education levels are linked with poor health, more stress and lower self-confidence.
How to assess health impact

- Scope of health impact that may emerge
- Consider scale of consequence and risk
- Determine mitigation to the risk levels

Application of Risk-based Approach

What is RISK?

- A probability
  1. Possibility of loss or injury
  2. The change of loss
  3. The likelihood of an event
     - Example: incidence
- Characteristics
  4. A dangerous element or factor
  5. A person or thing that is a specified hazard
     - Example: speed as a factor in automobile accidents
Risk

- DEFINING RISK (likelihood of harm)
  - The expected value of an undesirable consequence
    - $i^{th}$ sequence
    - $x_i$ hazard (potential harmful agent)
      ➢ Exposure to hazard must occur for risk to ensue
      ➢ Probability of that exposure occurring
      ➢ Consequences: How severe the harm
  - $f_i$ frequency of occurrence

$$Risk = \sum_{i=1}^{n} x_i f_i$$

Hazard (agent with potential to do harm such as automobile crash, tobacco smoke, tornado, toxic chemical release; lightening strike; ibuprofen)

Risk assessment procedure

1. HAZARD IDENTIFICATION
   Review research to identify potential health problems associated with agent of interest (chemical, radiation, biologic, etc.).

2. EXPOSURE ASSESSMENT
   Determine amount, duration, & pattern of exposure to agent.

3. DOSE-RESPONSE ASSESSMENT
   How much agent will degrees of health effects leading to illness.

4. RISK CHARACTERIZATION
   Determine risk caused by agent in an exposed population.
Risk assessment in HIA

- Consequences
  - Type
  - Significance level
- Potential exposure
  - Likelihood
  - Use of exposure science
    - Measurement (X)
    - Model (estimation)

Health Risk Assessment in HIA

Health Hazard Identification → Exposure Pathway → Health Impact → Risk Management

Physical, chemical, biological or social hazards
Consider all pathways by which health may be affected
HIA process

- Screening
- Scoping
- Profiling
- Risk assessment
- Risk management
- Implementation and decision making
- Monitoring and evaluation

Health Hazards - determine element or activity of a proposal that interact with human health

Health Impact - determine factor (or components) of health affected by health hazard change

Consequence - magnitude of an impact
Likelihood - frequency and probability of occurrence

Assess health risk level for a specific health hazard

Health risk management - mitigate to reduce negative impact or enhance positive impact

Residual health risk after risk management

Risk assessment

- Quantitative
  - Model
  - Can be more accurate
  - Need more information (resources)

- Qualitative
  - Using matrix
  - Cost
  - Capacity (expert opinion)
Models for Quantitative approach

- **Source strength**
  - Mass balance model

- **Transport**
  - Air pollution model (Gaussian model)

- **Dose calculation**
  - Average daily dose

---

Dose calculation

- **Average Daily Dose:**
  
  \[ \text{ADD} = \frac{C \times IR \times EF \times ED}{BW \times \text{AVG.TIME}} \]

  Where,
  
  - **C** = Contaminant Concentration
  - **IR** = Intake Rate
  - **EF** = Exposure Frequency
  - **ED** = Exposure Duration
  - **BW** = Body Weight
  - **AT** = Averaging Time

  Population
  Cancer
Scenario selection

- **Worst case scenario**
  - Based on idea that high risk estimates are more protective
  - It can reflect worst possible exposures (i.e., plausible upper bound) for each variable, but regulation with multiple variables can be based on upper bound estimate that are almost nonexistent.

- **Nominal (Realistic) scenario**
  - “most likely” set of assumptions

Dose response relationship

- **Cancer**
  - Assume no threshold
    - Chronic

- **Non cancer**
  - Assume threshold
    - Acute or chronic
Matrix for Risk assessment

- **Risk = Consequence X Likelihood**

<table>
<thead>
<tr>
<th>Probability or likelihood</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

- **Consequence**
  1. Catastrophic
  2. Massive
  3. Major
  4. Moderate/Significant
  5. Minor
  6. Negligible/slight

- **Likelihood**
  1. Almost certain
  2. Likely
  3. Possible/occasionally
  4. Unlikely
  5. Rare/improbable
### Significance/Environmental consequence

<table>
<thead>
<tr>
<th>Catastrophic</th>
<th>Human fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Loss of ecosystem function across a wide area</td>
</tr>
<tr>
<td></td>
<td>Extinction of a species regionally</td>
</tr>
<tr>
<td></td>
<td>Loss of major portion of a critical asset at the regional level</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Massive</th>
<th>Significant loss of a critical asset, plant communities, benthic habitat or significant species at a regional level</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Well in excess of an environmental limit</td>
</tr>
<tr>
<td></td>
<td>A critical asset is more significantly affected</td>
</tr>
<tr>
<td></td>
<td>Chronic or acute effects on a significant portion of a human population</td>
</tr>
<tr>
<td></td>
<td>Extinction of a species locally</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major</th>
<th>Chronic or acute effects on some sensitive humans (asthmatics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Significant loss of significant species or at the local level</td>
</tr>
<tr>
<td></td>
<td>A critical asset is less significantly affected</td>
</tr>
<tr>
<td></td>
<td>Habit of significant fauna is significantly affected.</td>
</tr>
<tr>
<td></td>
<td>Vegetation communities significantly affected at regional level</td>
</tr>
<tr>
<td></td>
<td>Near an environmental limit</td>
</tr>
</tbody>
</table>

---

### Significance/Environmental consequence

<table>
<thead>
<tr>
<th>Moderate/Significant</th>
<th>Sub-lethal impacts to highly sensitive humans (ie exercising asthmatics)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Significant deterioration/loss of vegetation communities at a local level</td>
</tr>
<tr>
<td></td>
<td>A high value asset is significantly affected</td>
</tr>
<tr>
<td></td>
<td>A critical asset is affected but not significantly</td>
</tr>
<tr>
<td></td>
<td>A significant species is affected but not significantly</td>
</tr>
<tr>
<td></td>
<td>Significantly below an environmental limit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Minor</th>
<th>Nuisance to humans</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>May cause adverse effects in sensitive individuals</td>
</tr>
<tr>
<td></td>
<td>Small number (&lt;5%) of individuals in the local population of non-significant species or plant communities may be affected.</td>
</tr>
<tr>
<td></td>
<td>Will not affect a critical asset</td>
</tr>
<tr>
<td></td>
<td>Well below (50%) of an environmental limit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Negligible/slight</th>
<th>No nuisance or health effect on any humans</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Very small number of individuals (&lt;1.0%) in local population of non-significant species or plant communities may be affected.</td>
</tr>
<tr>
<td></td>
<td>Will not affect a critical or high value asset</td>
</tr>
<tr>
<td></td>
<td>No significant addition to background level, Non-detectable change</td>
</tr>
</tbody>
</table>
Likelihood Definitions

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost certain 1</td>
<td>Common repeating occurrence, ongoing</td>
</tr>
<tr>
<td></td>
<td>Will occur most often</td>
</tr>
<tr>
<td></td>
<td>Planned occurrence/action</td>
</tr>
<tr>
<td>Likely 2</td>
<td>Will probably occur in most circumstances</td>
</tr>
<tr>
<td></td>
<td>There is at least 50% chance that it may happen</td>
</tr>
<tr>
<td>Possible/ occasionally 3</td>
<td>Might occur at some time</td>
</tr>
<tr>
<td></td>
<td>Could occur but not often</td>
</tr>
<tr>
<td></td>
<td>5% chance it could happen</td>
</tr>
<tr>
<td>Unlikely 4</td>
<td>Unusual occurrence</td>
</tr>
<tr>
<td></td>
<td>Unexpected</td>
</tr>
<tr>
<td>Rare/ improbable 5</td>
<td>May occur only in exceptional circumstances</td>
</tr>
<tr>
<td></td>
<td>Unheard of</td>
</tr>
</tbody>
</table>

Outcome from Matrix

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slight/ negligible</td>
<td>Minor</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Major</td>
</tr>
<tr>
<td></td>
<td>Massive</td>
</tr>
<tr>
<td></td>
<td>Catastrophic</td>
</tr>
<tr>
<td>Almost Certain</td>
<td>Low</td>
</tr>
<tr>
<td>Likely</td>
<td>Low</td>
</tr>
<tr>
<td>Possible</td>
<td>Very Low</td>
</tr>
<tr>
<td>Unlikely</td>
<td>Very Low</td>
</tr>
<tr>
<td>Rare/remote</td>
<td>Very Low</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consequences</th>
<th>Minor</th>
<th>Moderate</th>
<th>Major</th>
<th>Massive</th>
<th>Catastrophic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slight/ negligible</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td>Extreme</td>
<td>Extreme</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td>Extreme</td>
<td>Extreme</td>
</tr>
<tr>
<td>Very Low</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td>Extreme</td>
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<tr>
<td>Very Low</td>
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<td>Very Low</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Very Low</td>
<td>Very Low</td>
<td>Very Low</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
</tr>
</tbody>
</table>
### Risk Management Criteria

<table>
<thead>
<tr>
<th>Risk Rating</th>
<th>Risk Mitigation/Management Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extreme</td>
<td>Potentially unacceptable: modification of proposal required</td>
</tr>
<tr>
<td>High</td>
<td>Major mitigation/management (including offsets) may be required – Assessment required of health hazards</td>
</tr>
<tr>
<td>Medium</td>
<td>Substantial mitigation/management required – Assessment required of health hazards</td>
</tr>
<tr>
<td>Low</td>
<td>Some mitigation/management may be required – No detailed assessment of health hazards required but addressed with routine controls</td>
</tr>
<tr>
<td>Very Low</td>
<td>No further assessment required</td>
</tr>
</tbody>
</table>

### Uncertainty

- **Not to be confused with “variability”**
- **Three types**
  - Values (biased)
  - Modeling (inadequate)
  - Degree of completeness (was evaluation representative of other risk assessment?)
- **Sensitivity analysis – detecting model output changes after small input changes (Monte Carlo simulation)**
Uncertainty

- Uncertainty is inevitable, but it is better to identify and define the confidence level with an evaluation.
- How to address
  - Obtain more data and information through health impact investigations to better define the risks
  - Conducting risk assessment for the population, especially vulnerable population, to better define the risks to the population.

HIA

- HIA is needed to eliminate or reduce health effects of proposed project
- Exposure science and risk assessment should be critical parts of HIA
- Various exposure and risk assessment methods are available
  - as reasonable as and best possible approach
  - provide uncertainty
8.  태국 Tanita Suwanakitti 박사 : ASEAN 지역의 건강영향평가 현황

HIA in ASEAN Community

Tanita Suwanakitti, MA (Interpretations)
National Health Commission Office,
Thailand

AEC leads to trans-boarder impacts

The Objective of AEC is to create single market.

Trans-boarder impacts after the AEC effective;

• Growing in industrial investment
• Migration
Brunei, Philippines and Singapore

- HIA is incorporated in EIA process.

Indonesia

- HIA is applied in intersectoral collaboration


Cambodia: EHIA

- HIA has the potential to be combined with other impact assessments.

Piseth Raingsey P,
Focal Point on HIA, 2012
Challenges

- Socio-economic growth can cause positive and negative impacts on environmental and SDH
- Difficulties in decision-making and resolving conflicts among different partners
- Extremely high degree of socio-political health and environmental complexity
- Knowledge on HIA among health professionals

Lao PDR: EHIA

- HIA is a small component in EIA.
- Only when HIA has been requested, such as Nam Theun II, which is the assistance of WHO, the ministry of health

Phetsouvanh R,
Focal Point on HIA, 2012
Malaysia: EHIA

- The application of HIA has been mainly in the context of an EIA study.
- HIA consultants are registered under the EIA Consultant Registration Scheme

Chee Kheong C., Focal Point on HIA, 2012

Myanmar

- Lack of usage in Policy level
- Rare use of HIA in monitoring, capacity building, and intersectoral.  


Thailand

- HIA rules and procedures
- 4 pathways of doing HIA
Vietnam: EHIA

• The Law on Environment Protection issued in 1993 and the Decree of Vietnam government guiding the implementation of the Law regulated HIA as a part of EIA.

Huong N.,
Focal Point on HIA, 2012

<table>
<thead>
<tr>
<th>HIA Procedure in ASEAN Country</th>
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</thead>
<tbody>
<tr>
<td>EHIA</td>
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<tr>
<td>Brunei Darussalam</td>
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<tr>
<td>Cambodia</td>
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<td>Indonesia</td>
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<tr>
<td>Thailand</td>
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<tr>
<td>Vietnam</td>
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</table>
HIA Institution

- To have a common understanding of HIA
- To build up information sharing in HIA
- To gather HIA experts in ASEAN, and collaboration with WHO and agencies
- To strengthen capacity building in HIA/IA for all member countries

Things to be done before set up

- Expert roster (IA and HIA)
- Find tune common concept / perception
- Universities linkage
- Case study
  - Climate Change and Health
  - New clear power plant
  - HIA beyond project through health system
- Capacity Building
Information center

www.hiainasean.org
9. Southern Denmark 대학 Peter Gry : HIA의 교육과 수용력 수립

Training and capacity building of Health Impact Assessment

Background

- HIA is gaining more popularity in Denmark on local level
- HIA is implemented in some municipalities (local level) but not in any systematical manner
- A review shows that there is a need of
  - knowledge on methodology development
  - testing of suitable HIA models
Background

- Healthy Cities Network decided to apply for a project grant at the Danish National Board of Health

- Succeeded in getting the grant and started the project in 2010

- The project consists of three phases

Implementation models

1. Integration of health determinants in the mandatory environmental impact screening and assessment of plans and programmes

2. Qualitative judgement by the project leader of the need for HIA screening of projects, plans and programmes in the environmental and physical planning sector

3. Integration of health determinants in a sustainability appraisal tool of all municipal policies, major plans and strategies.
Method

- Focus group interviews and questionnaires after training courses
- Staff included employees from the public health, urban, environment and technical departments
- Looking at contextual and changing mechanism factors

Results part one

- The three different implementation models had a mixed response in the municipalities.
- One municipality reported model 1 as useful because of increased knowledge of other staff’s competences than their own and a further development of an integrated health/environment screening.
Results part one

- Another municipality described model 2 as less effective due to unmet or undelivered expectations of a training course and absence of key personnel in the implementation process.

- The last municipality had used the implementation model 3 as a launch pad for developing a sustainable strategy and tool in accordance with Local Agenda 21 and Aalborg Commitments.

Results part two

- Interviewees reported a higher awareness of HIA and its utility after participating in the training courses.

- All non-health interviewees stated a better understanding of (the determinants of) health and an improved interdisciplinary collaboration, especially with the public health department.
Results *part two*

- Screening
- Local data
- Training courses
- Considerations on future

**Conclusion**

- Model 1 has shown to be most suitable to implement HIA on the basis of interdisciplinary collaboration in the technical department
- Depends on (existing) intersectoral collaboration, engaged staff, a desire to collaborate and organizational support
Conclusion

• The structure and thinking of an organization is important

• Focus on the social determinants of health

• Political and administrative level

Acknowledgement

• The Danish National Board of Health

• The HIA project group
Any further questions

- Please contact me on pgry@health.sdu.dk or my colleague Mette Winge Fredsgaard on mfredsgaard@health.sdu.dk
Impact of electrification on human health – evidence from rural Bhutan

Ganesh Rauniyar
Principal Evaluation Specialist

HIA 2012
The 4th Asia and Pacific Regional Health Impact Assessment
Korea Institute for Health & Social Affair
Seoul, 9-11 October 2012

Background

❖ It is a part of larger study on impact of rural electrification on human welfare that examined economic, education, health, gender, fertility, environment, and time savings.
❖ Data collected in 2010 in household survey
❖ Focus of the presentation is on Health Impact.
Unelectrified Households
Electrified Households
Challenges in evaluating impact

- No baseline data
- Identification of counterfactuals

Approach: Mixed Method

- Quasi-experimental design using propensity score matching method (quantitative estimation)
- Focus group discussions and key informant interviews (triangulation)
- Secondary information from Bhutan Power Corporation (implementing agency)
Methodology, Estimation and Data

- Literature review
- Conceptual framework
- Household surveys in 10 of 15 districts covered by ADB assistance
- 20 Focus group discussions and interviews with 2,098 electrified and unelectrified household (HH) members (RE-2 and RE-3 vs. RE-4 areas)
- Impact evaluation using quasi-experimental design and propensity score matching technique

Method...

- Treatment Group: Villages and Households electrified under RE-2 and RE-3 through ADB support.
- Comparison Group: Villages and households identified for ADB (RE-4)/Japan International Cooperation Agency (planned to start in April 2010).

Control Variables

- Household level fixed characteristics such as age, gender, marital status, religion, education of household head, land ownership, household size, ownership of livestock, type of house and main source of drinking water were used as control variables.
- In addition, population of village, distance to district headquarter, availability of educational infrastructure were also used to estimate propensity score.
Sampling Frame and Sample Size

- **Districts**: 10 of 15 covered by ADB projects.
- **10 Districts** have 198 electrified and 277 un-electrified villages.
- **Total households**: 6316 (E) & 5374 (UE)
- **Sample size**: 1276 (E) and 822 (UE)
Districts Covered by the Study

Health Impact Parameters Evaluated (Based on Conceptual Framework)

- Occurrence of health risks
  - Overall
  - associated with indoor air quality (smoke)
  - (Observables)
- Cough
- Respiratory ailments
- Eye irritation
- Headache
Impact Results

Overall health associated risks
• Average treatment effect on treated (ATT) Values are:
  – Cough                  -0.028**
  – Respiratory ailments   -0.056**
  – Eye Irritation         -0.135***
  – Headache               -0.042**
  – No. of work days missed -0.72

Impact Results

Indoor air quality (smoke) associated risks
• Average treatment effect on treated (ATT) Values are:
  – Cough                  -0.1190***
  – Respiratory ailments   -0.0002
  – Eye Irritation         -0.1290***
  – Headache               -0.0890***
Findings

- **General health conditions**
  - Cough (2.8% less incidence in electrified HHs)
  - Respiratory ailments (5.6% less incidence in electrified HHs)
  - Eye irritation (13.5% less incidence in electrified HHs)
  - Headache (4.2% less in electrified HHs)
  - No. of work days missed (no significant difference)

- **Smoke-Related health conditions**
  - Cough (11.9% less incidence in electrified HHs)
  - Respiratory ailments (no significant difference)
  - Eye irritation (12.9% less incidence in electrified HHs)
  - Headache (8.9% less incidence in electrified HHs)

---

Other qualitative findings

- Electrification is largely limited to better lighting:
  - Use of health facilities for labor pregnancy and child delivery has not increased improved due to:
    - Traditional belief that home delivery is safe but improves visibility during child delivery
    - Lack of transport and road network to reach health facilities
- Electrification has reduced carbon residues inside living areas
- Children suffer less from skin rashes and scabies.
- Improved access to health and hygiene education through television
  - Encourages hand washing before meals and prevention of stomach ailments and other.
Conclusions and Policy Implications

- Health benefits from electrification are substantive (better indoor air quality)
- Encourage households to move away from dependency on firewood to other energy sources for cooking and heating indoors.
- By Asian standards, electricity is cheap in Bhutan. Promote use of electricity for income generating activities.

Full Independent Evaluation Report is available at

Thank you!
grauniyar@adb.org
http://www.adb.org/evaluation
Embedding Health Impact Assessment into Free Trade Negotiation Processes

Nusaraporn Kessomboon, PhD
Faculty of Pharmaceutical Sciences,
KhonKaen University, Thailand

Objectives

- to review how HIA has been advocated into the free trade negotiation process
Methods

- Incorporated primary, secondary and tertiary documents.
- Primary sources: materials which are collected by those who actually witnessed events.
- Secondary sources: written materials after an event that the author has not personally witnessed.
- Tertiary sources: other references e.g. indexes, abstracts and other bibliographies.

4 Stages of HIA Development in Thailand

1. 2000: Understanding HPP and HIA as a policy instrument development
2. 2002: Institutionalizing of HIA in MOPH
3. 2007: Legitimation of HIA in National Health Act, Thai constitution and Health Statute
4. 2009-present: Implementation of HIA in Thailand and ASEAN
2000: Understanding HPP and HIA as a policy instrument development

- Health System Research Institute
- Healthy Public Policy Foundation

HIA is designed to stimulate all sectors in the society to think, analyze, discuss, argue and learn throughout the process to create the healthy society.
H - Health

The Board Perspective beyond Physical Wellness

- Health is a state of complete **physical, mental and social well-being** and not merely the absence of disease or infirmity.
- The determinants of health include the social and economic environment, the physical environment, and the person’s individual characteristics and behaviours.

I - Impact

Assessing Beyond Health Outcomes

- goes beyond the assessment of traditional risks
- covers the assessment of **significant social determinants of health** (SDH)
- aiming at mitigating the negative impacts by focusing on **“the cause of the causes”**
A – Assessment

tool to support decision making process

- HIA is a set of "evidence-based recommendations" reflecting the guidelines towards a healthy society.
- Recommendations have to promote the potential positive impacts and mitigate the negative impacts of the program or policy.

6 Steps of HIA

Screening

Public Scoping

Assessing

Public Review

Decision Making

Monitoring
2002: Institutionalizing of HIA in MOPH

Department of Health, Ministry of Public Health

- 2002 Sanitation and Health Impact Assessment Division
- 2009 Health Impact Assessment Division
(http://hia.anamai.moph.go.th)

2007: Legitimation of HIA in National Health Act

Health in a broader term embracing 4 dimensions: physical, mental, social and spiritual aspects

VI

National Health Commission as a new mechanism for building healthy public policies

V

6 innovations to promote HiAP

IV

Health Assembly as a process to build healthy public policies

III

Health System as a direction for intersectoral collaboration

II

National Health Commission Office as a secretariat body

I
2007: Legitimation of HIA in Thai Constitution

Enforced on August 24th, 2007, the constitution is the highest law that makes important provisions for health impact assessment in Section 67:

The right of a person to participate with State and communities in the preservation and exploitation of natural resources and biological diversity and in the protection, promotion and conservation of the quality of the environment for their health and sanitary condition, welfare or quality of life, shall be protected appropriately.

Any project or activity which may seriously affect the quality of the environment, natural resources and biological diversity shall not be permitted, unless its impacts on the quality of the environment and on health of the people in the communities have been studied and evaluated and consultation with the public and interested parties have been organised, and opinions of an independent organization, consisting of representatives from private environmental and health organizations and from higher education institutions, have been obtained prior to the operation of such project or activity.

The right of a community to sue a government agency, State agency, State enterprise, local government organization or other State authority which is a juridical person to perform the duties under this section shall be protected.

2009-present: Implementation of HIA in Thailand and ASEAN

Thailand:
1. HIA in EIA: Guideline on HIA in EIA by the Office of Natural Resources and Environment Policy and Planning, Bureau of Environmental Impact Analysis.

2. HIA for Healthy Public Policy: HIA in the Map Ta Phut, FTA and impact on access to medicines, Integration of HIA in FTA negotiation process.

3. HIA at community level: as a tool for empowering local communities in the public policy process, > 50 cases
Bottom up policy proposal: HIA in FTAs 2010

- HIA Commission recommended to conduct HIA for a range of policies, including FTAs.
- 3rd National Health Assembly recognized the limitations of mechanisms and processes relating to free trade negotiation on the goods that have impacts on well-being and society.
- The assembly resolves the resolution on “The prevention of the impacts of free trade on well-being and society”.

After the resolution: knowledge generation 1

- 2011: review the process of Free Trade negotiations
- Before 2007: the negotiation process had proceeded without the Parliamentary scrutiny
- The Constitution of B.E. 2550 (2007): a treaty that generates commitments in trade and investment of the country must be approved by the parliament, and also permits all sectors to participate in the process widely.

(Satjanan S, 2011)
After the resolution: knowledge generation 2

- 2012-2013 develop case studies with key players and stakeholders:
  - ongoing negotiation: Thai-EU FTA
  - monitoring the signed FTA: JTEPA
- 2013 propose the criteria and methods for HIA in the free trade negotiation processes through the National Health Assembly 2014

Key to get success in embedding HIA into the free trade negotiation processes: synergy between three sides of the triangle

- 1 review papers
- 2 case studies
- Cabinet
- National Health Assembly
- 1. Knowledge and evidence generation
- 2. Mobilization of civil society and public support
- 3. Leadership of politicians and policy makers

The Need and Readiness for Health Impact Assessment of the Organizations in Thailand.

Phen Sukmag
Pongthep Suteeravut
Saywani Morzu
Prince of Songkla University, Songkhla, Thailand

HIA in Thailand: 4 cases

I. HIA under the Constitution of Thailand the year 2007, Section 67 (2); E-HIA.
II. HIA which request by people in accordance with their right under the National Health Act 2007 section 11.
III. HIA in the case of the development of a public policy and development planning activity.
IV. HIA for learning in the community; community health impact assessment; CHIA.
I. HIA under the Constitution of Thailand the year 2007, Section 67 (2); E-HIA.

**The New Constitution 2007**

Section 67 “Any projects and activities that may cause severe impacts on environment, human health, and quality of life cannot be done without conducting environmental and health impact assessment”
II : HIA which request by people in accordance with their right as accorded by section 11 of the National Health Act 2007.

The National Health Act, 2007

Section 11 “People have rights to demand for HIA and participate in HIA process of any public policies”

III : HIA in the case of the development of a public policy and development planning activity.

IV : HIA for learning in the community; community health impact assessment; CHIA.
Organizations & HIA in Thailand

Research question ??
How about the need and readiness for conducting HIA in the organization?

Objective

- to examine the need and availability for health impact assessment of the 4 organizations in Thailand
  - Government
  - Private sector
  - Local authority
  - Civil society
Research methodology

The questions covered the following topics areas:

- Organization factors
  - barriers and enabling influencing the use of HIA, HIA policy, HIA rules/laws
- Organization support for HIA
  - human, funding, tool, knowledge
- Partnerships;
- HIA experience/skill
- Type of support need for HIA current and future work in organization
  - HIA training need
HIA workshop: 12th March 2012

The results

Themes of results presentation:
(1) Barriers factor
(2) Capacity/organization support
(3) Type of HIA support need
(4) Training need
1. The barriers for conducting HIA in government organization

- Tools
  - HIA Guideline / E-HIA
  - Health database

- Policy/Rules/Law
  - No HIA policy in the national level
  - Lack of integration HIA
  - Lack of M&E system
  - Lack of the institution who consider serious project
  - EIA/HIA project base

- HIA knowledge
  - Lack of HIA knowledge
  - Special issue

- Funding
  - Central organization

1. The barriers for conducting HIA in civil society organization

- Lack of human
- Lack of HIA learning process
- Funding
1. The barriers for conducting HIA in private sector organization

- Criteria or procedure for conduct E-HIA, public scoping and public review tools
- Lack of HIA communication
- Lack of HIA knowledge in stakeholder group
- Difficult to access health data base
- Lack of qualitative knowledge and skill

1. The barriers for conducting HIA in local authority organization

- No HIA policy
- No job description
- Time frame for public scoping and public review
- Lack of HIA awareness in executive group
- HIA guideline for local authority
- Funding
2. Capacity/organization support for HIA: in the organizations

- Human
- Funding
- Tool
- HIA knowledge

3. Type of support need for HIA

- HIA Knowledge
  - HIA consultant or facilitator team
  - KM, and show success case study in the other area
  - Seminar HIA practice

- Tools
  - Screening and Public scoping tools
  - Guideline for HIA in the important or special issue in the local level such as solid waste management, conflict management, waste water management ...
  - E-HIA guideline
3. Type of support need for HIA (continue)

- Policy
  - Set policy in the national level
- Funding
  - Access funding from the central government, not local
- HIA Communication
  - Increase communication by mass media
- HIA training need
  - HIA Short course (5 days)
  - HIA course for bachelor and master degree in the university

Conclusion: enablers of the HIA development

- In the national level, the legal instruments amended regularly
  - The New Constitution 2007; section 67
  - The National Health Act, 2007; section 10,11
- There is National HIA commission of Thailand who encourage and support the HIA system in Thailand.
- Ministry of Public health of Thailand is developing HIA guideline for local authority (special issue; solid waste management)
- There are strength community network; health volunteers, primary health care unit, the other government and non government organization.
benefit

- Building capacity for HIA in Thailand
  - HIA consortium
  - CHIA: case by case in the community
  - HIA course in the university

HIA course for master degree student @ HSMI_PSU
Acknowledgements

- The National health commission office of Thailand who supported funding for this project.
- All key informants
Background

- Since its independence (1945) until today, the history of Indonesia’s housing policies are marked by the continuous decrease of the state’s role in ensuring the fulfillment of the people housing needs.
- The state tends to encourage more private sector’s roles to deliver the housing stock in the market place.
- These quasi "laissez faire-policies" lead, however, to unfair distribution of social goods in the society.
Background

- The housing statistics data of Indonesia (2000) indicated that there were approximately 3.7 million empty (idle) houses in Indonesia.
- This number of idle houses exceed even the total number of the housing units, that was built by the private and state housing companies in the time from 1974 to 2002 (only 2.1 million housing units).
- This phenomena emerges a social paradox: on the one hand there is a high number of the idle houses, simultaneously, there are so many people homeless.

Irony of idle houses and irrelevant target group of the housing programm
Distribution of Population based on Monthly Income in Indonesian

Sources: kompas.com, "Batas kemiskinan versi BPS naik", 2 Juli 2011

Housing Condition of Indonesian Population

Sumber: Statistik Kesejahteraan Rakyat tahun 2008
Comparison between the increasing of low cost housing price (RS/RSS) and the increasing of regional minimum wage

Note:
The increasing of the low cost housing price 1500% in 10 years.
The increasing of regional minimum wage 86.9% in 10 years.

Community response?
85% of population live in the informal settlement / self-help housing
Background

- To respond the weakness of the conventional laissez faire-policies or “supply side approach”, recently (2009) the Indonesian state ministry for people housing introduces a program based on the “community based approach”.
- The program called community based sub standard housing improvement program (in bahasa: Peningkatan Kualitas Perumahan or PKP Program).
- This article aims at describing a case study research result on the implementation of the PKP Program in Pringapus Village, Semarang District to describe to what extent the community based approach can be utilized as a way to minimize issues of the unfair distribution of key resources.

Community Based Project Management

- In contrast to the conventional approach, where the government assign professional contractor (as the third party) to conduct the project, the community based approach the government entrusts the people (as the end user) to build or rehabilitate their own houses by employing their own skills and know-how.
- In case of the community based sub standard housing improvement program (PKP) in Indonesia, the government support the program through the so called community direct financial aids (in Bahasa: Bantuan Langsung Masyarakat or BLM).
- This BLM (up to Rp. 5 million or app. 500 USD per housing unit) will be organized by the so called local community voluntary organization (in Bahasa: BKM). Technically, the BKM is assisted by the PKP Project Facilitator.
Community Based Project Management

- The aids will be disbursed in two stages. These two stages of fund disbursement are used as an instrument to monitor and evaluate the progress of the project. The evaluation result justifies whether the project should be continued, or be corrected or even terminated.

- The Indonesian state ministry for housing will disburse 50% of the total amount of the project value in each stages.
Pringapus village: the location of case study

Target group and its housing condition (before & after)
Three Types of Self-Help Contribution

- Based on the interview result from the respondents it can be categorized in three types of self-help contribution, namely, money, man power, and building materials.

- Money is all financial resources that come from the beneficiaries’ pocket itself that can contribute to the PKP Activities.

- Whereas the man power (sweat equity) is all of man power the beneficiaries used to support the PKP and building materials are all of the buildings materials that the beneficiaries utilize to improve their own housing.

Lessons learned

- The PKP Project implemented in the Pringapus Village, which is seen as a way in helping the poor to fulfill their basic needs is compatible or feasible enough for helping “the poor” to upgrade their sub standard housing.

- In case of PKP Project implemented in the Pringapus Village it shows that there is the “measurable” success story in in dealing with housing problem for the poor.

- However, the implementation of this project should be linked with a more comprehensive and integrated approach, such with the development plan in the city-wide level so that it can be more sustainable.
Lessons learned

- Besides, the competent of the BKM members are also the determining factor for the successful of the PKP project in Pringapus.

- Based on the experience in Pringapus, BKM Sedyo Mulya member are not only competent on the technical and administration aspect but also leadership competency of the BKM members.

- In practice, PKP project needs much social and political engagement of the BKM members, so that BKM can organize and mobilizing the social resources and local know-how to support the implementation of the PKP Project.

Conclusion

- From the research conducted this paper argued that Community based project management approach can increase transparency and accountability in determining the “real” target group (beneficiaries) and can mobilizing of the social resources available in the community to support the project so that the project can be accomplished with high added value of output.
MULTISECTORAL PARTICIPATORY APPROACH FOR HEALTH IMPACT ASSESSMENT IN CAMBODIA

HIA for increasing healthy life expectancy and well-being
9-11 October 2012
SEOUL

OUTLINE

- Overview
- Priority intervention
- Health issues need to be addressed
- Challenges
- Way forwards
OVERVIEW

- Increase urbanization - plan to respond to changing lifestyles
- Increase in environmental risk factors - air, water and soil contamination as well as other risk factors associated with the built environment
- Process of socio-economic development - use natural and human resources to serve for the development
- The impact both to health and discharged pollution and hazardous waste to the environment

OVERVIEW

- These factors are contributing to an increase in both communicable diseases, non-communicable diseases and injuries, poor nutrition and mental ill-health
- Emerging environmental health issues - global climate change presents new challenges
- Threats of serious or irreversible damage to the environment
- HIA offers a practical and flexible framework for identifying health and equity impacts and ways of addressing them
**PRIORITY INTERVENTION**

- Effective establishment of *inter-sectoral* and inter-disciplinary working group
- Implement measures that ensure public participation in the HIA process including full access to relevant information
- Optimal openness and great proclivity to participation by the communities involved
- Apply screening criteria to the policy, program, project or plan. Determine whether an HIA is required

---

**PRIORITY INTERVENTION**

- Selected developmental projects that required EIA & HIA:
  - constructing tower/new city,
  - coal power/ hydropower/fuel power plant,
  - mine
  - heavy industries, biogas plant
  - hazardous waste incineration plant,
  - agriculture and plantation
HEALTH ISSUES NEED TO BE ADDRESSED

❖ Construction
  . Health of workers and communities from construction work especially dust, noise, traffic
  . Disease surveillance established for injuries, respiratory diseases, vector and water borne diseases

❖ Operation
  . Potential pollutants associated with discharges from the plant to the air, water and soil
  . Disease under surveillance are cancer, congenital deformities, respiratory diseases, skin diseases etc.
  . Social and welfare of the workers

CHALLENGES

❖ Socio-economic growth within Cambodia can have both positive and negative impacts on the environmental and social determinants of health
❖ RGC not realize as priority issue
❖ Difficulties in agreement dialogue, decision-making and resolving conflicts among different partners in the process
❖ Extremely high degree of socio-political health and environmental complexity
❖ The procedures of the EIA is not include HIA
❖ HIA policy still in the process of approval by the National Committee for Environmental health
❖ Neediness capacity on HIA among health professionals
WAY FORWARDS

- Advocacy for political commitment
- Institutional arrangements
- Select the appropriate assessor and appraisal of HIA statement
- Institutional regulation and compliance of the HIA process
- Inter-sectoral capacity building of government and non-government HIA regulators and practitioners
- Public participation in the HIA process including full access to relevant information
- Negotiation with final choice of options for health risk management

WAY FORWARDS

- Ongoing inter-sectoral capacity building of government and non-government HIA regulators and practitioners is seen as strategically important
- Encourage and assist as required the development of an association of HIA professionals within the country to further enhance capacity building.
- Implement measures that ensure public participation in the HIA process including full access to relevant information.
- Ensure wider reaching collaboration of HIA practitioners within the region
필리핀 보건부 Maria Sonabel : 콜레라정역에 영향을 주는 환경적 요인

"4th Asia-Pacific HIA Conference & Business Meeting of the TWG on HIA"
Seoul, Korea, 9-11 October 2012

Determination of Environmental Factors that Influenced Cholera Outbreak in Catanduanes Province, Philippines

by:
Engr. Maria Sonabel S. Anarna, MSPH, MSc
Department of Health, Philippines

The presentation

• The Philippines’ profile
• Background of the assessment
• Objective
• Methodology
• Results
• Conclusion
• Challenges
PHILIPPINES

Capital: Manila
Official language(s): Filipino, English
Land Area: 299,764 km²
Population: 98.57M (August 2007)*
94.65M (projected population 2010)*
Region: Region I, II, III, IV-A, IV-B, V, VI, VII, VIII, IX, X, XI, XII, CARAGA, ARMM, NCR, CAG
Group of Island: Luzon, Visayas, and Mindanao

THE CODE ON SANITATION OF THE PHILIPPINES
PRESIDENTIAL DECREE NO. 856

Philippine National Framework and Guidelines for Environmental Health Impact Assessment
Background of the assessment

• June 2012: DOH declared a province-wide outbreak of cholera in Catanduanes, Phil.

![Diarrhea Cases: Province of Catanduanes Jan - Jul 2012](image)

• Cases: 2,021
• Validated deaths: 14
  (Source: Catanduanes Health Update #17, 21st July 2012)

• Catanduanes is the 12th largest island in the Phil., and the smallest in the six provinces of Bicol region
Objective

• Team: WHO-DOH-LWUA

• To determine the environmental factors that influence the cholera-stricken population of the whole province of Catanduanes, Phil.

Methodology

• Interview with local leaders, community
Results

• Open defecation practice

• Backyard piggery & poultry
• Absence of chlorination in water systems

• Poor water source protection

• Absence of regular water quality monitoring

• Population along rivers & shorelines
Conclusion

There were times during the outbreak that diarrheal cases in the affected areas were decreasing in its trend, but there is no assurance that the upsurge in cases may not happen again unless the identified risk factors are given preferential attention for intervention.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Number of cases</th>
<th>Rate per 100,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Acute Respiratory Infection</td>
<td>1,095,328</td>
<td>1203.0</td>
</tr>
<tr>
<td>2. ALTRI and Pneumonia</td>
<td>557,786</td>
<td>612.6</td>
</tr>
<tr>
<td>3. Bronchitis/Bronchiolitis</td>
<td>346,627</td>
<td>380.7</td>
</tr>
<tr>
<td>4. Hypertension</td>
<td>333,497</td>
<td>366.3</td>
</tr>
<tr>
<td>5. Acute Watery Diarrhea</td>
<td>322,799</td>
<td>354.5</td>
</tr>
<tr>
<td>6. Influenza</td>
<td>271,011</td>
<td>297.7</td>
</tr>
<tr>
<td>7. Urinary Tract Infection</td>
<td>82,867</td>
<td>91.0</td>
</tr>
<tr>
<td>8. TB Respiratory</td>
<td>73,614</td>
<td>80.9</td>
</tr>
<tr>
<td>9. Accidents</td>
<td>50,004</td>
<td>54.9</td>
</tr>
<tr>
<td>10. Injuries</td>
<td>35,396</td>
<td>38.9</td>
</tr>
</tbody>
</table>
Challenges

• HIA Guidelines during an outbreak of water and sanitation-related diseases

• HIA standardized methodology and tools use during outbreak of diseases

• Institutional strengthening to reduce the level of disease burden

“For increasing healthy life expectancy and well-being”

Thank you very much

Maraming Salamat

Kam-sa-ham-ni-da!
Health, EIA, and major projects: working towards more integrated approaches

Richard K. Morgan
Centre for Impact Assessment Research and Training
Department of Geography
University of Otago,
Dunedin, New Zealand

HIA and projects

• Keep separate from EIA?
  • presents problems
    • especially influencing project design, decisions, etc.
    • plus duplication of effort…
  • or integrate with EIA?
    • advantages, but slow progress so far
• If the second option:
  • how can we speed up integration?
What can HIA bring to EIA?

- Major EIAs often address *aspects* of health
  - pollution, noise, dust, etc.; access to services…etc.
  - but often implicit
    - e.g., environmental standards based on human health considerations
  - often diffuse, disjointed in the report
    - no assessment of total health burden
    - no assessment of distributional issues (for health)
  - and may raise issues but not investigate further

Even good EIAs can struggle with health

e.g., Solomon Islands…

Major mine proposals: Japanese consortium (Sumitomo/JOGMEC)…Nickel resources

EIAs published 2012

Comprehensive, lots of references to health

But disconnected, and treatment of public health weak.

http://www.smm.co.jp/solomon/
Room to improve EIA

- So HIA has something to offer EIA
  - especially a coherent, explicit analysis of health implications
- Question of how to exert an influence

Preliminaries

- EIA practices often constrained
  - by law, and entrenched practice
  - HIA practitioners may see EIA “failing”
    - but is practice, not theory/principles, that’s at fault
- EIA is the larger, recognised process
  - HIA needs to fit into EIA, not the reverse
    - focus on health as its core concern
    - help press for better EIA practices overall
Improving integration...
...selected issues

• Responsibility for commissioning HIAs
  • project proponents commission EIA work
    • often including social, cultural, ecological impact assessments as part of the whole EIA effort
  • they, not health authorities, should also commission HIAs
    • health authorities can then contribute to ToRs, provide advice on specific health issues, and help review the quality of the health assessment

Central Plains Water Scheme, New Zealand

• Major irrigation project
  • Public Health Unit carried out HIA as EIA lacked health assessment
    • but lacked experience with formal permitting processes, nature of evidence required in hearings, etc.
    • HIA information not seen as objective
    • duplicated other parts of the EIA, compromised the role of the PHU
□ Raises issues of capacity building
  • project managers, environmental and social consultants, environmental lawyers
  • decision makers, competent authorities, environmental administrators
  • health impact consultants

• Need to encourage a more searching consideration of health within EIA
  □ move from an environmental health focus, to address wider determinants
  • collaborate with social and cultural impact assessors, then draw out health implications
  □ focus on developing coherent analysis of health burden, health equity issues
For example

- An industrial project could lead to an individual being affected by:
  - increased exposure to noise, lack of sleep, higher PM10/2.5 intake, eating contaminated vegetables from urban gardens, increased household income but higher housing and food costs, etc.
  - each impact type usually addressed separately (some through environmental standards),
  - but what is the combined effect on that individual’s health?
  - will some sectors of the community be exposed to greater health impacts than others
  - due to where they live, or their age, or their cultural activities…?

• EIA is based on prevention of (negative) impacts where possible
  - if a significant impact is suspected, tend to change the project in some way
    - often not necessary to prove absolute cause and effect relationship
    - especially at early stages in project cycle
  - HIA literature often still promotes a much more demanding standard of evidence
    - cost, time, resource implications…
reflects medical view of “intervention”?
  • require strong statistical evidence to link action and health outcome…
  • so expect same level of precision with prediction of likely health impacts
  but as Bhatia and Wernham (2008) put it: “Causal certainty and quantitative precision are unrealistic and unnecessary standards for EIA.”
  need to adapt HIA methods to the needs of EIA decision-making….

Keep policy agendas under control
  • e.g. addressing health inequalities (as opposed to inequities due to the project)
  project HIA less amenable to wider “political” aims than policy HIA
  • but can look for contributions to the community wellbeing…clinics, water supplies, sewage treatment, etc.
Conclusion

• Need to get health into project IA
  ▫ Focus on what is realistic and achievable
    • Concentrate on adding real value to the total IA
  ▫ Make sure it is done well...within reason
  ▫ Work constructively with other forms of IA
  ▫ Once have that base, can be more adventurous!
Health Impact Assessment
A triumph over common sense?

Ben Harris-Roxas
Consultant, Harris-Roxas Health
Conjoint Lecturer, University of New South Wales, Sydney
Health Section Co-Chair, International Association for Impact Assessment
A detailed paper on this talk is available from
www.harrisroxashealth.com/2012/10/korea2012

Health Impact Assessment: A triumph over common sense?

HIA 2012

Ben Harris-Roxas
Director, Centre for Primary Health Care and Equity, University of New South Wales, Health Services
Co-Chair, International Association for Impact Assessment. Former, Fraser Island Health.
Email: ben@harrisroxas.com Ph: +61 2 9385 3966

1. Background
There is a well recognised need to evaluate health impact assessments (HIAs) for their efficiencies (Bennett & Harris 2002; Harris et al 2012); Guppy & Taylor 2004; Harris & Bennett 2012). We work in increasingly resource constrained systems that are facing ever increasing demands and all interventions are increasingly expected to demonstrate their utility.

Background

• We work in increasingly resource constrained systems and all interventions are expected to demonstrate their usefulness – this includes HIA.

• The use of HIA may seem like “common sense”. It’s already being used; it has already demonstrating its usefulness. We have good examples.
Background

- But common sense isn’t good enough. We need to convincingly demonstrate HIA’s effectiveness.
- This effectiveness can be thought of narrowly, in terms of changes to decisions and implementation, and evidence of recommendations being adopted.
- It’s also important to look at HIA’s ability to change ways of working, understanding and learning.

This presentation

- Draws on a before-and-after study (prospective multiple case study):
  - Two similar equity focused HIAs of service plans (obesity prevention and management strategies)
  - One HIA was conducted, one was screened out
  - 23 interviews, conducted before and after the HIAs, document analysis
The effectiveness of HIA

- The effectiveness of HIA is complex and affected by many factors.
- Colleagues at UNSW and I developed a conceptual framework that attempts to look at the broad range of factors that can be affected through HIAs, but also the factors that affect them.

The need to look at perceptions of effectiveness

• It was obvious to us from previous research that perceptions of an HIA matter.

• Perceptions determined the extent to which people attributed changes to an HIA.

• Perceptions can give rise to conflict.

Example: What is the purpose of an HIA?

“I think people felt when recommendations came in, that they saw as a critique, or not that they were a critique, because different... They were like ‘Oh, but it wasn’t a proper plan anyway, it was just, you know, we were just trying to get the money, and that was our goal at that time, just get the money, and we said we’d do this, but not sure if we really will’.”
Example: What is the purpose of an HIA?

“We didn’t have a shared understanding of why we were undertaking it. Our purposes were probably different[...], and maybe that’s where they don’t work, but if you have two differing purposes, unless you can fully appreciate what those two different purposes are, maybe it doesn’t work out as well as it could... I think there was a feeling that, well, we could get something out of [the EFHIA]. There were probably two rationales for why it would be useful. One is that we could get some, a critique if you like, or some feedback about, through an equity lens, on the strategies that we had proposed. And the second one was that it would perhaps serve a process of helping people who are more engaged in the consultation process.”

Example: What is the purpose of an HIA?

“In a way, it was about improving the quality of the document, it was actually quite important to be able to debate some of the issues.”
Example: We would have known it anyway 
(the recommendations are common sense)

“There were also some things in [the EFHIA report] that, I guess, implied, that we wouldn’t consider, some issues that I think can be dealt with in careful planning, and careful implementation, and the intention, as I said before, if the [ABHI implementation plan] was really about ‘this is the flavour of where we’re going with this’ we’re going to have to obviously have greater implementation plans around each of these strategies, we’ve only got sixty pages to do it in.”

Example: We would have known it anyway 
(the recommendations are common sense)

“There are quite dichotomous views about what people believe about HIAs. Some people believe there is a place [for HIAs], blah, blah, blah and they’re fantastic. Other people believe [these issues are addressed as] part of a good planning process, and there’s some there are in between those two.”
Are common sense and HIA synonymous?

• Not really! What seems obvious in hindsight wasn’t really at the time – this is known as hindsight bias.

• I found several examples of hindsight bias in this study, where people expressed disappointment that the HIA didn’t result in radically new information, even though that isn’t what they hoped for in the interviews before the HIA (more detailed examples in the paper)

Conceptual challenges in evaluating HIA

So, given:

1. perception of HIA’s effectiveness matters, and

2. we know hindsight bias applies to perceptions of HIA; how should we address this problem when evaluating HIA?

(Keep in mind almost all evaluations of HIAs have relied on retrospective/historical accounts)
Challenge 1: Narrative fallacy

- We create narratives (stories) to explain events.
- Stories are created after the event, often to explain what happened, e.g. “this is why the HIA failed/succeeded”.
- We tend to create stories to suit we want events to be understood, and this leads to narrative fallacy.
- We can’t rely on stories to explain what actually happened (stories often sound like they’re about different events!)

Challenge 2: Creeping determinism

- Sounds complicated but is essentially the tendency to discount information and learning because “we knew it all along” or “the HIA was always going to end up not making a difference”.
- It highlights the need to have clear descriptions about the purpose and desired outcomes of an HIA before it starts.
What’s required: Prospective evaluation

- We lack counterfactuals – the “what if?” cases
- Comparative prospective evaluation/natural experiments of similar proposals when HIAs were done
  - won’t allow perfect comparisons
  - but will allow some comparisons.
- Data also needs to be collected before, during and after HIAs to attempt to address the problems of narrative fallacy and creeping determinism.

What’s required: HIAs of health proposals

- There’s an assumption health addresses health well in planning but not much evidence of this.
- HIAs with a focus on distributional impact and equity have been useful in getting the health sector to think about the impacts of health services and programs in a different way.
- Capacity gets built in the health sector, not just to do HIAs but to set ToRs, review completed HIAs and advocate for HIA’s use (and work intersectorally)
What’s required: HIAs of health proposals

- This study was only possible of strong relationships and credibility in the health sector. It would have been more difficult working with other sectors.
- If health agencies/professionals want to promote Health in All Policies they will also need to demonstrate they’re serious about Health in Health Policies.

Conclusions

- HIA has the ability to alter not only plans and documents but also perceptions and understandings, often in ways that are only poorly accounted for by participants in retrospect (looking backwards).
- Impact assessment, at its best, provides useful recommendations that are timely and linked to implementation.
- The recommendations can seem obvious!
Conclusions

- Narrative fallacy and creeping determinism can make it seem like we knew this information all along.
- Common sense is often anything but common, but it can seem that way in retrospect.
- HIA may be a way to triumph over common sense.

These slides are available at

www.slideshare.net/benharrisroxas

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@ben_hr or @hiablog

healthimpactassessment.blogspot.com

linkedin.com/in/benharrisroxas
Health Impact Assessment in England – Some points of debate

John Kemm
10/10/12 Seoul

Plan

- Magnitude of impact
- Modelling impact
- Values
- Conflict resolution
- Equity
- Integrated Impact Assessment
- Impact assessment in English policy making
Qualitative/Quantitative

- “Qualitative or quantitative” is the wrong question
- Right question is “How do we describe magnitude of impact”

Describing magnitude

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major</td>
<td>Strongly positive</td>
<td>+++</td>
</tr>
<tr>
<td>Minor</td>
<td>Weakly positive</td>
<td>+</td>
</tr>
<tr>
<td>Negligible</td>
<td>No effect</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Weakly negative</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Strongly negative</td>
<td>--</td>
</tr>
</tbody>
</table>
Using numbers - Ratio scales

- Determinants (examples)
  - Pollutants
  - Noise
  - Traffic levels
- Impacts (examples)
  - Death
  - Cancer incidents
  - IQ loss

Quantitating outcomes in HIA
Veerman JL, Barendregt JJ, Mackenbach JP
J. Epidemiol Comm Hlth 2005; 59:361-370

- 98 prospective HIA studies
- 17 quantitative estimates of change in exposure
- 16 quantitative estimates of health outcome
Dimensions of Magnitude

- “Nastiness/niceness” of impact
- Number/proportion of people affected
- Timing of impact (discounting)
- Who is affected (inequalities)
- Uncertainty

Degree of dread
Acceptability

Rating severity of impact – Step 1

<table>
<thead>
<tr>
<th>Extent</th>
<th>Consequences</th>
<th>Intensity</th>
<th>Duration</th>
<th>Health Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Rare cases</td>
<td>Hardly noticed</td>
<td>&lt;1 month</td>
<td>Not perceptible</td>
</tr>
<tr>
<td>Medium</td>
<td>Limited number of cases</td>
<td>Can adapt with ease</td>
<td>Short term (1-12 months)</td>
<td>Annoyance, Minor injuries or illness</td>
</tr>
<tr>
<td>High</td>
<td>Affects only project area</td>
<td>Adapt with difficulty</td>
<td>Medium term (1-4 years)</td>
<td>Moderate injury / illness may require hospitalisation</td>
</tr>
<tr>
<td>Very High</td>
<td>Extends beyond project area</td>
<td>Cannot adapt</td>
<td>Long term/ irreversible (&gt;6 years)</td>
<td>Loss of life or severe injuries / chronic illness</td>
</tr>
</tbody>
</table>
### Rating severity of impact - Step 2

<table>
<thead>
<tr>
<th>Impact Severity</th>
<th>Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Improbable (&lt;40%)</td>
</tr>
<tr>
<td></td>
<td>Possible (40-70%)</td>
</tr>
<tr>
<td></td>
<td>Probable (70-90%)</td>
</tr>
<tr>
<td></td>
<td>Definite (&gt;90%)</td>
</tr>
<tr>
<td>Low (0-3)</td>
<td>LOW</td>
</tr>
<tr>
<td>Medium (4-6)</td>
<td>LOW MEDIUM MEDIUM</td>
</tr>
<tr>
<td>High (7-9)</td>
<td>MEDIUM HIGH HIGH</td>
</tr>
<tr>
<td>Very High (10-12)</td>
<td>MEDIUM VERY HIGH VERY HIGH</td>
</tr>
</tbody>
</table>

Not everything that can be counted counts, and not everything that counts can be counted.

Attributed to Albert Einstein (1879 - 1955)
“The point of the exercise [modelling] is not to “predict” with precision and certainty. Rather it is a range finding exercise that yields indicative forecasts, useful in setting social priorities and in making policy decisions.”

McMichael AJ. Environmental Modelling and Assessment 1997; 2, 129-137.
Models

“All models are wrong, some are useful”


Chaos

‘In chaos a little bit of uncertainty in initial conditions is quickly and enormously magnified. The system is unpredictable because the initial conditions can never be specified so precisely that you can tell where the system will end up’

Kolata G (1986) Science 231. 1068-1070
HIA values (Gothenburg)

- Democracy
  - the right of people to participate in a transparent process for formulation of policies that affect their life

- Equity
  - HIA is interested not only in the aggregate impact of the policy but also on the distribution of the impact

- Sustainable development
  - Both short and long term are taken into consideration

- Ethical use of evidence
  - Use of quantitative and qualitative evidence has to be rigorous and based on scientific disciplines

Some Other Values of HIA

- Scientific / Logical Rigor
- Impartiality
- Broad view of health
- Utilitarianism
- Value for money
Two types of judgement

- Technical judgements
- Value judgements

HIA Impartial or advocacy?
The problem with advocacy

- Taking on role of decision maker
- Mandate
- Paternalism/maternalism
- Deciding which voices to hear (voice of the voiceless)
- Selective use of evidence
Closing the gap in a generation

National governments and international organisations supported by W.H.O. should evaluate the health equity impact of policy and action.

Distribution of impacts
Needed to assess equity of impact

• Baseline differences
• Impact on vulnerable groups
• Differential exposure
• Differential sensitivity
• Describe inequalities and distribution - Yes

• Identify inequities and prescribe distribution - No

Rugby Cement proposal to use chopped tyres as fuel
HIA of Rugby Cement

- Proposal to use chopped tyres as fuel in Kiln
- Operation licensed by Environment Agency
- Strong opposition from residents
- Confused scope
- Tight time scales
- Conventional science vs lay knowledge
- Conflict resolution

Conflict resolution

- HIA often invoked by community to stop something
- HIA increasingly invoked by proposer to justify something
- HIA is an assessment not advocacy
- Aim to be impartial
- Usually dealing with situations of unequal power
HIA Second Runway at Stansted airport

- National profile
- Powerful well organised opposition
- Powerful commercial interests
- Assessments (EIA and HIA) by commercial company
- Reopening of “higher” policy decisions
- Disputed scope of assessment
- Who are stakeholders?
Impact Assessments

EIA  Environmental Impact Assessment
HIA  Health Impact Assessment
SIA  Social Impact Assessment
SEA  Strategic Environmental Assessment
HIIA Health Inequalities Impact Assessment
CBA  Cost Benefit Analysis

Why Integrated Impact Assessment?

- Vehicle for issue champions
- Simplify and reduce work for developers / implementers
- Screen out topics needing detailed work on particular issues
- Assist with development stage of work
- Quality check for sign off stage of work
- Audit trail for consideration of cross cutting issues
- Information source for issue champions
Integrated Impact Assessment

FOR
• Efficient use of time
• Reduces bureaucratic work load
• Balances different policy objectives
• Opportunity for trading and alliances

AGAINST
• Risk of tickbox exercise
• Inadequate coverage of any issue

Choosing Health
• The government will build health into all future legislation by including health as a component in regulatory impact assessment

Para 8.4
아태지역 및 유럽지역의 건강영향평가 동향 및 정책과제

### Specific Impact Tests: Checklist

<table>
<thead>
<tr>
<th>Type of testing undertaken</th>
<th>Results in Evidence Base?</th>
<th>Results annexed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competition Assessment</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Small Firms Impact Test</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Legal Aid</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Sustainable Development</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Carbon Assessment</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Other Environment</td>
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<td>No</td>
</tr>
<tr>
<td>Health Impact Assessment</td>
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</tr>
<tr>
<td>Race Equality</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Disability Equality</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Gender Equality</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Human Rights</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Rural Proofing</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

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**House of Commons Health Committee 12th Report (Public Health) October 2011**

We recommend that its [Cabinet sub-committee on public health] remit should be defined to include consideration and publication of evidence-based health impact assessments prepared by each department of state on policies within its sphere of responsibility.

(HC 1048, paragraph 30)
Government response

to House of Commons Health Committee report February 2012

• We expect that the [Cabinet] Sub-Committee will provide a strategic oversight of wider government policies. It will not be a replacement for existing policy clearance mechanisms, which are a more appropriate means for ensuring that proposed policies are supported by appropriate impact assessments.

• We will look at whether there is a role for Public Health England in supporting health impact assessments, and will work with other government departments to consider the best way of ensuring that they take account of possible health impacts when developing their policies.

SEA Directive requirements

“The likely significant effects on the environment including on issues such as biodiversity, population, human health, fauna, soil water air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage landscape and the interrelationship between the above factors.

Note f Fig 1 Practical Guidance on SEA Directive ODPM
Who should do HIA?

• Enthusiasts (academia / public health)
• Decision maker
• Commercial sector –

• Who pays for HIA?

Who will do HIA
Who will pay for HIA

• HIA enthusiasts from public health departments
• Commercial assessors
• Decision makers
Who should be entitled to perform HIA?

- Many badly conceived /performed HIA
- Unqualified people offer to do HIA
- License / Accreditation
- Public scrutiny

HIA by commercial firms

When someone commissions HIA what are they buying?

What are duties of health impact assessor
- to person paying for HIA?
- to decision making body?
- to public?
HEALTH IMPACT ASSESSMENT CAPACITY DEVELOPMENT IN VIETNAM

Nguyen Thi Lien Huong¹, Ton Tuan Nghia²
1. Health Environment Management Agency, MOH,
2. World Health Organization Representative Office in Vietnam

Contents

- HIA in the Mekong region
- HIA capacity development in Vietnam
- Conclusions and recommendations
I. Health impact assessment in the Mekong Region

- Responding to expressed needs by Mekong governments for more focus on the health dimension of impact assessments, a series of Health Impact Assessment (HIA) capacity building activities have been conducted in the region (Lao PDR, Cambodia and Vietnam) since 2003.
- With support from: WHO, DBL-Institute for Health Research and Development, Denmark and InWEnt (Capacity Building International, Germany).
- Objective: To develop concepts and strategies for the introduction and implementation of health impact assessment.

Looking back – start in Lao PDR

Comprehensive HIA capacity building in the Mekong Basin

<table>
<thead>
<tr>
<th>National Workshop for MoH staff</th>
<th>Intersectoral Skills Development</th>
<th>Policy Seminar (I)</th>
<th>Policy Reform Process</th>
<th>Policy Seminar (II)</th>
<th>HIA Technical Assistance (I) and (II)</th>
</tr>
</thead>
</table>

- Mekong Region: HIA Network & Exchange of Experiences
- Global Campus 21: Virtual Workspace & E-Learning Platform

- 2003
- 2004
- 2005
- 2006
II. HIA capacity building in Vietnam

- National Workshop for MoH staff
- Intersectoral Skills Development
- Policy Seminar (I)
- Policy Reform Process
- Policy Seminar (II)
- HIA Technical Assistance (I and II)

Mekong Region: HIA Network & Exchange of Experiences
Global Campus 21: Virtual Workspace & E-Learning Platform

2005

Some of several recommendations

- Development of ToT course
- Technical guidelines
- Policy formulation

---

2005
- National workshop on HIA for health staff
- Integrate HIA into EIA - Failed

2006
- Development of ToT course
- Integrate HIA into Law on Communicable diseases control

2007
- Training of Master Trainers
- Policy seminar and development on HIA

2008
- Joint HIA orientation and refresher course
- Development of technical HIA guidelines
- 2 provincial courses on intersectoral HIA

2009
- National Environmental Health Action Plan (NEHAP)

2011
- Dev. of training materials for provincial level
- Pilot training at provincial level

2012
- Revising and complement of technical HIA guidelines
Prototype case scenario on HIA developed: Songbong 4
Hydropower Plant.

National workshop on HIA principles and practice for a target
group of MOH’s staff:
  MOH together with InWEnt, DBL, WHO.
  The focus of the national workshop was on:
  • Essential functions of the health sector in support of HIA process.
  • Reviewed the options for further HIA capacity building in VN
  • A Training-of-Trainers (ToT) approach has been considered an
    appropriate and efficient way of creating a critical mass of
    government staff with the required competencies at the provincial
    level.

Workshop on Development of a Training of Trainers Course
Curriculum on HIA.
  • prioritized list of selection criteria for Master Trainers.
  • trainers course curriculum of HIA was outlined - developed.
  • an Action Plan was developed for a continuation of the HIA related
    training activities including a needs assessment, initiation of a
    selection process for Master Trainers (MT) as well as running a
    ten-day MT training course in preparation for the ToT.
2007 Training of master trainers

1. Course on Training-of-trainers for HIA Capacity Building:
   - Objective: to create a critical mass of Master Trainers
   - Contents: course management, pedagogical and technical issues related HIA capacity building and implementation
   - Teachers: Peter Furu- DBL; Robert Bos- WHO; Yanyong Inmuong, Mahasarakham University, Thailand.
   - Output: 14 people were trained.
Training of master trainers

2. Technical Briefing Workshop on HIA:

- **Objectives:**
  - To inform all sectors of the principles and practice of HIA,
  - To obtain sector feedback and support for HIA to become part of development planning in Vietnam
  - To reach agreement on the contents of a national technical guidelines document for HIA
  - To formulate a draft Memorandum of Understanding between the MOH and the MONRE for intensified collaboration in the area of impact assessment

2007 Training of master trainers

2. Technical Briefing Workshop on HIA (cont.)

- Workshop outcomes:
  - Outline of Technical guidelines on HIA developed
  - Outline of intersectoral Memorandum of Understanding developed
  - Road map for follow-up activities towards a policy/legislative foundation for HIA in Vietnam
2008 HIA Orientation & Refresher Course

Meeting between MOH, WHO, Inwent and DBL:

- Master Training:
  - role of trainers was not clear for all,
  - the training was too theoretical
  - the Song Bung 4 project was not suitable for being a concrete project, as the report has not been completed yet and social indicators are missing.
- Definition of HIA is still not clear/the concept of HIA is new.
- A refresher course is needed/the training material was revised and adapted to the Vietnamese context.

---

2008 HIA Orientation & Refresher Course

- The objective:
  - To prepare HIA Master Trainers for the process of planning and implementation of intersectoral HIA courses at provincial level.
  - To introduce members of the national HIA guideline development team to the basic principles and practices of HIA.
- 2 phases & for 02 different target groups:
  - 3 day refresher phase for master trainers & members of the HIA national guideline development team
  - 4 day ToT phase for master trainers.
2008 HIA Orientation & Refresher Course

- Output of the course:
  - 4 Master Trainers fully prepared
  - 11 members of the National HIA Guidelines development team were introduced into important elements of HIA principles and practice
2008 Provincial courses on intersectoral HIA

- 2 courses on intersectoral HIA at provincial organized
  - Trainers: 4 Master Trainers
  - Participants: health, environment, agriculture, transportation, construction, communication, companies.
  - Course material compiled based on the trainers' course curriculum

2008 Provincial courses on intersectoral HIA

- Handbook for practitioners “Environmental and Health Impact Assessment of Development Projects” compiled by WHO and CEMP was translated into Vietnamese.
- Translated handbook has not been distributed to health and environmental staff and experts
Pilot training on HIA at provincial level

- HIA was addressed in the Law on communicable disease control issued in 2007.
  - All investment projects on construction of industrial zones, urban areas, crowded residential areas, health care facilities for communicable diseases have to submit HIA report to health authorities for appraised and approval before setting.

- New Decree of the government on EIA issued in 2011:
  - EIA report must propose measures to mitigate negative environmental impacts to the natural conditions, public health and involved socio-economic factors

2011

Pilot training on HIA at provincial level

- Develop a training material on HIA at provincial level.
  - HEMA leads the training material development
  - A working group on HIA was established
  - The group consists of master trainers, representatives from HEMA, Vietnam Environment Agency, WHO.
  - Contents: basic definition and importance of HIA, principles and participants of HIA, HIA procedures and process, contents of HIA reports, health risks relating different types of development projects, case studies.
  - Funding: WHO
2011  Pilot training on HIA at provincial level

- The training material piloted in 2 training courses.
  - Trainers: 2 Master trainers.
  - Participants from health department, preventive health center, environment department (EIA appraisal section) of 30 provinces.
- The training material was revised and finalized.
- Challenge: Lack of finance for:
  - printing the training material to distribute to MTs and provinces.
  - Organize more courses for provinces
  - translating the material into English for sharing among TWG
III. Conclusions and recommendations

- Through a series of training activities in the capacity building for HIA, several key trainers in HIA has been established to serve for further trainings at national and provincial levels.
- Awareness on HIA in healthcare and environmental staff at all levels has been improved.
- More HIA case studies in different areas needed.
- More inter-sectoral training on HIA at provincial level needed.
- HIA should become a compulsory subject for undergraduate, graduate and postgraduate medical and environmental students.

Thank you for your attention!
HEALTH IMPACT ASSESSMENT POLICY DEVELOPMENT IN VIETNAM

Nguyen Thi Thanh Tam, Nguyen Thi Lien Huong, Health Environment Management Agency, MOH

Contents

- Policies and regulations of Vietnam on HIA
- Institutionalization of HIA in Vietnam
The legal system

Policies and regulations of Vietnam on HIA

- Law on Environment Protection and guiding Decrees
- Law on Infectious Disease Prevention and Control and guidelines under the law
- National Environmental Health Action Plan (NEHAP)
1. Law on Environment Protection and guiding Decrees:

- The Law on Environment Protection issued in 1993 and the Decree of government guiding implementation of the Law regulated HIA as a part of EIA.
- However, there was no guideline on HIA at that time so that HIA was not implemented comprehensively. It mainly concentrated on assessing impacts on worker health.

1. Law on Environment Protection and guiding Decrees:

- The Law on Environment Protection was revised in 2005, and the Decree guiding implementation of EIA issued in 2006 did not regulate HIA as a part of EIA, though the Vice Minister of Health sent an official letter asking the Minister of MOE to integrate HIA into EIA.
- The reasons were:
  - Since 1993 the health sector did not develop a technical guidelines on HIA.
  - HIA methodology is different from EIA methodology
  - HIA implementation is responsibility of the health sector.
1. Law on Environment Protection and guiding Decrees:

- In 2010 the MOE started to revise the Decree guiding implementation of EIA.
- MOH worked with MOE and Prime Minister Office to integrate HIA into EIA.
- Finally, New Decree of the government on EIA issued in 2011 requests only that the EIA report must propose measures to mitigate negative environmental impacts to the natural conditions, public health and involved socio-economic factors.
- Opportunity: MOE has been revising the Law on Environmental Protection since 2011. MOH in collaboration with WHO in Vietnam will try their best to push the MOE to regulate HIA into EIA.

2. Law on Infectious Disease Prevention and Control and guidelines under the law

- Law on Prevention and Control of Infectious Diseases issued in 2007 regulates that All investment projects on construction of industrial zones, urban areas, crowded residential areas, health care facilities for communicable diseases have to submit HIA report to health authorities for appraised and approval before setting.
- Therefore, to implement the Law, a technical HIA guideline must be developed.
2. Law on Infectious Disease Prevention and Control and guidelines under the law

- In 2008, a working group to work on technical HIA guidelines was established by the MOH.
  - This group consisted of representatives from different departments of MOH (General Dept. of Preventive Medicine and Environment was assigned to be a focal point of HIA), MPI, MoST, MoE, MoIT, MoC, MARD.
  - The group was sent to HIA Orientation & Refresher Course for training on HIA principles and practice.
  - The group developed 3 drafts of technical HIA guideline
  - INWENT provided funding

- Challenges:
  - Due to restructure of MOH and other ministries in 2010, the working group is no longer working.

---

2. Law on Infectious Disease Prevention and Control and guidelines under the law

- In 2012, with the WHO support, HEMA in collaboration with a national consultant is revising the technical HIA guidelines

- The technical guideline consists of basic definition of HIA, steps of HIA process, contents of HIA report and HIA appraisal.

- Users of the guidelines: HIA implementers, EIA implementers, HIA appraisal officers and EIA appraisal officers.

- The draft technical HIA technical guidelines will be issued by Minister of Health.

- Question:
  - Should the technical HIA guidelines be issued by inter-ministries MOH and MOE?
3. Development of National Environmental Health Action Plan (NEHAP)

- Since 2009, HEMA in co-operation with WHO and MoNRE has continued to conduct capacity building in HIA and step by step set up a foundation for development of HIA process in Vietnam through the proposal of NEHAP.
- MONRE (Centre for environmental consultation and technology – Vietnam Environment Administration) leads to submit a proposal for NEHAP to the Government for approval.
- In NEHAP: HIA is one of two main components.

Development of National Environmental Health Action Plan (NEHAP)

- Challenges:
  - NEHAP has been refused by the Prime Minister because of its poor quality.
  - Some ministries have requested the NEHAP to be led by MOH.
Institutionalization of HIA in Vietnam

- Health Environment Management Agency, a new department of MOH which was established in May 2010, is the focal point for HIA. It has a division that is responsible for HIA – Division of Chemical Management and Health Environment Impact Assessment.
- The Agency is the official coordinator of HIA network in VN. It is also responsible for:
  - Developing regulations, technical guidelines on HIA
  - Raising awareness of importance and benefits of HIA
  - Enhance HIA capacity
  - Conducting HIA report appraisal.

Conclusions

- Focal points on HIA in Vietnam should develop and facilitate the implementation of HIA comprehensive work plans.
21. 환경정책평가연구원 이영수 박사 : top-level 행정계획을 위한 HIA의 효과성

Is HIA Effective for Top Level Administrative Plan?

2012. 10. 10
KEI
Young Soo Lee

Administrative Procedure

- Industrial Complex Development
  - Set up of Industrial Complex Supply Plan → Designation of Industrial Complex Site → EIA for Industrial Complex Construction

- Waste Treatment Facility Construction
  - Set up of Basic Waste Treatment Plan → Designation of Landfill or Incinerator Site → EIA for Landfill or Incinerator Construction
Industrial Complex Development
Korea Environment Institute
2nd Supply Plan

<table>
<thead>
<tr>
<th>Type</th>
<th>2001</th>
<th>2006</th>
<th>2011</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(단위: km², %)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>512.0 (100.0)</td>
<td>575.8-584.1 (100.0)</td>
<td>618.3-632.0 (100.0)</td>
<td>63.0-72.1 42.5-47.9 108.3-120.0</td>
</tr>
<tr>
<td>Planning</td>
<td>266.2 (52.0)</td>
<td>312.0-317.7 (54.2-54.4)</td>
<td>341.9-351.8 (55.3-55.7)</td>
<td>45.0-51.5 29.9-34.1 75.7-85.6</td>
</tr>
<tr>
<td>District</td>
<td>245.8 (48.0)</td>
<td>263.6-266.4 (48.0-45.6)</td>
<td>276.6-289.2 (44.7-44.3)</td>
<td>18.0-20.6 12.6-13.8 30.6-34.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th>2001(A) (단위: %)</th>
<th>2002-2011 (단위: %)</th>
<th>2011(C) (단위: %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolitan</td>
<td>134.3 (26.2)</td>
<td>22.8-54.4 (21.4-20.3)</td>
<td>157.1-158.7 (25.4-25.1)</td>
</tr>
<tr>
<td>Other</td>
<td>377.7 (73.8)</td>
<td>63.5-95.6 (78.6-79.7)</td>
<td>461.2-473.8 (74.6-74.9)</td>
</tr>
<tr>
<td>National</td>
<td>512.0 (100.0)</td>
<td>106.3-120.0 (100.0)</td>
<td>618.3-632.0 (100.0)</td>
</tr>
</tbody>
</table>

Type of Industry of Each Region

1. Seoul : Fashion, IT, Software
2. Busan : Shoes, Automobile, Software
3. Daegu : Textile, Apparel, Transportation, Machine, Electronics
4. Incheon : Steel, Machine, Electronics, IT, ET, BT
5. Daegeon : R & D, Venture
6. Ulsan : Automobile, Ship
7. Kyeong Gi : Semi Conductor, Electronics, IT
8. Kwang Won : BT, Medical, Machine
Screening/Scoping Checklist

1. Difficult to do screening/scoping

Appraisal and Recommendation

1. Difficult
## Waste Treatment Facility Construction

## Contents of Basic Waste Treatment Plan

### <Management Goal of National Plan> – Domestic Waste (ton/day)

<table>
<thead>
<tr>
<th></th>
<th>2000 (Achievement)</th>
<th>2005</th>
<th>2008</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount Estimated</td>
<td>46.438</td>
<td>50.750</td>
<td>51.829</td>
<td>52.743</td>
</tr>
<tr>
<td>Reduction</td>
<td>-</td>
<td>3,645 (6.0%)</td>
<td>4,665 (9.3%)</td>
<td>6,329 (12.0%)</td>
</tr>
<tr>
<td>Real Amount (kg/day/person)</td>
<td>46.438 (0.96)</td>
<td>47.765 (0.97)</td>
<td>47.164 (0.94)</td>
<td>46.414 (0.91)</td>
</tr>
<tr>
<td>Rate of Reuse (target)</td>
<td>19.187 (41.3%)</td>
<td>21.944 (46.0%)</td>
<td>23.582 (50.0%)</td>
<td>24.597 (53.0%)</td>
</tr>
<tr>
<td>Amount of Treatment needed</td>
<td>27.971</td>
<td>25.761</td>
<td>23.562</td>
<td>21.817</td>
</tr>
<tr>
<td>Incineration (target)</td>
<td>5.440 (11.7%)</td>
<td>10.972 (23.0%)</td>
<td>13.206 (28.0%)</td>
<td>13.924 (30.0%)</td>
</tr>
<tr>
<td>Landfill (target)</td>
<td>21.831 (47.0%)</td>
<td>14.769 (31.0%)</td>
<td>10.376 (22.0%)</td>
<td>7.893 (17.0%)</td>
</tr>
</tbody>
</table>
Contents of Basic Waste Treatment Plan

<Management Goal of National Plan> – Industrial Waste (ton/day)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount Estimated</td>
<td>187,844</td>
<td>280,340</td>
<td>316,691</td>
<td>356,413</td>
</tr>
<tr>
<td>Reduction</td>
<td></td>
<td>8,410 (3.0%)</td>
<td>19,001 (6.0%)</td>
<td>20,513 (6.0%)</td>
</tr>
<tr>
<td>Real Amount after Reduction</td>
<td>187,844</td>
<td>271,930</td>
<td>297,690</td>
<td>327,900</td>
</tr>
<tr>
<td>Reuse (target)</td>
<td>73.5%</td>
<td>76.7%</td>
<td>78.5%</td>
<td>80.0%</td>
</tr>
<tr>
<td>Amount Reused</td>
<td>138,035</td>
<td>208,570</td>
<td>233,984</td>
<td>262,320</td>
</tr>
<tr>
<td>Amount of Treatment Needed</td>
<td>49,809</td>
<td>63,360</td>
<td>63,706</td>
<td>65,580</td>
</tr>
<tr>
<td>Incineration (%)</td>
<td>11.757 (6.3)</td>
<td>13.763 (6.0)</td>
<td>22.227 (7.5)</td>
<td>25.576 (7.9)</td>
</tr>
<tr>
<td>Landfill (%)</td>
<td>32.004 (15.9)</td>
<td>33.719 (12.4)</td>
<td>30.960 (10.4)</td>
<td>30.167 (9.2)</td>
</tr>
<tr>
<td>Marine Disposal and etc</td>
<td>8,148 (4.3)</td>
<td>10,878 (4.0)</td>
<td>10,419 (3.5)</td>
<td>9,839 (3.0)</td>
</tr>
</tbody>
</table>
Appraisal and Recommendation

1. Difficult to evaluate and make recommendations

Conclusions

1. It is not easy to have HIA on top level administrative plan because of its contents.
2. There is a need to develop HIA methodology for top level administrative plan.
22. 한양대의대 김윤신 교수: 노인인구에 대한 기후변화의 건강영향

The Potential Health Effects of Climate Change on the Elderly Population in Korea

Yoon Shin Kim, Chol-Min Lee, Hyung Jin, Chon, Jung-Won Lee, Sung-won Yoon
Institute of Industrial and Environmental Medicine,
College of Medicine, Hanyang University, Seoul, Korea.

Presented at the Fourth Asia-Pacific HIA Conference
10 October 2012
Seoul, Korea

Contents

- Overview/ objectives
- Materials and Methods
- Preliminary results
- Summary
Climate Change and Health: Pathways

1. Direct impact
   e.g. heatwaves, floods, fires

2. Mediating processes (indirect)
   Changes to physical systems/processes
   e.g. urban air pollution

3. Biological changes: processes, timing
   e.g. mosquito numbers, range; photosynthesis → crop yields

   Changes to ecosystem structure and function
   e.g. fisheries; constraints on microbes; nutrient cycles; for est productivity

4. Social, economic, demographic disruptions

Health impacts

(Ref: McMichael and Haines, BMJ, 1997)
Two Important Perspectives

**Effects on Health**
Health risks are influenced by both natural climate variability and by (human-induced) climate change.

**Effects on Environmental Pollutants**
Climate change typically acts in concert with other environmental changes.

Three Types of Study

<table>
<thead>
<tr>
<th>Empirical studies</th>
<th>Estimation, modelling</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learn</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Detect</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Past</strong></td>
<td><strong>Present</strong></td>
</tr>
<tr>
<td>Natural climate variation:</td>
<td>Current climate change:</td>
</tr>
<tr>
<td>- identify 'effect'</td>
<td>- detect effects</td>
</tr>
<tr>
<td>- quantify risks</td>
<td>- quantify effects</td>
</tr>
</tbody>
</table>
Daily temperature and deaths: what happens at temperature extremes?

- Impact of Europe 2003 heat-wave suggests graph c, not b, applies at unusually hot temperatures
- We already have sufficient observations within this 'normal' temperature range

Cold spells and excess winter deaths

- Cold generally more prolonged & lethal than heat waves
- Winter death toll tends to be 5% to 30% higher than usual
- Approx. 18% increase in premature deaths (UK)
- But between 1971-2003, cold related mortality reduced >33%
- Significant association between winter mortality and temperature, with a 1.5% higher odds of dying in winter for every 1°C reduction in 24-h mean winter temperature
Temperature Comparison
(Global, USA, Korea)

Global temperature (1900-2010)

Temperature of USA (1900-2010)

Temperature of Korea (1910-2010)

Table 1. Temperature by scale

<table>
<thead>
<tr>
<th>Scale</th>
<th>Elevated Temperature</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>+0.71°C/100 years</td>
<td>1901-2009</td>
</tr>
<tr>
<td>USA</td>
<td>+0.69°C/100 years</td>
<td>1901-2009</td>
</tr>
<tr>
<td>Korea</td>
<td>+0.70°C/100 years</td>
<td>1912-2008</td>
</tr>
</tbody>
</table>

Association between temperature and health outcome

Relative risk of heat-related and cold-related death for every 1°C change in mean temperature, by region and combined estimate (Hajat. 2007)
Daily Temperature and Deaths in Seoul
(Heatwave Episode, June-Sept 1994)
Objectives

☐ To study the similarities and differences in how the Korean elderly population (aged 65 and above) respond to summer and winter ambient temperatures in terms of population-level major-cause of mortality.

☐ To examine the possible relationships of indoor and outdoor CO2 to specific mortality and morbidity, and assess the effect of other pollutants as well as the effect of temperature.

☐ To develop KAHI (Korea Air Health Index) based on data of temperature, emission of CO2, and air pollutant levels.

Materials and Methods

1) Analysis of mortality

<table>
<thead>
<tr>
<th>Mortality data</th>
<th>Meteorological data</th>
<th>Air pollutants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause of death, date</td>
<td>of death, daily death counts, region, age, sex, etc.</td>
<td>Temp., and relative humidity</td>
</tr>
<tr>
<td>Major variables</td>
<td>Sources</td>
<td>Korea Meteorological Administration</td>
</tr>
</tbody>
</table>

- Generalized additive model (GAM)
  \[ Y = \alpha + \sum_{i=1}^{p} f_i(X_i) + \epsilon \text{ (dependent variable Y, predictor X$_1$, X$_2$, X$_3$, ..., X$_p$, Smooth function f(X))} \]

- Relative Risk Ratio (RR) from increase of temperature and air pollutant concentration
  - RR = exp(\(\beta\))
  - 95% CI = exp(\(\beta\) ± 1.96*sd Error)

2) Analysis of morbidity
(common prevalence of hospital admission and Emergency visit)

<table>
<thead>
<tr>
<th>Health insurance data</th>
<th>Meteorological data</th>
<th>Air pollutant concentration data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major variable</td>
<td>Hospital admission, emergency visit, sex, birth date, etc.</td>
<td>Temp., rel. humidity, etc.</td>
</tr>
<tr>
<td>Sources</td>
<td>Health Insurance Review and Assessment Service</td>
<td>Korea Meteorological Administration</td>
</tr>
</tbody>
</table>

- Analysis: same as 1) analysis of mortality
- CO2 levels were calculated by simulation model.
### Results – 1) mortality change

#### Total mortality change due to temperature and air pollutants

**Summer**

<table>
<thead>
<tr>
<th>Age group</th>
<th>Risk factor</th>
<th>% Change</th>
<th>95% CI</th>
<th>AIC</th>
<th>Lag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weather Temperature</td>
<td>1.07</td>
<td>0.70 - 1.3</td>
<td>1.0351</td>
<td>Lag 0</td>
<td></td>
</tr>
<tr>
<td>GHS Outdoor</td>
<td>1.77</td>
<td>0.63</td>
<td>1.0250</td>
<td>Lag 0</td>
<td></td>
</tr>
<tr>
<td>Indoor</td>
<td>2.24</td>
<td>1.20 - 3.1</td>
<td>1.0456</td>
<td>Lag 0</td>
<td></td>
</tr>
<tr>
<td>CO</td>
<td>1.00</td>
<td>0.64 - 1.0</td>
<td>1.0230</td>
<td>Lag 0</td>
<td></td>
</tr>
<tr>
<td>Pollution Ozone</td>
<td>1.25</td>
<td>0.49 - 2.0</td>
<td>1.0240</td>
<td>Lag 0</td>
<td></td>
</tr>
<tr>
<td>PM2.5</td>
<td>9.2</td>
<td>0.95</td>
<td>1.0586</td>
<td>Lag 0</td>
<td></td>
</tr>
<tr>
<td>NO2</td>
<td>2.05</td>
<td>1.13 - 2.7</td>
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| Weather Temperature | 1.43 | 1.10 - 1.8 | 1.0213 | Lag 0 |
| GHS Outdoor | 1.72 | 0.62 - 5.0 | 1.0378 | Lag 0 |
| Indoor | 2.22 | 1.36 - 3.6 | 1.0456 | Lag 0 |
| CO | 3.23 | 0.70 | 1.0578 | Lag 0 |
| Pollution Ozone | 2.25 | 0.93 - 2.7 | 1.0550 | Lag 0 |
| PM2.5 | 1.79 | 0.95 | 1.0151 | Lag 0 |
| NO2 | 2.08 | 0.95 | 1.0314 | Lag 0 |
| SO2 | 2.27 | 1.12 - 4.3 | 1.0209 | Lag 0 |

**Winter**

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| Weather Temperature | 0.27 | 0.05 - 0.40 | 1.0977 | Lag 0 |
| GHS Outdoor | 0.51 | 0.01 - 1.0 | 1.0895 | Lag 1 |
| Indoor | -0.88 | -1.99 | 1.0963 | Lag 2 |
| CO | 0.20 | 0.11 - 1.5 | 1.0839 | Lag 3 |
| Pollution Ozone | -2.49 | -3.60 - 0.1 | 1.0871 | Lag 3 |
| PM2.5 | 0.64 | -0.19 - 1.4 | 1.0934 | Lag 3 |
| NO2 | 1.16 | -0.75 - 2.5 | 1.0978 | Lag 3 |
| SO2 | 1.05 | 0.60 - 2.7 | 1.2040 | Lag 1 |

### Respiratory mortality change due to temperature and air pollutants

#### Summer

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| Weather Temperature | 1.77 | 0.82 | 0.90 | 1.0040 | Lag 1 |
| GHS Outdoor | -0.54 | -0.60 | 0.9877 | Lag 2 |
| Indoor | 2.31 | 0.29 - 0.5 | 0.9856 | Lag 2 |
| CO | 4.81 | -1.00 | 0.9881 | Lag 2 |
| Pollution Ozone | -2.21 | -2.7 | 0.9994 | Lag 7 |
| PM2.5 | 4.04 | -0.25 | 0.9871 | Lag 7 |
| NO2 | 4.90 | 0.30 | 0.9835 | Lag 7 |
| SO2 | 5.02 | 1.75 - 9.0 | 0.9830 | Lag 7 |

#### Winter

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| Weather Temperature | 0.83 | 0.08 | 0.95 | 1.0042 | Lag 5 |
| GHS Outdoor | 1.67 | -2.93 | 1.0073 | Lag 2 |
| Indoor | 2.02 | 0.13 - 3.9 | 1.0094 | Lag 5 |
| CO | 2.10 | -2.06 | 1.0056 | Lag 5 |
| Pollution Ozone | -1.57 | -1.87 | 1.0069 | Lag 3 |
| PM2.5 | -1.30 | -1.55 | 1.0053 | Lag 7 |
| NO2 | -0.02 | -0.30 | 1.0024 | Lag 7 |
| SO2 | 1.48 | -0.19 | 0.9591 | Lag 4 |
### Cardiovascular mortality change due to temperature and air pollutants

#### Summer

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### Percentile change in mortality of the elderly people associated with 1°C decrease in daily minimum temperature in winter, Seoul, 1992-2007

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Hanyang Univ. IEIM | HIA 2012
### 2) morbidity change

**Asthma morbidity change due to temperature and air pollutants**

- **Summer - Asthma**

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- **Winter - Asthma**

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**Emergency visit**

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### MI morbidity change due to temperature and air pollutants

- **Summer - Myocardial infarction**

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<td>20.15 - 23.43</td>
<td>4771.85</td>
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</tr>
<tr>
<td></td>
<td>SO2</td>
<td>9.85</td>
<td>-0.95 - -2.70</td>
<td>3559.06</td>
<td>Lag4</td>
</tr>
</tbody>
</table>

- **Winter - Myocardial infarction**

<table>
<thead>
<tr>
<th>Categories</th>
<th>Risk factor</th>
<th>%Change</th>
<th>95% CI</th>
<th>AIC</th>
<th>Lag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weather</td>
<td>Temp</td>
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<td>-0.87 - 1.72</td>
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</tr>
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<td>GHS</td>
<td>Outdoor</td>
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</tr>
<tr>
<td></td>
<td>Indoor</td>
<td>-2.61</td>
<td>-5.38 - -1.86</td>
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</tr>
<tr>
<td></td>
<td>CO</td>
<td>2.52</td>
<td>-4.93 - -0.95</td>
<td>4275.74</td>
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</tr>
<tr>
<td></td>
<td>Ozone</td>
<td>-1.72</td>
<td>-4.06 - -0.08</td>
<td>424.62</td>
<td>Lag5</td>
</tr>
<tr>
<td>Pollution</td>
<td>PM2.5</td>
<td>-1.18</td>
<td>-3.97 - 0.42</td>
<td>420.95</td>
<td>Lag5</td>
</tr>
<tr>
<td></td>
<td>NOx</td>
<td>2.95</td>
<td>-4.73 - -0.09</td>
<td>420.71</td>
<td>Lag5</td>
</tr>
<tr>
<td></td>
<td>SO2</td>
<td>2.04</td>
<td>-0.90 - 4.91</td>
<td>420.47</td>
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</tr>
</tbody>
</table>

**Emergency visit**

<table>
<thead>
<tr>
<th>Categories</th>
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<th>%Change</th>
<th>95% CI</th>
<th>AIC</th>
<th>Lag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weather</td>
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<td>0.53</td>
<td>0.06 - 0.98</td>
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<td>Lag7</td>
</tr>
<tr>
<td>GHS</td>
<td>Outdoor</td>
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<td>-0.99 - -0.54</td>
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</tr>
<tr>
<td></td>
<td>Indoor</td>
<td>3.14</td>
<td>1.12 - 5.67</td>
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</tr>
<tr>
<td></td>
<td>CO</td>
<td>-1.99</td>
<td>-5.34 - -1.34</td>
<td>532.56</td>
<td>Lag7</td>
</tr>
<tr>
<td></td>
<td>Ozone</td>
<td>1.56</td>
<td>1.10 - 1.99</td>
<td>528.10</td>
<td>Lag0</td>
</tr>
<tr>
<td>Hospital admission</td>
<td>PM2.5</td>
<td>1.98</td>
<td>-0.00 - 4.87</td>
<td>529.44</td>
<td>Lag7</td>
</tr>
<tr>
<td></td>
<td>NOx</td>
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<td>-1.70 - 4.27</td>
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</tr>
<tr>
<td></td>
<td>SO2</td>
<td>1.73</td>
<td>-3.04 - 5.03</td>
<td>513.90</td>
<td>Lag7</td>
</tr>
</tbody>
</table>
### COPD morbidity change due to temperature and air pollutants

#### Summer - Chronic obstructive pulmonary disease

<table>
<thead>
<tr>
<th>Categories</th>
<th>Risk factor</th>
<th>% Change</th>
<th>95% CI</th>
<th>ADC</th>
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</tr>
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<tbody>
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<tr>
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<td>-7.05 - -3.35</td>
<td>2248.34</td>
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<tr>
<td></td>
<td>Indoor</td>
<td>-7.11</td>
<td>-9.88 - -4.78</td>
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<tr>
<td>Hospital admission</td>
<td>CO</td>
<td>-3.11</td>
<td>-5.29 - -0.88</td>
<td>2275.91</td>
<td>Lag 2</td>
</tr>
<tr>
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<td>Ozone</td>
<td>3.37</td>
<td>1.15 - 5.59</td>
<td>2272.11</td>
<td>Lag 1</td>
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<tr>
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<td>2.69</td>
<td>0.58 - 4.87</td>
<td>2273.62</td>
<td>Lag 7</td>
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<tr>
<td></td>
<td>PM10</td>
<td>-15.05</td>
<td>-13.20 - -12.20</td>
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<tr>
<td></td>
<td>SO2</td>
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<td>-2.22 - -1.22</td>
<td>2205.31</td>
<td>Lag 1</td>
</tr>
</tbody>
</table>

#### Winter - Chronic obstructive pulmonary disease

<table>
<thead>
<tr>
<th>Categories</th>
<th>Risk factor</th>
<th>% Change</th>
<th>95% CI</th>
<th>ADC</th>
<th>Lag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weather</td>
<td>Temp</td>
<td>0.77</td>
<td>0.43 - 1.11</td>
<td>2207.93</td>
<td>Lag 5</td>
</tr>
<tr>
<td>GHS</td>
<td>Indoor</td>
<td>3.95</td>
<td>1.73 - 6.22</td>
<td>2286.63</td>
<td>Lag 0</td>
</tr>
<tr>
<td></td>
<td>Outdoor</td>
<td>4.95</td>
<td>2.09 - 7.06</td>
<td>2264.87</td>
<td>Lag 4</td>
</tr>
<tr>
<td>Hospital admission</td>
<td>CO</td>
<td>7.75</td>
<td>5.30 - 10.27</td>
<td>2278.80</td>
<td>Lag 0</td>
</tr>
<tr>
<td></td>
<td>Ozone</td>
<td>-4.12</td>
<td>-6.06 - -2.18</td>
<td>2285.55</td>
<td>Lag 4</td>
</tr>
<tr>
<td>Pollution</td>
<td>PM2.5</td>
<td>-2.69</td>
<td>-4.25 - -1.10</td>
<td>2271.53</td>
<td>Lag 1</td>
</tr>
<tr>
<td></td>
<td>PM10</td>
<td>6.04</td>
<td>5.51 - 6.63</td>
<td>2274.87</td>
<td>Lag 0</td>
</tr>
<tr>
<td></td>
<td>SO2</td>
<td>-0.80</td>
<td>-1.89 - -0.90</td>
<td>2266.94</td>
<td>Lag 0</td>
</tr>
</tbody>
</table>

### Summary

- **Our preliminary study results suggest that mortality risks of total, respiratory, and cardiovascular death in the aged population (65 yr+) seem to be increased 1.43%, 1.77%, and 1.14%, respectively, with the 1 °C increase in daily minimum temperature in summer, whereas mortality risks of total, respiratory, and cardiovascular death seem to be increased 0.27%, 0.83%, and 0.33%, respectively, with the 1 °C decrease in daily minimum temperature in winter. That means mortality risks by temperature effects in aged population seemed to be higher summer than winter.**

- **For elderly population, indoor CO2 showed the higher risk in respiratory death, whereas temperature in summer seemed to be a major factor of increasing risk of CVD mortality. However, this should be more analyzed.**
- The morbidity risks of temperature effects on emergency visit in asthma, MI and COPD during summer seemed to be higher than those effects on hospital admission.

- The results suggested that public health programs should be considered reducing the effect of sudden change in temperature on the related mortality and morbidity as well as the adaptation of climate change.

- Therefore, the accurate monitoring system, early warning system and vulnerability index on the climate change should be developed urgently to estimate the effects of climate change on health, especially for the aged population.

**Acknowledgement**

This study was carried out with the support of “The Converging Research Center Program (Project NO. 901-094-082)”, Korea Environmental Industry & Technology Institute funded by Ministry of Environment, Republic of Korea.
• HIA----INDOOR ENVIRONMENTS

Why IAQ Issues were emerged?...
Change of IAQ Recognition since 1990s.

Increases of Indoor air pollution (SHS, SBS, MCS)

Industrial Process

Urbanization (Increase of Domestic fuel and Motor vehicles)

Decreased Ventilation

Increase of daily time spent indoors

Increase of consumer products
### Ever-growing demand for the prevention of environmental diseases related to indoor air pollution

<table>
<thead>
<tr>
<th>Period</th>
<th>Allergic rhinitis patients</th>
<th>Asthma patients</th>
<th>Prevalence rate of atopic dermatitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>3.02M</td>
<td>2.02M</td>
<td>19.7%</td>
</tr>
<tr>
<td>2008</td>
<td>4.95M (54% pt up)</td>
<td>2.42M (20% pt up)</td>
<td>29.2%</td>
</tr>
</tbody>
</table>

- **Continuously growing demand for better quality of life** with increasing incomes

![Graph showing increase in civil petitions on noise and survey results](image-url)
### Trends of IAQ Management by Ministry of Environment, Korea

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>Recommended Standards for Underground Spaces</td>
</tr>
<tr>
<td></td>
<td>Set recommended environmental standards for underground spaces on 14 pollutants including dust, sulfur dioxide and lead.</td>
</tr>
<tr>
<td>1996</td>
<td>Act on Air Quality Control in Underground Spaces</td>
</tr>
<tr>
<td></td>
<td>Established standards for controlling 7 pollutants including PM$_{10}$, CO$_2$, and formaldehyde in underground stations and shopping areas.</td>
</tr>
<tr>
<td>2003</td>
<td>Act on Indoor Air Quality Control in Public Facilities, etc.</td>
</tr>
<tr>
<td></td>
<td>Standards for control and recommended standards for 10 pollutants such as PM$_{10}$ and formaldehyde in 17 types of public facilities.</td>
</tr>
<tr>
<td></td>
<td>Established regulations for IAQ management in new collective housing.</td>
</tr>
<tr>
<td></td>
<td>(enacted the obligation for constructors to measure/report)</td>
</tr>
<tr>
<td></td>
<td>Introduced various management methods such as the restriction on the use of pollutant-releasing construction materials.</td>
</tr>
</tbody>
</table>

- 8 ministries took part in this plan
- Set the IAQ Policy Goal and measures in each field for next five years

#### 2005 : 1st Revision of the Act
- Expanded facilities subject to the Act: underground facilities attached to buildings on the ground, dormitories
- Created a basis for recommended standards for air quality management in new collective housing
- Exempted existing public facilities from the obligation to install purifiers and air ventilators by May 2005
  - Issue an order to improve facilities when control standards are violated

#### 2007 : 2nd Revision of the Act
- Expanded facilities subject to the Act: Public childcare centers of 1,000m$^2$ or more and private ones
- Strengthen standards of formaldehyde in public facilities
Major IAQ Management Policy (KMOE)

Appropriate management of indoor air quality

1. Public facilities
2. New Collective Housing
3. Pollution Sources Management
4. Air Ventilators

※ Koreans consider decreased ventilation (36%), pollutants emitted from construction materials (27%), inflow of outdoor air pollutants (25%), peoples’ activities (12%) as major factors of Indoor Air pollution (Cyber Poll for 2,213 people in December 2003)

Thank you for your attention
Health Impact Assessment in Healthy cities in Korea

Dongjin Kim
Associate research fellow
Korea Institute for Health and Social Affairs

Contents

- Health Impact Assessment Overview
- Rationale for HIA in healthy cities
- HIA cases in healthy cities
- Obstacles and Challenges
HIA Overview

Definitions

- A combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population (European Center for Health Policy, 1999)

- A structured method for assessing and improving the health consequences of projects and policies in the non-health sector. It is a multidisciplinary process combining a range of qualitative and quantitative evidence in a decision making framework (Karen L, 2000)
Purpose

- HIA helps decision-makers make choices about alternatives and improvements to prevent disease/injury and to actively promote health.

Reasons to use HIA

- Promotes cross-sectoral working
- A participatory approach that values the views of the community
- The best available evidence is provided to decision-makers
- Improves health and reduces inequalities
- It is a positive approach
- Appropriate for policies, programmes and projects
- Timeliness
- Links with sustainable development and resource management
- Many people can use HIA
Type of HIA

- Prospective: before the policy / project / program
- Retrospective: after the policy / project / program
- Concurrent: during the policy / project / program
Rationale for HIA in healthy cities

Healthy cities in Korea

- urbanization

Source: Ministry of Health & Welfare, Management Center for Health Promotion, Challenges and opportunities for sustainable Healthy Cities, 2011
Healthy cities in Korea

- dysfunction of urbanization
  → evolve the concept of Healthy cities
- In Korea
  - From 1996
  - 60 Healthy cities

Healthy cities and HIA

- Conducting HIA in healthy cities
  - Local government can influence health determinants
    - Housing, education, welfare, transportation...
    - Health determinants: local government > central government
  - pursue “healthy public policy”
    - HIA can be a systematic tool to evaluate policies from a health point of view
  - Reduce the burden on health sector
    - Without health considerations → transfer of hidden costs to the health sector
Health determinants

Source: Dahlgren and Whitehead, 1991

Healthy cities and HIA

- As a result,
  - More health sector resources are likely to be liberated for health promotional activities
    - More cost-effective than curative measures
Healthy cities and HIA

• “License to operate” the policy

![Diagram showing the relationship between health policy, development policy, health care, environmental determinants, social determinants, and health.]


Healthy cities and HIA

• Approach to introducing HIA in healthy cities

![Diagram showing the process of introducing Health Impact Assessment with policy makers and HIA undertakers.]

Introducing Health Impact Assessment
HIA in Healthy cities

HIA in KIHASA

- From 2008
- Projects on HIA
  - Study on institutionalization
  - HIA in healthy cities
  - Build HIA database
  - International Networking
### HIA in Healthy cities

<table>
<thead>
<tr>
<th>Year</th>
<th>No</th>
<th>Study area</th>
<th>Project</th>
</tr>
</thead>
</table>
| 2008 | 4  |                                   | + Health impact of KTX
+ Dream start project
+ Program on chronic disease control
+ Adaptation program on Climate change |
| 2009 | 5  | Gwangmyeong city                  | + HIA Project on artificial turf of school grounds                       |
+ HIA Project on illumination at night of school grounds |
+ HIA Project on building a park near town reservoirs |
|      |    | Changwon city
Gangnam-gu                      | + HIA project on riding a bike campaign                                   |
+ HIA Project on carbon mileage |

### HIA in Healthy cities

<table>
<thead>
<tr>
<th>Year</th>
<th>No</th>
<th>Study area</th>
<th>Project</th>
</tr>
</thead>
</table>
| 2010 | 5  | Gangdong-gu
Siheung city
Dong-gu
Gwangju
Jinju city | + HIA on demonstration project on Bus Rapid Transit
+ HIA project on building healthy apartment
+ HIA project on trail creation
+ HIA on residential environmental improvement project
+ HIA on free childhood immunization support program |
| 2011 | 3  | Gwangmyeong city
Muju county
Jangsu county | + HIA on banning smoking policy in public areas
+ HIA on urban planning program
+ HIA on reclaiming town landfill |
# HIA in Healthy cities

<table>
<thead>
<tr>
<th>Area Type</th>
<th>Study Area (Project, Year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolitan area</td>
<td>• Gangnam-gu (HIA Project on carbon mileage, 2009)</td>
</tr>
<tr>
<td></td>
<td>• Gangdong-gu (HIA on demonstration project on Bus Rapid Transit, 2010)</td>
</tr>
<tr>
<td></td>
<td>• Dong-gu, Gwangju (HIA project on trail creation, 2010)</td>
</tr>
<tr>
<td></td>
<td>• Gwangmyeong city (HIA Project on artificial turf of school grounds, 2009)</td>
</tr>
<tr>
<td></td>
<td>• Gwangmyeong city (HIA Project on illumination at night of school grounds, 2009)</td>
</tr>
<tr>
<td></td>
<td>• Gwangmyeong city (HIA Project on building a park near town reservoirs, 2009)</td>
</tr>
<tr>
<td></td>
<td>• Gwangmyeong city (HIA on banning smoking policy in public areas, 2011)</td>
</tr>
<tr>
<td>The other area</td>
<td>• Changwon city (HIA project on riding a bike campaign, 2009)</td>
</tr>
<tr>
<td></td>
<td>• Siheung city (HIA project on building healthy apartment, 2010)</td>
</tr>
<tr>
<td></td>
<td>• Jinju city (HIA on free childhood immunization support program, 2010)</td>
</tr>
<tr>
<td></td>
<td>• Jinju city (HIA on residential environmental improvement project, 2010)</td>
</tr>
<tr>
<td></td>
<td>• Muju county (HIA on urban planning program, 2011)</td>
</tr>
<tr>
<td></td>
<td>• Jangsu county (HIA on reclaiming town landfill, 2011)</td>
</tr>
</tbody>
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# HIA in Healthy cities

<table>
<thead>
<tr>
<th>Health Determinants</th>
<th>Study Area (Project, Year)</th>
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<tbody>
<tr>
<td>Physical activity</td>
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</tr>
<tr>
<td></td>
<td>• Gwangmyeong city (HIA Project on illumination at night of school grounds, 2009)</td>
</tr>
<tr>
<td></td>
<td>• Gwangmyeong city (HIA Project on building a park near town reservoirs, 2009)</td>
</tr>
<tr>
<td></td>
<td>• Changwon city (HIA project on riding a bike campaign, 2009)</td>
</tr>
<tr>
<td></td>
<td>• Dong-gu, Gwangju (HIA Project on trail creation, 2010)</td>
</tr>
<tr>
<td>Residential environment</td>
<td>• Jinju city (HIA on residential environmental improvement project, 2010)</td>
</tr>
<tr>
<td></td>
<td>• Siheung city (HIA project on building healthy apartment, 2010)</td>
</tr>
<tr>
<td>Transportation</td>
<td>• Gangdong-gu (HIA on demonstration project on Bus Rapid Transit, 2010)</td>
</tr>
<tr>
<td>Healthy surroundings</td>
<td>• Gwangmyeong city (HIA on banning smoking policy in public areas, 2011)</td>
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<td></td>
<td>• Muju county (HIA on urban planning program, 2011)</td>
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<td></td>
<td>• Jangsu county (HIA on reclaiming town landfill, 2011)</td>
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<td>Climate change</td>
<td>• Gangnam-gu (HIA Project on carbon mileage, 2009)</td>
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<tr>
<td>Medical accessibility</td>
<td>• Jinju city (HIA on free childhood immunization support program, 2010)</td>
</tr>
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### HIA in Healthy cities

<table>
<thead>
<tr>
<th>type</th>
<th>Study area (project, year)</th>
</tr>
</thead>
</table>
| Rapid         | • Gangnam-gu (HIA Project on carbon mileage, 2009)  
                • Gangdong-gu (HIA on demonstration project on Bus Rapid Transit, 2010)  
                • Dong-gu, Gwangju (HIA project on trail creation, 2010)  
                • Gwangmyeong city (HIA Project on building a park near town reservoirs, 2009)  
                • Siheung city (HIA project on building healthy apartment, 2010)  
                • Jinju city (HIA on residential environmental improvement project, 2010)  
                • Jinju city (HIA on free childhood immunization support program, 2010)  
                • Muju county (HIA on urban planning program, 2011)  
                • Jangsu county (HIA on reclaiming town landfill, 2011)                                                                                     |
| Intermediate  | • Gwangmyeong city (HIA Project on illumination at night of school grounds, 2009)  
                • Changwon city (HIA project on riding a bike campaign, 2009)  
                • Gwangmyeong city (HIA on banning smoking policy in public areas, 2011)                                                                     |
| Comprehensive | • Gwangmyeong city (HIA Project on artificial turf of school grounds, 2009)                                                                                |

### Obstacles and Challenges
Obstacles

- Assessment or Evaluation
- Resources
- Community participation
- Feedback

Challenges

- HIA and healthy public policy
- Institutionalization
- Capacity building
Using community knowledge in promoting health: Examples from two case studies in Seoul

Jinhee Kim, Seunghyun Yoo

Graduate School of Public Health
Seoul National University

Contents

› Background

› Case 1: Photovoice - Perspectives of urban walkers

› Case 2: Focus group interview – Biking to school

› Conclusion
Background

- Traditionally, policies and programs to promote community health are developed from evidence produced by ‘outside experts’.
- This approach may lead to insufficient response to the community’s actual concerns.
- By reviewing cases of two studies recently conducted in Seoul, this presentation emphasizes the role of community knowledge as valid evidence health promotion.

Case 1: Photovoice study on the perspectives of urban walkers

- Study conducted as part of the Healthy Cities planning in Gangnam-gu, Seoul, Sept-Oct 2011.

- Objective of the study
  - To identify the meaning of walking and its facilitating factors and barriers from the perspective of urban walkers in Seoul.
  - Provide evidence to develop a plan to create a walking-friendly environment and promote walking.

Case 1: Photovoice study on the perspectives of urban walkers

- **Participants**
  - 12 participants were recruited: 8 residents, 4 workers
  - Snowballing method

- **Methods**
  - Photovoice
  - Focus group interviews
  - Taxonomical, thematic analysis

---

**Photovoice**

- Developed by Caroline Wang and Mary Anne Burris in 1992. (Photo Novella)

- **Participatory Action Research**

  Participants are asked to represent their community or point of view by:
  - taking photographs
  - discussing them together
  - developing narratives to go with their photos, and
  - conducting outreach or other action.

- Often used among marginalized people as an emancipatory approach.
Research questions to participants

1. What does “walking” mean to you?
2. What are the facilitating factors for walking in Gangnam-gu?
3. What are the barriers for walking in Gangnam-gu?

- Participants were given 2 weeks to take pictures for each question and submitted their most important photos for each theme.

Focus group interview

- Discussions on the submitted photos: SHOWeD
  - What do you See here?
  - What is really Happening?
  - How does this relate to Our lives?
  - Why does this problem or strength exist?
  - What can we Do about it?

- Discussions on recommendations for creating a more walking-friendly community.
Results (1) Meaning of walking

- Exercise

“I can walk any time, anywhere I want. Walking is the most convenient way for exercise.” (male, 40s)

“I want become a healthy and energetic dad. For an office worker like me, walking is the best option for physical activity.” (male, 30s)

- Communication and reconciliation

“On our weekend walks, my husband and I will talk about what happened during the week, our children and make plans.” (female, 50s)

“The things that we end up fighting about at home are nothing when we talk in the open air.” (female, 40s)
Results (1) Meaning of walking

- Communication and reconciliation

  "I take the time to walk my daughter to pre-school. The other day we found a squirrel on the tree." (female, 30s)

  "As I walk along the streets and see how beautiful this place is, I am proud to be a part of the scenery." (female, 20s)

Results (1) Meaning of walking

- Detachment from busy, everyday life

  "After a long, busy day at work, I sometimes get off the bus at an earlier stop and walk. I would look out at the busy street and think 'I was busy just like one of them.'" (female, 30s)

  "Walking brings back memories." (male, 30s)
Results (2) Facilitating factors

- **Walkable environment**

  - “I am blessed to live in Gangnam, because we have a beautiful park.” (female, 50s)
  - “I can walk home from work. The commute is safe and convenient for pedestrians” (male, 40s)
  - “I like to walk on streets that have interesting shops” (female, 30s)

Results (2) Facilitating factors

- **Companions**

  - “I like to walk with my husband. With him, walking is not boring.” (female, 30s)
  - “My walking club members are now like family to me.” (female, 60s)
Results (3) Barriers

Environmental factors

“Sometimes the sidewalk is just too poorly designed.” (male, 40s)

“I wish there were more benches so the elderly can take a rest.” (female, 50s)

“Everyone on the street is in a hurry. On these streets, I feel busy and pressured.” (male, 40s)

“The ‘popular’ spots like the ‘Garosu street’ is no longer an ideal spot for walking. There are just too many people.” (female, 20s)
Results (3) Barriers

- Obstructive behavior (poor citizenship)

“The delivery motorcyclists use the pedestrian sidewalks. They are a great danger.” (female, 30s)  
“The wide, open areas are usually occupied by smokers. Because they are banned from smoking in the buildings they are now smoking on the streets.” (female, 30s)

Results (3) Barriers

- Situational barriers

“I like to walk home from work. But usually I work overtime. Then it’s too late and I’m too tired.” (male, 30s)  
“I try to walk and take the subway to work, but because I have the option to drive my car, I simply drive. Besides, it saves a lot of time, too.” (female, 50s)
Case 2: Focus group interview on “Biking to school”

- Study conducted as part of a Healthy Cities pilot program to promote biking to school in Yangcheon-gu, Seoul, March-July 2012.

- Objective of the study
  - To identify factors related with students riding bikes to school.
  - meaning of walking and its facilitating factors and barriers from the perspective of urban walkers in Seoul.
  - Provide evidence to develop a plan to create a walking-friendly environment and promote walking.

Case 2: Focus group interview on “Biking to school”

- Participants
  - “Bike to School” pilot project
  - 2 pilot schools – 1 middle school, 1 high school
  - 28 participants: 13 bikers, 15 non-bikers
  - 4 groups (40-60 minutes)
Case 2: Focus group interview on “Biking to school”

- **Main questions**
  - What are the advantages/disadvantages of biking to school?
  - Why do you bike/don’t bike to school?
  - Do you know/follow the road safety rules? Why or why not?

Key findings (1) Factors associated with biking to school

- **Location of students’ homes from school**

School A – Students live closer to school

School B – Students live farther from school
Key findings (1) Factors associated with biking to school

- Fast and convenient
- Other commuting options not available
- Shorter commute time
- Save money
- Personal preference

Key findings (2) Barriers to biking to school

- Street environment
  - Bike lanes
  - Signs for bikers
  - Crosswalks
- Theft and vandalism
- School uniforms (skirts)
- Heavy bags
Key findings (3) Bicycle safety

- Low level of knowledge on bicycle safety
- No use of helmets
  - Not aware of importance
  - Embarrassing
- Pedestrians and drivers’ behaviors

Conclusion (Key messages)

- Emphasis on the importance of community knowledge (“street science”) for health promotion.
  - Supplement quantitative data
  - Gap between the view of “outside experts” and the community

- Community’s view on health is already holistic.
  - Mental and social health

- Engaging the community provides opportunity for intersectoral participation.

- Learning by doing
  - Local health department’s view on qualitative evidence
Thank you

Jinhee Kim (jeeny98@gmail.com)
Air Pollution and Health Impacts in China

Prof. Yinlong Jin

National Institute for Environmental Health and Related Product Safety, China CDC

I. Urban air pollution and health impacts
II. Indoor air pollution and health impacts in rural areas
III. Central-air-conditioning pollution in public places and health impacts
I. Urban air pollution and health impacts

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I. Urban Air Pollution Status in China


Although urban air quality in China has been improved in recent years, the urban air pollution is still a serious environmental problem in China. Among the 471 monitoring points, 17.2% have not yet met the National Standard for air quality.
2. Changing trends of TSP concentration in China

The TSP concentration in 90% of total 31 provincial capital cities showed a decreasing trend, while some cities in northwest China still showed an increasing trend which might be due to the increasing frequency of sandstorms in that area in recent years.


Institute for Environmental Health and Related Product Safety, China CDC

3. Changing trends of SO₂ concentration in China

The SO₂ concentration in 71% of total 31 provincial capital cities showed a decreasing trend, which may be a result of promoting the use of clean energy in China.


Institute for Environmental Health and Related Product Safety, China CDC
4. Changing trends of NO$_2$ concentration in China

The NO$_2$ concentration in 52% of total 31 provincial capital cities showed an increasing trend. This increasing trend may be related to the rapid increase of the number of civil vehicles in recent 25 years, which had increased from 3.2 million in 1985 to 78 million in 2010. Vehicle exhaust is becoming one of the most important sources of urban air pollution in China.


Institute for Environmental Health and Related Product Safety, China CDC

II) Health impacts of urban air pollution

1. Effects of air pollution on respiratory diseases

The research carried out by China CDC in Taiyuan city showed that the prevalence rates of respiratory diseases in both pupils and adults were significantly higher in heavily and medium polluted areas than relative clean area ($p<0.05$). The meta analysis results from 8 cities in China estimated that the prevalence rates of pulmonary emphysema, acute bronchitis and chronic bronchitis increased 58%, 30% and 30%, respectively, when the TSP concentration increased per 100μg/m$^3$.

Institute for Environmental Health and Related Product Safety, China CDC
2. Impacts of air pollution on immune indexes

(1) Impacts of air pollution on immune indexes of pupils

The research carried out by China CDC in Taiyuan city showed that the serum levels of IgA, IgG, IgM of pupils in heavily polluted area were significantly lower than those in relative clean area (p<0.05). Other related researches in China during recent 10 years also showed that children’s immune function could be reduced by air pollution.

Institute for Environmental Health and Related Product Safety, China CDC

(2) Impacts of Beijing Olympic traffic restrictions on immune indexes of traffic police assistants and community elders

Epidemiological studies carried out by IEHS of China CDC showed that the level of serum IgG in traffic police assistants and community elders increased significantly while the PM$_{10}$ and NO$_2$ concentration decreased during the Beijing Olympic traffic restrictions.

Institute for Environmental Health and Related Product Safety, China CDC
3. Effects of air pollution on disease mortality

The correlation between air pollution and the mortalities of some diseases

<table>
<thead>
<tr>
<th></th>
<th>Malignant tumors</th>
<th>Respiratory diseases</th>
<th>Lung cancer</th>
<th>COPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSP</td>
<td>0.8918*</td>
<td>0.6163*</td>
<td>0.7394*</td>
<td>0.2904</td>
</tr>
<tr>
<td>SO₂</td>
<td>0.7932*</td>
<td>0.6996*</td>
<td>0.2707</td>
<td>0.8911*</td>
</tr>
<tr>
<td>TSP × SO₂</td>
<td>0.7493*</td>
<td>0.7426*</td>
<td>0.8753*</td>
<td>0.7092*</td>
</tr>
</tbody>
</table>

* P<0.05

The correlation analysis of the data from 28 Chinese Disease Surveillance Points showed that the mortalities of malignant tumors, respiratory diseases and lung cancer correlated with the concentration of TSP. The mortalities of malignant tumors, respiratory diseases and COPD correlated with the concentration of SO₂. The mortalities of all the 4 diseases correlated with the interaction of TSP and SO₂.

Institute for Environmental Health and Related Product Safety, China CDC

4. Exposure-effect relationship between daily mortality and air pollutants

<table>
<thead>
<tr>
<th>Pollutants (µg/m³)</th>
<th>COPD</th>
<th>Cardiovascular diseases</th>
<th>Total mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSP</td>
<td>7.4%</td>
<td>1.9%</td>
<td>1.2%</td>
</tr>
<tr>
<td>SO₂</td>
<td>7.8%</td>
<td>2.7%</td>
<td>2.4%</td>
</tr>
</tbody>
</table>

The Meta analysis based on 4 studies of the exposure-effects of air pollution in China showed that the daily mortalities of COPD, CVD and total mortality increased by 7.4%, 1.9%, 1.2% and 7.8%, 2.7%, 2.4%, respectively, when the concentration of TSP or SO2 increasing every 100 µg/m³.

Institute for Environmental Health and Related Product Safety, China CDC
5. Annual excess death caused by air pollution

<table>
<thead>
<tr>
<th>Disease</th>
<th>Excess death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory diseases</td>
<td>127,000</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>44,000</td>
</tr>
<tr>
<td>Malignant tumor</td>
<td>118,000</td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>205,000</td>
</tr>
<tr>
<td>(Age group: 60~85 years)</td>
<td></td>
</tr>
</tbody>
</table>

* The number was calculated on the basis of the correlation between air pollution and mortality revealed from the study in 28 Chinese Disease Surveillance Points.

Institute for Environmental Health and Related Product Safety, China CDC

II. Indoor air pollution (IAP) and health impacts in rural areas of China

Institute for Environmental Health and Related Product Safety, China CDC
1) IAP status in rural areas of China

1. Structure of energy consumption in rural areas of China

Among the total consumption of energy in rural areas of China, biomass and coal covered 55% and 35% respectively, the other sources covered about 10%.

Data source: Ministry of Agriculture, P.R. China, 2006

2. Main sources of IAP in rural areas of China

- Using solid fuel and biomass
Using stove without chimney or with bad ventilation

3. Indoor air pollution in poor rural areas of China

Pollutants of CO, SO₂, IP in some poor rural areas of China reached to the level of 8.8, 33.6 and 4.6 folds of the National Standard for indoor air quality, respectively.
II) Health impacts of IAP

1. Effects of IAP on occurrence rates of symptoms of women and children

Note: heavily polluted: \( SO_2 = 2.0 \text{mg/m}^3 \), \( PM_{10} = 0.43 \text{mg/m}^3 \)
lightly polluted: \( SO_2 = 0.61 \text{mg/m}^3 \), \( PM_{10} = 0.15 \text{mg/m}^3 \)

According to an investigation in 4 Chinese provinces supported by World Bank, the respiratory and eye symptoms in women, and the acute respiratory symptoms in children occurred at a higher rate in heavily polluted areas than in lightly polluted areas.

Institute for Environmental Health and Related Product Safety, China CDC

2. Effects of IAP on children’s lung function

World Bank project carried out in 4 Chinese provinces by China CDC showed that the occurrence rates of children’s abnormal lung function in both heavily and medium polluted areas were significantly higher than that in lightly polluted area \((p<0.05)\).

Institute for Environmental Health and Related Product Safety, China CDC
3. Constitution of causes of child death in rural areas

According to the data from 9 provinces, pneumonia was the leading cause of death for children younger than 5 years old and accounted for 28% of total deaths of this group in rural areas, which may be related to IAP.

Data source: Health VI project including 9 provinces in 2001, China MOH

Institute for Environmental Health and Related Product Safety, China CDC

4. Fluorosis & arsenism caused by IAP in rural areas in China

Dental fluorosis
In 2009, there are 15.5 million dental fluorosis and 1.91 million skeletal fluorosis caused by coal-burning in 188 counties in China according to the data from China MOH.

Arsenism
In 2009, there are 1.2 million population exposed to arsenic due to coal burning, and 16,463 of them had been diagnosed as arsenism in China according to the data from China MOH.

Institute for Environmental Health and Related Product Safety, China CDC
5. The relationship of Indoor \( B(a)P \) concentration and lung cancer mortality of population

The risk factors study of high incidence of lung cancer in Xuanwei county of Yunnan Province, found a high correlation between the concentration of benzo (a) pyrene (\( B(a)P \)) in indoor air and lung cancer mortality. The relative risk of lung cancer will increase by 3.3 folds, when the concentration of \( B(a)P \) in indoor air increases by 1 fold.

Institute for Environmental Health and Related Product Safety, China CDC

III. Central-air-conditioning pollution in public places and health impacts

Institute for Environmental Health and Related Product Safety, China CDC
1) Pollution status of central-air-conditioning in public places in China

The sanitary situation of ventilation system of central-air-conditioning in public places

The investigation carried out in the 60 cities of 30 provinces by the MOH showed that 47.1% and 46.7% of central-air-conditioning systems were heavily and medium polluted, only 6.2% of them met the national standard for air quality of central-air-conditioning. The dust in the heavily polluted ventilation ducts reached 486g/m², which was 486 folds of the national standard.

Institute for Environmental Health and Related Product Safety, China CDC

1. Pollutants found in the ventilation ducts

- dust
- Legionella
- acaridan
- myctes

Institute for Environmental Health and Related Product Safety, China CDC
The pollution situation of the ventilation duct of central-air-conditioning in a hotel

2. Legionella pollution status in cooling tower water of central-air-conditioning in China

In 9 cities, total 801 water samples from cooling tower water of central-air-conditioning were detected. The results showed that the detection rate of legionella was between 43.9% and 66.7%, and Lp1 was the main serogroup.
II) Infection status of staff working in the environment of central-air-conditioning in some areas of China

The studies in 4 cities showed that the positive rate of antibodies against legionella in staff working in the environment with central-air-conditioning, such as hotel and supermarket, was significantly higher than the control group.

Institute for Environmental Health and Related Product Safety, China CDC

Impacts of central-air-conditioning in public places on Legionella pneumophila infection

<table>
<thead>
<tr>
<th></th>
<th>No. of patients</th>
<th>No. of patients with positive antibody</th>
<th>Antibody positive rate (%)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with CAC</td>
<td>354</td>
<td>21</td>
<td>5.9</td>
<td></td>
</tr>
<tr>
<td>Control group</td>
<td>139</td>
<td>1</td>
<td>0.7</td>
<td>0.020*</td>
</tr>
<tr>
<td>Total</td>
<td>493</td>
<td>22</td>
<td>4.5</td>
<td></td>
</tr>
</tbody>
</table>

* P<0.05

In 2008, a survey by the IEHS of China CDC on 493 patients with respiratory disease in 5 Beijing hospitals found that the legionella pneumophila antibody positive rates were significantly higher in patients who used to stay in public place with central-air-conditioning than control groups.

Institute for Environmental Health and Related Product Safety, China CDC
The pollution from the central-air-conditioning may be a way of spreading some infectious diseases and also can cause some diseases such as allergic diseases, respiratory diseases, sick building syndromes and other infections besides Legionella infection.

With the rapid development of Chinese economy, the air pollution and health impacts is getting more and more attention which has been listed as the government priority in the National Action Plan on Environment and Health.

Now we are establishing national pilot monitoring network of air pollution and health impacts in 8 provinces of China. A group of experts from Yale University have also joined this action. We hope more experts from the world join our studies on air pollution and health impacts in China.
Thank you
Health Impact Assessment in Mongolia”  
Country Presentation

Tsetsegsaikhan Batmunkh, Ph.D.

Ministry of Health

09-11 October 2012

The 4th Asia and Pacific Regional Health Impact Assessment Conference, Seoul, Korea

Mongolia

Territory:
1564.1 thousand sq.km.

Population:
2780.7 thousand
Background

- Environmental influences on human health have been recognized seriously for last decades

- Increasing negative impacts on health and well being of the population due to the rapid urbanization, development of the mining sector, agriculture

- Increasing need for inter-sectoral collaboration between environment and health sectors

Background

- EIA Law from 1992

- Approved guidelines, regulations

- Institutionalization of EIA

- Ministry of Environment, Nature’s responsibility for approving regulations on EIA

- NEHAP, 2005
Legal aspects on HIA

- Guideline for the Environmental Impact Assessment, Minister of Nature and Environment Order, No.A-2, from 2010 (should be updated)
  - This order registered by Ministry of Justice and Foreign Affairs No.3104, 2010
  - Separate chapter on Health Impact Assessment guideline

Legal aspects on HIA

  (incorporation of the Health Impact Assessment issues with Environmental Impact Assessment)

Regarding the new Law on EIA the guideline should be revised and approved by Government Resolution

- Revision of Law on Hygiene (under progress)
Before  

EIA guideline approval  

Ministry of Nature and Environment

Now

Governments of Mongolia

Ministry of Nature and Environment  
Ministry of Health  
etc

Legal aspects

- **Implementing the Jeju Declaration on Environment and Health**
  - appointed 7 Thematic Working Groups, approved by the Joint Minister’s Order (Ministry of Health and Ministry of Nature and Environment) No.32/A-28, from 2011, including HIA thematic working group

- **Intersectoral HIA thematic working group**
  - (16 members from Ministry of Nature and Environment, General Professional Inspection Agency, officers from Capital city Governor Office, Health Department, Air quality agency, Environmental laboratory, Public Health institute and WHO in Mongolia.)
Legal aspects

- Detailed Guideline on Health Impact Assessment, developed jointly with the Simon Fraser University, Canada and Health Department of MoH, Mongolia

- Drafted a Regulation on Health Impact Assessment, developed jointly with the WHO

Activities

- Workshop on Health Impact Assessment, September, 2007 - 2010, WHO


- Workshop on Strategic Impact Assessment, 2012, WHO
Dissemination meeting on draft of the Detailed Guideline on Health Impact Assessment, developed jointly with the Simon Fraser University, 2012

**Detailed Health Impact Assessment - Oyu Tolgoi Mining**

combined open pit and underground mining project, in South Gobi desert

Joint venture of Ivanhoe Mines, Rio Tinto and Government of Mongolia
Detailed Health Impact Assessment - Oyu-Tolgoi Mining, Umnugobi aimag, 2011

Scheduled to produce 450,000 tonnes (500,000 short tons) of copper per year, an amount equal to 3% of global production. And 330,000 ounces of gold annually.

HIA done by Khukh Tenger hugjil consortium, 2011

Challenges

- Lack of capacity to make detailed assessment
- Need for the infrastructure for making assessment
- Lack of intersectoral understanding and collaboration on HIA
- Lack of studies and research
- Weak capacity of laboratories
Further activities

- Approve the detailed guidelines on HIA

- Establish health infrastructure for screening and monitoring of HIA at the national level

- To increase evidence based recommendations to other sectors

Further activities

- To develop and approve HIA tools and methods

- Empower community

- To increase screening of hazards for health
  - to establish health data system
  - to increase researches on HIA

- Share and learn experiences of other countries

- National capacity building /experts/
Publication

- Health Impact Assessment in Mongolia: Current Situation, Directions, and Challenges

- Jeff Spickett, Tsetsegsaikhan Batmunkh, Sarah Jones

- Asia Pac J Public Health, 1010539512455043, first published on August 10, 2012

Thank you for your attention
Health in EIA: Thailand’s Experiences

SIRIWAN CHANDANACHULAKA
HEALTH IMPACT ASSESSMENT DIVISION, DEPARTMENT OF HEALTH, MINISTRY OF PUBLIC HEALTH, THAILAND

HIA 2012 the 4th Asia Pacific Regional Health Impact Assessment Conference
Korea Institute for Health and Social Affairs, Seoul, KOREA
10 October 2012

Contents

- Introduction: Objectives, EIA system in Thailand, health aspect in EIA
- Methodology
- Results
- Conclusion and recommendation
Introduction

Objectives

- To preliminary examine how health include in the EIA
- To provide recommendation for better inclusion of health within EIA
**EIA System in Thailand**

- Started in 1981 – 31 years ago;
- EIA as a permit approval process;
- Ministry of Natural Resources and Environment – by Office of Natural Resources and Environmental Policy and Planning - acts as secretariat for EIA consideration

**Current situation**

- 35 types of projects/activities are required to conduct EIA
- 11 types of projects/activities are required to conduct EHIA – according to the requirement stated in the Thai Constitution 2007

---

**Health aspect in EIA**

EIA requires to assess 4 components:

- Physical environmental resources
- Biological environmental resources
- Value for human utilization
- Value for quality of life - including “Health”
Requirements for the HIA: 9 Factors should be assessed

1. Changes in status and utilization of natural resources;
2. Production, transportation and storage of hazardous substance;
3. Sources of pollution from project activities;
4. Exposure to pollution and health threatening substances;
5. Change and effect on occupation, employment and local working conditions;
6. Change and effect on relationship of people and communities;
7. Change in the area which is important for cultural heritage;
8. Specific impact on particular groups of people;
9. Resources and capacity of health services

Methodology
Methodology

1. Ten different types of EIA/EHIA reports (submitted during 2011-2012) were selected: 7 EIAs & 3 EHIs
2. Data collected based on the reports and health topic presented;
3. Primarily analyzed data, opportunities and challenges;
4. Conclusion

Lists of Projects

<table>
<thead>
<tr>
<th>EIAs</th>
<th>EHIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Steel bar factory-new establishment</td>
<td>9. Iron and steel making plant</td>
</tr>
<tr>
<td>4. Ethanol manufacturing plants</td>
<td></td>
</tr>
<tr>
<td>5. On-shore natural gas production plant</td>
<td></td>
</tr>
<tr>
<td>6. Sugarcane production plant and biomass power plant</td>
<td></td>
</tr>
<tr>
<td>7. Blended alcoholic and beverage</td>
<td></td>
</tr>
</tbody>
</table>
Results

<table>
<thead>
<tr>
<th>Health in EIA</th>
<th>EIA</th>
<th>EHIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1. Health baseline data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Baseline relevance to specific area</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>- No. of health facilities &amp; personnel</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>- Ratio of health personnel and population</td>
<td>✓</td>
<td>✗</td>
</tr>
</tbody>
</table>

2. Target population of impact assessment

|               |     |      |      |      |      |      |      |      |      |      |
| - Workers     | ✓   | ✓   | ✓   | ✓   | ✓   | ✓   | ✓   | ✓   | ✓   | ✓   |
| - Community   | ✓   | ✓   | ✓   | ✗   | ✓   | ✓   | ✓   | ✓   | ✓   | ✓   |
| - Risk group  | ✗   | ✗   | ✗   | ✗   | ✗   | ✗   | ✓   | ✗   | ✗   | ✗   |
### Health in EIA

<table>
<thead>
<tr>
<th></th>
<th>EIA</th>
<th>EHIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
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</table>

#### 3. Health impact assessment methods

<table>
<thead>
<tr>
<th></th>
<th>3.1. Qualitative Health Risk Assessment</th>
<th></th>
<th>3.2. Quantitative Health Risk Assessment</th>
<th></th>
<th>3.3. Hazard Assessment leading to severe damage</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
</tr>
</tbody>
</table>

#### 4. Protection and remediation measures

- Occ. health & safety
- Community health

|   |   |   | ✓ |   |   | ✓ |   |   | ✓ |   | ✓ |   | ✓ |   | ✓ |   | ✓ |   | ✓ |   |

#### 5. Monitoring measures

<table>
<thead>
<tr>
<th></th>
<th>5.1 Occ. health &amp; safety</th>
<th></th>
<th>5.2 Community health</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
<td></td>
<td>× × × × ✓ x ✓ ✓ ✓ ✓ ✓ ✓</td>
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### Health in EIA

<table>
<thead>
<tr>
<th></th>
<th>EIA</th>
<th>EHIA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

#### 6. Topic of health impact assessment

<table>
<thead>
<tr>
<th></th>
<th>6.1. Separated chapter</th>
<th></th>
<th>6.2. Include in environmental impact assessment topic</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>6.3. Include in quality of life topic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓ ✓ ✓</td>
</tr>
</tbody>
</table>
Health in Baseline Data

Health baseline data in all 10 projects include:
- No. of in-patient, out-patient according to 21 groups of
diseases at provincial/district/sub-district level;
- No. of deaths according to 10 leading cause of deaths;
- No. of morbidity according to 10 leading cause of
sickness

Health baseline data in 1 EHIA report include records
according to chemicals accident and disaster
Health facilities/personnel
- No. of health facilities and health personnel
- Ratio of health personnel and population

Health impact assessment methodology

7 EIAs
- 7 projects use qualitative
  health risk assessment –
  using Health Risk Matrix;
- 2 projects add
  quantitative health risk
  assessment specifying
carcinogen and non-
carcinogen risk;
- 4 projects include hazard
  assessment that may
  cause severe damage e.g.
  fire, explosion

3 EIAs applied both qualitative
and quantitative health risk
assessment
- Qualitative health risk
  assessment – criteria for
  assessing are ONEP, DOH and
  the Philippines;
- Quantitative health risk
  assessment specifying
carcinogen and non-carcinogen
  risk from chemical and heavy
  metals. Using reference
  concentration/standards from
  US.EPA./IRIS/WHO
- 1 project assessed exposure of
different age group
  (0-5 yr., 15-60 yr., 60+ yr)
**Health in protection and remediation measures**

7 EIAs have well developed occupational health and safety measures:
- Occupational health and safety policy and measures;
- First aids;
- Workers’ health examinations
- Emergency plan

2 projects include communicate with community regarding activities at each stage.

3 EHIAs
- Well developed occupational health and safety measures;
- Measures for protection of community health from hazards;
- Coordinate with health organizations for provision of mobile health service, health education.

**Health in monitoring measures**

All include monitoring for occupational health and safety:
- Recording accidents and damages related to project;
- Annual health examination of workers;
- Recording sickness and annual health examination results;
- Emergency plan.

Some include monitoring for community:
- Recording complaints from community;
- Community health survey;
- Annual health examination of community people.
Conclusion & recommendation

Conclusion

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is found gradually putting health into priority for assessing impacts;</td>
<td>Limitation in understanding of impact on health and methodology for assessment;</td>
</tr>
<tr>
<td>Separated chapter/topic for health impact assessment were reported;</td>
<td>Based line data on health are hospital-based;</td>
</tr>
<tr>
<td>The Constitution stated health should be assessed and guideline for conducting EHIA was developed;</td>
<td>No specific standard/criteria set for health impact assessment in Thailand</td>
</tr>
<tr>
<td>Cooperation between MOE &amp; MOPH through 2nd NEHAP</td>
<td></td>
</tr>
</tbody>
</table>
Recommendation

This report is a preliminary analyzed 10 EIA/EHIA reports. Further qualitative analysis should be conducted for better inclusion of health into EIA report.

Comments and recommendations for further analysis are welcome.

Thank you for your kind attention

SPECIAL THANKS TO KOREAN INSTITUTE FOR HEALTH AND SOCIAL AFFAIRS AND DEPARTMENT OF HEALTH, THAILAND

THANK YOU REGIONAL THEMATIC WORKING GROUP ON HEALTH IMPACT ASSESSMENT
http://hia.anamai.moph.go.th
E-mail siriwan9@gmail.com
## Project Analysis

<table>
<thead>
<tr>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>Dam Height</td>
</tr>
<tr>
<td>Dam Length</td>
</tr>
<tr>
<td>Water Level</td>
</tr>
<tr>
<td>Area of Water Body</td>
</tr>
<tr>
<td>Amount of Water</td>
</tr>
</tbody>
</table>
Main Issues

1. Heavy Metals from Waste Mines
2. Change of Weather (Fog Formation and shushine time)
### Appraisal

<table>
<thead>
<tr>
<th>Proposal</th>
<th>Physical Determinants</th>
<th>Socio-economic Determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Air</td>
<td>Water</td>
</tr>
<tr>
<td>Dam Operation</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

### Appraisal (Weather)

**Change of Fog Formation Day (reservoir), estimated**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>total</th>
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<tbody>
<tr>
<td>before</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
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<td>4</td>
<td>5</td>
<td>3</td>
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<tr>
<td>after</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
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<td>0</td>
<td>0</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>24</td>
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</table>
## Appraisal (Weather)

### Change of Fog Formation Day (downstream), estimated

<table>
<thead>
<tr>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<th>10</th>
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<th>12</th>
<th>total</th>
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<td>0</td>
<td>0</td>
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<td>4</td>
<td>5</td>
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<td>0</td>
<td>16</td>
</tr>
<tr>
<td>after</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>7</td>
<td>3</td>
<td>1</td>
<td>19</td>
</tr>
</tbody>
</table>

## Appraisal (Weather)

### Change of Sunshine time (downstream), estimated

<table>
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<tr>
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<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>total</th>
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<tbody>
<tr>
<td>before</td>
<td>192</td>
<td>195</td>
<td>185</td>
<td>248</td>
<td>289</td>
<td>236</td>
<td>151</td>
<td>135</td>
<td>139</td>
<td>150</td>
<td>173</td>
<td>186</td>
<td>2,279</td>
</tr>
<tr>
<td>after</td>
<td>188</td>
<td>195</td>
<td>189</td>
<td>248</td>
<td>289</td>
<td>236</td>
<td>151</td>
<td>135</td>
<td>139</td>
<td>142</td>
<td>173</td>
<td>182</td>
<td>2,267</td>
</tr>
</tbody>
</table>
### Appraisal (Weather)

#### Change of Fog Formation day and Sunshine time, measured

<table>
<thead>
<tr>
<th>Dam</th>
<th>구분</th>
<th>Avg. temp (°C)</th>
<th>Relative humidity (%)</th>
<th>Day of fog (day/yr)</th>
<th>Sunshine time (hr/month)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>avg</td>
<td>inc</td>
<td>avg</td>
<td>inc</td>
</tr>
<tr>
<td>A</td>
<td>before(‘66~’73)</td>
<td>10.9</td>
<td>Δ0.6</td>
<td>11.9</td>
<td>Δ0.3</td>
</tr>
<tr>
<td></td>
<td>after(‘74~’85)</td>
<td>10.4</td>
<td>11.6</td>
<td>62.8</td>
<td>29.5</td>
</tr>
<tr>
<td>B</td>
<td>before(‘74~’86)</td>
<td>10.9</td>
<td>0.6</td>
<td>74.0</td>
<td>Δ4.4</td>
</tr>
<tr>
<td></td>
<td>after(‘87~’95)</td>
<td>11.5</td>
<td>76.6</td>
<td>68.5</td>
<td>25.5</td>
</tr>
<tr>
<td>C</td>
<td>before(‘72~’76)</td>
<td>11.6</td>
<td>0.2</td>
<td>72.4</td>
<td>Δ4.5</td>
</tr>
<tr>
<td></td>
<td>after(‘83~’90)</td>
<td>11.8</td>
<td>67.9</td>
<td>69.1</td>
<td>25.5</td>
</tr>
<tr>
<td>D</td>
<td>before(‘81~’91)</td>
<td>12.4</td>
<td>0.3</td>
<td>74.4</td>
<td>Δ8.5</td>
</tr>
<tr>
<td></td>
<td>after(‘92~’95)</td>
<td>12.7</td>
<td>65.9</td>
<td>69.1</td>
<td>25.5</td>
</tr>
<tr>
<td>E</td>
<td>before(‘85~’90)</td>
<td>11.2</td>
<td>0.6</td>
<td>71.9</td>
<td>Δ6.7</td>
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<tr>
<td></td>
<td>after(‘91~’95)</td>
<td>11.8</td>
<td>65.2</td>
<td>69.1</td>
<td>25.5</td>
</tr>
<tr>
<td>F</td>
<td>before(‘75~’80)</td>
<td>12.3</td>
<td>0.0</td>
<td>63.0</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>after(‘81~’90)</td>
<td>12.3</td>
<td>64.6</td>
<td>69.1</td>
<td>25.5</td>
</tr>
<tr>
<td>G</td>
<td>before(‘88~’91)</td>
<td>13.3</td>
<td>0.3</td>
<td>72.0</td>
<td>Δ9.25</td>
</tr>
<tr>
<td></td>
<td>after(‘92~’95)</td>
<td>13.6</td>
<td>62.8</td>
<td>69.1</td>
<td>25.5</td>
</tr>
</tbody>
</table>

### Appraisal (Water)

#### Waste Mines

<table>
<thead>
<tr>
<th>Name</th>
<th>Length (km)</th>
<th>Species</th>
<th>Operation Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10.6</td>
<td>Ag, Hg</td>
<td>More than 60 yr</td>
</tr>
<tr>
<td>B</td>
<td>10.9</td>
<td>Ag, Hg</td>
<td>50 yr</td>
</tr>
<tr>
<td>C</td>
<td>12.5</td>
<td>Ag, Hg, Zn, Cu</td>
<td>60 yr</td>
</tr>
<tr>
<td>D</td>
<td>7.9</td>
<td>Ag, Hg, Zn, Cu</td>
<td>70 yr</td>
</tr>
<tr>
<td>E</td>
<td>9.0</td>
<td>Ag, Hg</td>
<td>70 yr</td>
</tr>
<tr>
<td>F</td>
<td>10.2</td>
<td>Ag, Hg</td>
<td>40 yr</td>
</tr>
<tr>
<td>G</td>
<td>1.7</td>
<td>Ag, Si</td>
<td>50 yr</td>
</tr>
</tbody>
</table>
아태지역 및 유럽지역의 건강영향평가 동향 및 정책과제

Appraisal (Water)

Monthly Water Inlet Amount after Dam Construction

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>Total (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inlet Amount</td>
<td>1,125 (±42)</td>
<td>1,379 (±57)</td>
<td>1,758 (±66)</td>
<td>2,105 (±92)</td>
<td>2,320 (±67)</td>
<td>4,510 (±76)</td>
<td>11,728 (±95)</td>
<td>11,839 (±42)</td>
<td>9,120 (±21)</td>
<td>2,598 (±97)</td>
<td>1,591 (±81)</td>
<td>1,018 (±36)</td>
<td>52,111 (±65)</td>
</tr>
</tbody>
</table>

Appraisal (Water)

Concentration of Fe and Al at sampling point in flood time

<table>
<thead>
<tr>
<th>Flow Rate CMS</th>
<th>Fe (mg/L)</th>
<th>Al (mg/L)</th>
<th>Fe load (mg/s)</th>
<th>Al load (mg/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST-2</td>
<td>0.3</td>
<td>0.16</td>
<td>8</td>
<td>1,246</td>
</tr>
<tr>
<td>ST-3</td>
<td>4.07</td>
<td>0.17</td>
<td>0.35</td>
<td>691.9</td>
</tr>
<tr>
<td>ST-4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ST-5</td>
<td>0.62</td>
<td>0.18</td>
<td>0.31</td>
<td>111.6</td>
</tr>
<tr>
<td>total</td>
<td></td>
<td></td>
<td>803.5</td>
<td>2061.7</td>
</tr>
</tbody>
</table>
Conclusions

1. There is a little change of sunshine time, although, no significant adverse effect was not considered to occur.

2. It's better to purify water when it is used as drinking water because of Fe and Al.
Health Impact Assessment of Settlement Re-developement Plan of a Village

Kosin University Graduate School of Public Health
Kyeongsang University Dept. of Urban Engineering
Urban Space Design Institute Co., Ltd

“Poor marginalized living of slums”

- Unprecedented “compressed economic growth” and rapid urbanization of ROK ➔ poor marginalized living of slums
- Urbanization rate ≥ 90%
  (Ministry of land and ocean)
“Republic of APT”

“Seoul, ville géante, cites radieuses (2004)” written by French Geologist Valérie Gelezeau (Doctoral thesis)
• Korean living in APT ≥ 60% (2008)

What is your verdict? "2 Doors"
Antiquated village of old city

- Jinju city has been thousands year southern Korean old military city
- Across the old castle antiquated village separated by railroad are selected to improve the housing condition.

3 Kinds of Re-Developement City and living condition fixing law (2005)

- Mode of fixing
  - Self renovation(현지개량식)
    - Local government only provide public infra
  - New APT construction by public corporation LH(공동주택건설 방식)
  - Participatory stronghold diffusion model(거점확산형 주거환경 개선)
**Participatory stronghold diffusion model**

**Research Method**

<table>
<thead>
<tr>
<th>단계 (Screening)</th>
<th>목적 (Objectives)</th>
<th>과정 (Process)</th>
</tr>
</thead>
<tbody>
<tr>
<td>스크리닝(Screening)</td>
<td>HIA가 적절하고 필수한지 정확</td>
<td>사전 스크리닝</td>
</tr>
<tr>
<td></td>
<td></td>
<td>스크리닝 회의</td>
</tr>
<tr>
<td></td>
<td></td>
<td>스크리닝 정비사항 도출</td>
</tr>
<tr>
<td>스크핑(Scoping)</td>
<td>HIA의 변수(parameters)를 정점</td>
<td>운영위원의 심의</td>
</tr>
<tr>
<td></td>
<td></td>
<td>수렴체계의 HIA의 적합도 분석</td>
</tr>
<tr>
<td></td>
<td></td>
<td>수렴한 근거의 범위 결정</td>
</tr>
<tr>
<td></td>
<td></td>
<td>프로젝트 계획 설계</td>
</tr>
<tr>
<td>확인(Identification)</td>
<td>잠재적 건강영향을 확인하기 위한 지역사회 인구집단의 프로파일 작성을 정보 수집</td>
<td>지역사회/인구집단의 프로파일 작성</td>
</tr>
<tr>
<td></td>
<td></td>
<td>인구 및 이자 자료, 정성적, 정량적 정보 수집</td>
</tr>
<tr>
<td>평가(Assessment)</td>
<td>건강영향의 우선순위를 정하기 위해 정보를 종합하고 비판적으로 평가</td>
<td>여러 정보원에서 수집된 영향들에게 편안한 정보의 평가</td>
</tr>
<tr>
<td></td>
<td></td>
<td>영향의 중요성을 결정하고 우선순위를 결정하기 위한 영향에 대한 논고</td>
</tr>
<tr>
<td>의사결정 및 권고 (Decision-making and recommendations)</td>
<td>HIA 결과를 바탕으로 실행할 수 있는 최종 영향사항 도출을 위한 의사결정</td>
<td>간결하고도 행동 중심적인 권고사항 조안 제안</td>
</tr>
<tr>
<td></td>
<td></td>
<td>실행사례 평가를 위한 최종 권고 보고서 작성</td>
</tr>
<tr>
<td>평가 및 추후조사 (Evaluation &amp; follow-up)</td>
<td>HIA 결과와 그 영향을 평가하고, 모니터링과 검증 영향 관리 계획을 통해 HIA 추후 조사</td>
<td>과정 및 영향 결과 심사 영향의 모니터링 및 검증 건강영향관리계획 개발</td>
</tr>
</tbody>
</table>
Brainstorming and Screening

• Brainstorming: Jinju city Public Health Center, Kosin University Graduate School of Public Health, Kyeongsang University Dept. of Urban Engineering

• Screening:

Consideration of various tools

• Screening tool (스크리닝 도구)
  - 영국의 자가제를 위한 건강영향평가 지침 중 스크리닝 도구 (Egbuah C, Churchill K, 2002)
  - 영국 런던의 건강 스크리닝 도구 (London Health Commission, 2001)
  - 뉴질랜드의 HIA 지침 중 스크리닝 도구 (Public Health Advisory Committee, 2005)
  - 아일랜드의 건강영향평가 가이드 (The Institute of Public Health, 2006)
  - 호주 뉴사우스웨일즈의 건강영향평가 가이드 (Harris, Harris-Roxas, Harris, Kemp, 2007)
  - 웨스트 토리안 건강영향평가 가이드 & 스코틀랜드 NHS 로터안 성 건강전략의 건강영향 스크리닝 중 스크리닝 체크리스트 (Douglas M, 2006)
  - 캐나다 브리티시 콜롬비아 보건부의 체크리스트 (British Columbia Ministry of Health, 2008)
  - 영국 웨스트민스터의 보건위험과 보고서를 평가하는 스크리닝 도구 (The Association of Public Health Observatorys and Health Development Agency, 2003)
  - 영국 노스웨스턴 감염 건강영향평가 도구 (The Integrated Appraisal Toolkit steering group, 2003)
  - 영국 웨일즈 의회의 월병영향평가 스크리닝 도구 (Countryside Council for Wales, 2008)
### Survey of Housing Environment

- **Land use:** 83.4% of land were privately owned, Mean area of land/house = 109.6 m²
- **Road:** 33.6% of the land(2,076 m²) mostly alley, 56.9% of width of the road ≤ 4m
- **Housing:** 57.6% were for living only, 58.8% degenerated
Survey of Housing Environment

- Mean age of inhabitant = 55.5 years
- Occupation: 48.0% have no job
- Number of room: 3/house
- Car own house = 53.1%
- Subject rating to house = 3.35/5.00
- Dissatisfactory about car parking, noise, hygien, open space, safety,..
Some results of workshop

Board Writing: ‘What is healthy housing environment for me?’

나에게 건강한 주거환경이란?

Workshop Results 1

- In physical aspect, contamination of environment from wastes, bugs and traffic and sewage raised first as problem.
- In social aspect, no meeting place for elderly, passenger safety and illegal parking of cars in narrow street, insufficient lighting and crowding caused frequent quarrel among neighbor and crime.
- In human health aspect, wide road obstructs the crossing to the river-side green area and too big train noise in misty day cause stress, sparse outing due to dirty narrow alley cause physical inactivity and social isolation.
Workshop Results 2

- Some unreasonableess and irrationality found in view of inhabitants including housing repair cost and minimal area requirement for compensation of small land.
- Positive effect derived about temporary house rotating re-developement of housing in low income village were minimizing the destruction of existing infra, new employment, new open space and resettlement of inhabitants.
- Negative effect derived was apprehension about external support

HIA to the diffusion model

Various positive and negative impact were recommended according to below item.
- Physically: housing density, car parking, walking environment, housing quality, garden, leisure facility, hygien, cost
- Socially: economic independence, social relation, social exclusion
Discussion and Conclusions:

- Inhabitants need clearly about community based improvement including hygiene, lighting and car parking etc.
- Specific policy and methods needs more refinement based on community participation and empowerment.
- Temporary house rotating re-developement of housing in low income village found to have many positive effect and some negative effect in view of inhabitants
The Experience of Health Impact assessment of Immunization Program in Jinju City, Korea

Koon Youp Kim1, So Youn Jeon2, Min Joong Jeon1, Kwon Ho Lee1, Soo Goo Lee3, Dongjin Kim1, Eunjeong Kang1, Sang Guen Bae1, Jinhwa Kim4

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Backgrounds (배경)

- As the most cost-effective health service, Korea has emphasized and expanded its immunization program
- 어린이 대상 예방접종은 가장 비용·효과적인 보건사업
- Public immunization program has geographical and economic barriers, because it is only available at public health centers and not at private clinics
  - The Korean government launched the National Immunization Program in March 2009, in which the government supports 30% of the cost of vaccines received at private clinics
  - 2009년 3월부터 ‘국가필수예방접종 국가부담사업’을 추진
- Several local governments in Korea have already started free immunization program, the Jinju City launched free immunization program.
- 민간의료기관 예방접종비용에 대한 전액 지원 사업 추진 예정(진주시)
Purpose of this study (연구목적)

- Assess the potential health impacts and improve the quality of the free immunization program in Jinju City
  - Maximize the predicted positive health gains and minimize the negative health risks

- 사업추진 예정인 ‘진주시 어린이 필수예방접종 무료 시책’의 잠재적 있는 건강 영향을 평가하고 사업의 질을 개선
- 공정적인 영향을 최대화하고 부정적인 영향을 최소화

Method (1): steps of study (연구방법: 단계)

<table>
<thead>
<tr>
<th>사업계획</th>
<th>Project planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>운영위원회 구성</td>
<td>Steering committee</td>
</tr>
<tr>
<td>스크리닝</td>
<td>Screening</td>
</tr>
<tr>
<td>스크핑</td>
<td>Scoping</td>
</tr>
<tr>
<td>평가</td>
<td>Appraisal</td>
</tr>
<tr>
<td>워크숍</td>
<td>Workshop</td>
</tr>
<tr>
<td>보고서 작성</td>
<td>Making report</td>
</tr>
</tbody>
</table>

Project analysis (사업분석) → Community assessment (지역사회진단) → Literature review (문헌검토) → Questionnaire (사례조사를 통한 설문조사) → Expert advice (전문가의 조언)
Method (2): Steering committee (운영위원회)

- **Composition (구성)**
  - 2 pediatric physicians, 1 representative from a women's non-governmental organization, 1 from a childcare facility, 1 mother, 1 HIA expert, 1 local professor from a college of medicine, 1 public health center immunization staff person, and 1 public health center HIA staff person

- **Roles (역할)**
  - consult with each other in stages throughout the project, including screening, scoping, and appraisal (사업단계 참여, 자문)
  - attend workshops for developing recommendations for suggesting program alternatives (의견 및 대안 제시)

Method (3): Screening (스크리닝)

- **The process of determining whether the policy or project is suitable and necessary for an HIA**
  - 진주시 주민(특히 어린이)의 신체적 건강에 매우 급정적 영향
  - 취약계층 및 지역 문제, 백신보관 및 안전 문제, 선택예방접종의 문제 등에 대한 고려가 필요

Scoping (스코핑)

- Planned the procedure and the scope of the assessment
- Decided to perform a rapid assessment, which would require relatively little time and few resources
- 비교적 적은 시간 및 자원을 투입하여 결과 도출이 가능한 ‘속성 건강영향평가’로 진행하기로 결정함
Method (4): Assessment (사정)

- Secondary data analysis (지역 2차 자료 활용)
  - The coverage population, infectious disease incidence, immunized population
- Literature review (기존 문헌 고찰)
  - Immunization programs
- Case studies (타지역 사례 분석)
  - Other regions that have implemented fully funded immunization programs
- Community survey (지역주민 조사, 31명)
  - Local representatives, welfare facilities representatives, residents and members of women’s organizations (A total of 31 people)
- The GIS-assisted analysis (GIS를 활용한 공간분석)
  - The expected increase in the coverage area resulting from the free immunization service
  - The distribution of the immunization target population and private clinics in 2009
- Expert advice (전문가 자문)

Result (1): Immunization Status of Children
결과(1): 예방접종 대상자 및 접종기관 현황

- The target population for immunization services: 45, 520 children (12 years of age or younger)
  - An average of 576 children lived in the eop and myun areas and an average of 1,729 children lived in the dong areas
  - Children in the vulnerable group
- 진주시 만 12세 이하 필요예방접종 대상 총 인구 : 45,520명
  - 읍면 지역 평균 576명, 동지역 평균 1,728명
  - 다문화 가정 702명, 소년소녀가장 17명, 보육아동 9,740명
- Clinics offering immunization services
  - Most were concentrated in the downtown regions of the dong areas
  - In the dong areas, and myun areas near dong areas, private medical clinics were responsible for immunizations, while public health centers covered the eop and myun areas
  - 동지역은 민간의료기관, 읍면지역은 보건기관에서 예방접종 담당
### Result (2): Immunization rate of Children

<table>
<thead>
<tr>
<th>Type of vaccine</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td>4427 (100.0)</td>
<td>4245 (100.0)</td>
<td>3444 (100.0)</td>
</tr>
<tr>
<td>DTaP 1st-3rd</td>
<td>8314 (95.0)</td>
<td>10033 (100.0)</td>
<td>8538 (100.0)</td>
</tr>
<tr>
<td>Polio 1st-3rd</td>
<td>8727 (100.0)</td>
<td>10061 (100.0)</td>
<td>8495 (100.0)</td>
</tr>
<tr>
<td>Chickenpox</td>
<td>2224 (78.3)</td>
<td>2756 (89.3)</td>
<td>2828 (90.0)</td>
</tr>
<tr>
<td>MMR 1st</td>
<td>3211 (100.0)</td>
<td>3382 (100.0)</td>
<td>2915 (100.0)</td>
</tr>
<tr>
<td>Japanese encephalitis 1st, 2nd</td>
<td>6263 (85.0)</td>
<td>5616 (91.0)</td>
<td>5803 (89.2)</td>
</tr>
<tr>
<td>Japanese encephalitis 3rd</td>
<td>1914 (73.2)</td>
<td>2451 (85.0)</td>
<td>2455 (78.2)</td>
</tr>
<tr>
<td>DTaP 4th</td>
<td>2523 (90.0)</td>
<td>2764 (89.5)</td>
<td>2712 (95.0)</td>
</tr>
<tr>
<td>MMR 2nd</td>
<td>3833 (100.0)</td>
<td>3619 (100.0)</td>
<td>2985 (95.0)</td>
</tr>
<tr>
<td>DTaP 5th</td>
<td>2130 (62.2)</td>
<td>2357 (72.5)</td>
<td>2306 (75.5)</td>
</tr>
<tr>
<td>Polio 4th</td>
<td>2243 (85.5)</td>
<td>2459 (75.7)</td>
<td>2419 (79.0)</td>
</tr>
<tr>
<td>Japanese encephalitis 4th</td>
<td>3777 (91.2)</td>
<td>2360 (81.0)</td>
<td>2579 (77.0)</td>
</tr>
<tr>
<td>Td</td>
<td>1594 (30.4)</td>
<td>2365 (46.7)</td>
<td>8170 (80.0)</td>
</tr>
<tr>
<td>Japanese encephalitis 5th</td>
<td>3777 (71.8)</td>
<td>3296 (63.0)</td>
<td>3296 (64.7)</td>
</tr>
</tbody>
</table>

Values are presented as number (%).
Result (3): Case studies (타지역 사례조사)

- The Expanded National Immunization Pilot Program (2005)
  - Gunpo city (군포시: 예방접종률 향상, 어린이 건강 서비스 향상)
    - An increased participation and share of medical clinics, improved accessibility due to shorter travel time, increased initial DTP immunization rate, and improved overall children health services
  - Daegu city (대구시: 예방접종률 향상)
    - High immunization rates of BCG, DTP 1 and 2, and IPV 1 and 2

- Fully-funded immunization services (2009)
  - Gangnam-gu, Seoul (서울 강남구: 예방접종서비스 향상)
    - Quantitative and qualitative improvement of the vaccination services in comparison with adjacent districts

Result (4): Survey (설문조사 결과)

- Positive impacts (긍정적 영향)
  - Time savings from increased accessibility to service providers and Cost reduction
  - The availability of private clinics when public health centers are closed
  - The possibility of medical examinations for infants and checking health status along with the vaccinations and the provision of the service by the primary care doctor leading to reduced risk and readily available follow-up treatment
  - 접근성 향상으로 인한 시간절약과 비용감소
  - 보건소가 운영하지 않는 시간에도 민간의료기관을 이용가능
  - 다른 영유아 검진이나 건강상태도 같이 체크하며, 주치의가 직접 진료

- Negative impacts (부정적 영향)
  - The possibility of increased taxes or a reduced budget for other projects
  - The management and supervision of the vaccines
  - Over-charging for the vaccines, overuse of the vaccines, and the increased number of patients going to private medical institutions
  - 무료예방접종 확대로 인한 세금 증가와 다른 복지관련 사업 예산 삭감
  - 백신 관리 및 감독
  - 민간 의료 백신 남용, 민간 병원 접종대상자 증가로 인한 진료 혼잡
Result (5): GIS-assisted Analysis (GIS를 활용한 분석)

Changes in area where children can receive free immunization after project implementation

사업시행 후 무료예방접종 지역변화
Distribution of children immunized in Public health center in 2009
2009년 보건소 필수 예방접종 대상자의 주소지 분포

- About 80% of the target population lives within the service areas of private clinics, as of 2009, and the program is expected to dramatically improve the accessibility to citizens
- 접종대상자의 약 80% 이상이 민간의원의 진료권 내에 거주

Conclusion (1) (결론)

<table>
<thead>
<tr>
<th>Potential impact on health</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>Recommendations to public health center</td>
</tr>
<tr>
<td>Increased access to immunization</td>
<td>Reorient the role of the public health center for immunization and</td>
</tr>
<tr>
<td>Increased immunization rate</td>
<td>develop administrative preparations</td>
</tr>
<tr>
<td>Deliver of comprehensive health service at private clinics</td>
<td>Develop strategies to increase booster immunization rates</td>
</tr>
<tr>
<td>Strengthened role of the public health center in increasing the immunization rate and service coordination</td>
<td>Identify and include marginalized communities and population groups</td>
</tr>
<tr>
<td>Contribute to the national policy to reverse the low birth rate phenomena</td>
<td>Prevent budget cuts in other welfare programs</td>
</tr>
<tr>
<td>Ripple effect to neighboring communities</td>
<td>Expand program to include elective immunization policy</td>
</tr>
<tr>
<td>Negative</td>
<td>Establish a monitoring system for program evaluation</td>
</tr>
<tr>
<td>Increased access limited to only some regions within Jinju City</td>
<td>Collaborate with other relevant sectors</td>
</tr>
<tr>
<td>Possibility of poor management of vaccines</td>
<td>Recommendations to private hospitals and clinics</td>
</tr>
<tr>
<td>Low quality of health professionals</td>
<td>Improve management of vaccines</td>
</tr>
<tr>
<td>Mise of vaccines</td>
<td>Provide training for health professionals and strengthen quality control measures</td>
</tr>
</tbody>
</table>

- 긍정적 영향
  - 집단적 주요, 예방접종 통합, 포괄적 관리 서비스, 보건소의 관리 역할, 지역내 대책
  - 민간 지역 비급
- 부정적 영향
  - 특별히 지역에 한정된 진료소 증가, 백신 관리 문제, 예방 접종 신고의 급격 감소, 백신의 교환

- 지방자치체 관리 사항
  - 보건소의 역할 강화
  - 타 복지사업에 대한 예산을 줄이지 않도록 노력
  - 전역에서의 지원을 고려

- 전반적인 관리 사항
  - 백신 관리 및 유통, 접종자의 교육 및 관리
  - 염증과 관리 개선, 전역을 대상으로 해서 보호자에게 중부한 설명을 제공
Conclusion (2) (결론)

- This study collected the opinions of various stakeholders before implementing the Jinju Free Childhood Immunization Program and reviewed the possible positive and negative impacts on health and suggest recommendations in implementing Program
  - collaboration of public and private health institutions, experts and citizens, local and central government agencies, and with other local governments
  - interdisciplinary approach of collaboration of experts of health and GIS

- 진주시의 필수예방접종 무료 사업을 도입하기 전 다양한 이해관계자 및 전문가들의 의견을 수렴
  - 다양한 협력: 공공과 민간의료기관, 전문가와 시민, 지역과 종업(철병관리본부), 지역간의 협력(기존 시범사업 지역과의 교류), 보건의료 분야와 GIS 전문가(학회 발문)
- 건강영향평가를 통해 사업으로 인한 금정적, 부정적 건강영향과 이에 대한 권고사항을 제안
Part-Time Work and Suicide Attempts among Adolescent Students in Korea

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¹ Dept. of Preventive Medicine, The Catholic University of Korea
² Clinical Research Center for Depression of Korea
³ Seoul Suicide Prevention Center

Background
### Cause of death in Korea

<table>
<thead>
<tr>
<th>Ranking Age(yr)</th>
<th>First Cause</th>
<th>%</th>
<th>Second Cause</th>
<th>%</th>
<th>Third Cause</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-9</td>
<td>Transport accidents</td>
<td>18.4</td>
<td>Cancer</td>
<td>14.2</td>
<td>Congenital Problems(^1)</td>
<td>8.9</td>
</tr>
<tr>
<td>10-19</td>
<td>Suicide</td>
<td>24.3</td>
<td>Transport accidents</td>
<td>22.7</td>
<td>Cancer</td>
<td>14.1</td>
</tr>
<tr>
<td>20-29</td>
<td>Suicide</td>
<td>44.9</td>
<td>Transport accidents</td>
<td>16.6</td>
<td>Cancer</td>
<td>9.2</td>
</tr>
<tr>
<td>30-39</td>
<td>Suicide</td>
<td>33.9</td>
<td>Cancer</td>
<td>19.2</td>
<td>Transport accidents</td>
<td>8.9</td>
</tr>
<tr>
<td>40-49</td>
<td>Cancer</td>
<td>28.1</td>
<td>Suicide</td>
<td>16.9</td>
<td>Dx. of the liver</td>
<td>8.4</td>
</tr>
<tr>
<td>50-59</td>
<td>Cancer</td>
<td>37.7</td>
<td>Suicide</td>
<td>9.5</td>
<td>Dx. of the liver</td>
<td>7.4</td>
</tr>
<tr>
<td>60-69</td>
<td>Cancer</td>
<td>42.8</td>
<td>Cerebrovascular Dx.</td>
<td>9.2</td>
<td>Heart Dx.(^2)</td>
<td>8.0</td>
</tr>
<tr>
<td>70-79</td>
<td>Cancer</td>
<td>33.8</td>
<td>Cerebrovascular Dx.</td>
<td>13.0</td>
<td>Heart Dx.</td>
<td>9.7</td>
</tr>
<tr>
<td>80+</td>
<td>Cancer</td>
<td>16.2</td>
<td>Cerebrovascular Dx.</td>
<td>12.3</td>
<td>Heart Dx.</td>
<td>11.4</td>
</tr>
</tbody>
</table>

\(^1\) Congenital malformations, deformations and chromosomal abnormalities; \(^2\) Ischaemic heart diseases and other heart diseases.

### Mortality of cause of death

<table>
<thead>
<tr>
<th>Ranking Age(yr)</th>
<th>First Cause</th>
<th>Rate</th>
<th>Second Cause</th>
<th>Rate</th>
<th>Third Cause</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-9</td>
<td>Transport accidents</td>
<td>2.8</td>
<td>Cancer</td>
<td>2.1</td>
<td>Congenital Problems(^1)</td>
<td>1.3</td>
</tr>
<tr>
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<td>Suicide</td>
<td>5.2</td>
<td>Transport accidents</td>
<td>4.8</td>
<td>Cancer</td>
<td>3.0</td>
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<td>20-29</td>
<td>Suicide</td>
<td>24.4</td>
<td>Transport accidents</td>
<td>9.0</td>
<td>Cancer</td>
<td>5.0</td>
</tr>
<tr>
<td>30-39</td>
<td>Suicide</td>
<td>29.6</td>
<td>Cancer</td>
<td>16.8</td>
<td>Transport accidents</td>
<td>7.8</td>
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<tr>
<td>40-49</td>
<td>Cancer</td>
<td>56.7</td>
<td>Suicide</td>
<td>34.1</td>
<td>Dx. of the liver</td>
<td>17.0</td>
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<td>50-59</td>
<td>Cancer</td>
<td>158.8</td>
<td>Suicide</td>
<td>40.1</td>
<td>Dx. of the liver</td>
<td>31.0</td>
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<td>60-69</td>
<td>Cancer</td>
<td>415.5</td>
<td>Cerebrovascular Dx.</td>
<td>88.9</td>
<td>Heart Dx.(^2)</td>
<td>77.3</td>
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<tr>
<td>70-79</td>
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<td>Cerebrovascular Dx.</td>
<td>357.1</td>
<td>Heart Dx.</td>
<td>266.8</td>
</tr>
<tr>
<td>80+</td>
<td>Cancer</td>
<td>1530.0</td>
<td>Cerebrovascular Dx.</td>
<td>1162.3</td>
<td>Heart Dx.</td>
<td>1073.6</td>
</tr>
</tbody>
</table>

\(^1\) Congenital malformations, deformations and chromosomal abnormalities; \(^2\) Ischaemic heart diseases and other heart diseases.
Threat of adolescents’ suicide

- Premature death leads to the loss of social productivity

Source: Socio-economic cost of adolescent’s behavior problems, 2005.

Threat of adolescents’ suicide

- Premature death leads to the loss of social productivity

Source: Adapted from 'Socio-economic cost of adolescent's behavior problems, 2005' by considering the inflation rate
Threat of adolescents’ suicide

• Adverse consequences for the bereaved and friends
  – Short-term
    • Greater depression
    • Higher personal suicidal ideation / attempts
    • Maladaptive coping strategies
  – Long-term
    • Increased incidence of depression, anxiety and PTSD

Opportunity

• Suicide of adolescents is often characterized as more impulsive in comparison to that of adults.
• That implicates the preventable suicide would have relatively large portion of adolescent’s suicide.

“Although people who attempt suicide tend to be more impulsive than those who do not, the actual act of completed suicide is often not made impulsively.” (Anestis et al, 2007)
Risk factors of adolescents’ suicide

- Biologic factors
- Social factors
- Psychological factors

What do we know about their part-time work?

Difference & similarity

- Western countries
  - Adolescents’ part-time work has been regarded as one of the normal developmental process to gain initiative or independence.
- Korea
  - Adolescents are not supposed to do the part-time work generally.

; Few studies explored how the part-time work of adolescent could be associate with their suicide.
Objectives

• This study analyzed the association between adolescents’ part-time work and suicide.
• The authors suggested future direction of the social efforts to prevent adolescent’s suicide.

Methods
Participants and data

- The 2008 Korean Youth Risk Behavior Surveillance (KYRBS)
  - Annual on-line survey in the students attending to the sample school selected by the multi-phase stratified cluster random sampling method
  - Participation rate
    - 796 schools from 800 samples
    - 75,238 students among 79,099 samples
  - Representative data on adolescents in school

Definition of terms: suicide

- Suicidality
  - Suicidal ideation
  - Suicidal plan
  - Attempted suicide
  - Completed suicide
- Attempted suicide
  - Acts as a serious risk factors for completed suicide
  - Studies on the risk factors for suicide attempts can be useful when the psychological autopsy on the suicide is limited.
Definition of terms

- **Suicide**
  - Attempted suicide
  - Measured by a single question
    “Have you ever attempted suicide during last 1 year?”

- **Part-time work**
  - Measured by one question
    “Have you ever had experience of part-time work during last 1 year?”

Confounders

<table>
<thead>
<tr>
<th>Factors</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-demographic</td>
<td>Gender, age, residence region, economic status of household, living together with both, weekly pocket money</td>
</tr>
<tr>
<td>School-related</td>
<td>School levels, grade, co-education, and self-assessed academic achievement level</td>
</tr>
</tbody>
</table>
Confounders

<table>
<thead>
<tr>
<th>Factors</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life-style</td>
<td>Body Mass Index (BMI), sleeping hours, alcohol drinking frequency during last 1 month, smoking behavior during last 1 month, any physical activities for 3 times per a week, presence of current chronic diseases*</td>
</tr>
<tr>
<td>Psychological</td>
<td>Presence of depressive mood, conflicts with friends or parents, stress caused by out-appearance, sexual behaviors, sexual abuse, and substance use or inhalation of butane gas/bond of life-time</td>
</tr>
</tbody>
</table>

* Atopic dermatitis, rhinitis, asthma, enterogastritis, cardiac disease, cancer or diabetes

Data analysis

- Complex sample analysis procedure was adopted via SAS 9.2.
- $\chi^2$ test for univariate analysis
- Multiple logistic regression analysis to investigate the independent effect of part-time work on suicide attempt.
- Stratified analysis by school level
Results

Experience of part-time work and suicide attempts

- Part-time work
- Suicide attempter

<table>
<thead>
<tr>
<th></th>
<th>Middle school students</th>
<th>High school students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part-time work</td>
<td>11.0%</td>
<td>24.0%</td>
</tr>
<tr>
<td>Suicide attempter</td>
<td>5.6%</td>
<td>4.5%</td>
</tr>
</tbody>
</table>
Proportion of suicide attempters by part-time work experience: *Middle school students*

Proportion of suicide attempters by part-time work experience: *High school students*
Results of multiple logistic regression

* Adjusted by socio-demographic, school-related, life-style, and psychological variables

Discussion
Employment & suicide in adults

• Systematic review of Li et al. (2009)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>RR/OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMPLOYMENT STATUS</td>
<td></td>
</tr>
<tr>
<td>Qin et al., (2000)</td>
<td>2.21 (1.69, 2.88)</td>
</tr>
<tr>
<td>Kposowa, (2001) *</td>
<td>1.14 (0.77, 1.70)</td>
</tr>
<tr>
<td>Blakely et al., (2002) *</td>
<td>2.70 (1.84, 3.95)</td>
</tr>
<tr>
<td>Qin et al., (2003)</td>
<td>1.21 (1.07, 1.36)</td>
</tr>
<tr>
<td>Subtotal</td>
<td>1.68 (1.11, 2.54)</td>
</tr>
</tbody>
</table>

Risk of suicide in male

Employment & suicide in adults

• Systematic review of Li et al. (2009)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>RR/OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMPLOYMENT STATUS</td>
<td></td>
</tr>
<tr>
<td>Qin et al., (2000)</td>
<td>1.37 (0.86, 2.19)</td>
</tr>
<tr>
<td>Kposowa, (2001) *</td>
<td>3.06 (1.42, 6.60)</td>
</tr>
<tr>
<td>Blakely et al., (2002) *</td>
<td>2.88 (1.19, 6.85)</td>
</tr>
<tr>
<td>Qin et al., (2003)</td>
<td>1.19 (0.97, 1.46)</td>
</tr>
<tr>
<td>Subtotal</td>
<td>1.68 (1.09, 2.59)</td>
</tr>
</tbody>
</table>

Risk of suicide in female
Employment & suicide in adolescents

- Only a few studies dealt with this association.
- Sharma et al. (2008)
  - Analyzed the association between adolescent’s part-time work and ‘at risk’ suicidal behavior in south Delhi (serious consideration of or attempted suicide)

![At risk behaviors graph]

Point of view on adolescent’s part-time work

- One of the ‘developmental process’ in the western countries

![Working youth graph]

Source: US Department of Labor, 2012
Point of view on adolescent’ part-time work

- In Korea, adolescent’s part-time work is not universal.
- They are expected to study hard for better school achievement.

Different association by social norm
Different association by social norm

Adolescent’ part-time work

Social norm  |  Association with suicide

Expected  |  Negative

NOT expected

Result of a recent study in US*:
"Adolescent’s summer job may help prevent suicidal tendencies."

* Source: Baller & Richardson, 2009.

Different association by social norm

Adolescent’ part-time work

Social norm  |  Association with suicide

Expected  |  NOT negative

NOT expected

Result of this study in Korea:
"Adolescent’s part-time work may increase suicide attempt."
Possible explanation 1
: Developmental characteristics

• “Energy, enthusiasm, and challenging”
  – They would put up with the workload being required beyond their physical capacities.
  – Overloaded work could increase their biological vulnerability.

Possible explanation 2
: Deprived sleep

• Most of part-time work taken by adolescents is carried out after school-time.
• Those who are engaged in part-time work may have less sleeping hours compared to those who do not.
• Deprived sleep could elevate vulnerability by causing sleep disorders, depression or anxiety.
Possible explanation 3
: Exposure to harmful environments

- Adolescents could imitate the adults’ smoking, alcohol drinking, or violence that they might contact with frequently during part-time work, which might increase the ‘risk’ of suicide.

Possible explanation 3
: Exposure to harmful environments (cont.)

- Adolescents are mostly working for low-paying jobs in retail and service industries, where management and monitoring of treatment and work environment is more difficult compared to that of adults.
- Consequently, there could be adolescents exploitation by the adult employers.
Regulations for protection of children and young worker

• Age
  – Lower limit: 15yr or older
  – Exception: 13yr if the required documents are submitted

• Occupation
  – Harmful or risky jobs in the view of health or moral aspects

Regulations for protection of children and young worker (cont.)

• Day or time
  – Time limit: 10 pm - 6 am, and holidays
  – Exception: not limited if adolescent worker’s need and permit of the Minister of Employment and Labor

• Working hours
  – Upper limit: 7 hrs/day, 40 hrs/wk
  – Overtime limit: 1 hr/day, 6 hrs/wk
Limitations

- Cross-sectional study
- Insufficient information on details of adolescent’s part-time work including kinds of the work, hours for work per week, etc.
Implications

• This study showed that Korean adolescent’s part-time work may increase their suicide attempt through a nation-wide representative samples.

• Also this report revealed that the conditions and environments of Korean adolescents’ part-time work need to be reviewed.
Thank you for your attention!

jiny4u@catholic.ac.kr
The Impact of Socioeconomic Environment on Local Suicide Mortality: Evidence from a Spatial Analysis

Eunjeong Kang,¹ Hosung Shin²
¹ Soon Chun Hyang University, Asan, Korea; ² Won Kwang University, Iksan, Korea

List of contents

• Background
• Methods
• Results
• Discussion and conclusion
Background

Trends in suicide rates per 100,000 persons

Source: OECD Factbook 2011: Economic, Environmental and Social Statistics

Change in suicide rates, percentage 1995-2009 or latest available period

Source: OECD Factbook 2011: Economic, Environmental and Social Statistics
• Geographical variations of suicide mortality
  – 76.1 in Im Sil, Jeonbook vs 12.8 in Gwa Cheon, Gyeonggi in 2008
  – National differences greater than 10 times in Europe (Levi et al., 2003)
  – Within a country, variation exists especially between rural and urban areas (Hirsch, 2006)

  Implies common impact of sharing geographically defined common characteristics on geographical differences

  Spatial analysis is necessary

• Research on suicide mortality has been focused on individual-level analysis.

• Studies of suicide even on the level of the administrative area seldom consider possible correlations among neighboring areas, i.e., neighboring effects.
Purpose

- To find out how socioeconomic environmental factors are related to local suicide mortality considering neighboring effects.

Methods

- Data
  - Age-standardized suicide mortality of 249 local government areas (si-goon-gu or city/district)
  - 7 areas which were islands were excluded and 242 areas were included in the final analysis.

- Socioeconomic environmental variables
  - % of high school graduates, population density, number of beds per 1,000, % of single hh, % of rented housing, % of hh where more than 1 person living per room, % of moving population, % of singles, divorce rate(%), % of farmers, % of population with a chronic disease
• All data were of 2010 and obtained from the National Statistics Office (KOSIS).

• Geographical distributions of suicide mortality by sex
  – R + GRASS GIS

• Spatial analysis
  – Moran’s I for testing the existence of spatial correlations
    • +1~1, + signs mean positive spatial autocorrelation, 0 means a random pattern, - signs negative spatial autocorrelation

– Spatial analysis
  • In regression, independent and identically distributed values of variables are assumed. But if there are geographical correlations, this assumption is violated.
  • Sets of districts that share a border=neighboring areas

– Baysian poisson regression analysis
  • CAR (Conditional Autoregressive Model) module in WinBUGS
  • 10,000 burn-in MCMC chain, 500,000 iterations for all variables in the model
Results

Geographical distribution of suicide mortality in Korea, 2010

• Moran’s I test results

<table>
<thead>
<tr>
<th></th>
<th>Moran’s I value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>0.423020448</td>
<td>2.2e-15</td>
</tr>
<tr>
<td>Males</td>
<td>0.394914981</td>
<td>2.2e-15</td>
</tr>
<tr>
<td>Females</td>
<td>0.251727553</td>
<td>4.29e-10</td>
</tr>
</tbody>
</table>

*Significant spatial correlations exist.*
### Descriptive statistics of variables

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>mean</th>
<th>SD</th>
<th>min</th>
<th>max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highsch (%)</td>
<td>242</td>
<td>77.1</td>
<td>18.5</td>
<td>35.9</td>
<td>99.9</td>
</tr>
<tr>
<td>Popdens (persons/km²)</td>
<td>242</td>
<td>2.585</td>
<td>4.817</td>
<td>88.2</td>
<td>16,221</td>
</tr>
<tr>
<td>Beds (per 1,000 persons)</td>
<td>242</td>
<td>8.3</td>
<td>5.1</td>
<td>0</td>
<td>35.9</td>
</tr>
<tr>
<td>s_jhh (%)</td>
<td>242</td>
<td>37.1</td>
<td>25.6</td>
<td>13.4</td>
<td>97.6</td>
</tr>
<tr>
<td>rent_jhh (%)</td>
<td>242</td>
<td>70.9</td>
<td>12.4</td>
<td>45.8</td>
<td>99.9</td>
</tr>
<tr>
<td>Crew (%)</td>
<td>242</td>
<td>12.2</td>
<td>5.9</td>
<td>2.4</td>
<td>46.3</td>
</tr>
<tr>
<td>Promove (%)</td>
<td>242</td>
<td>87.0</td>
<td>35.9</td>
<td>0</td>
<td>229.9</td>
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<tr>
<td>Single (%)</td>
<td>242</td>
<td>26.3</td>
<td>5.6</td>
<td>14.9</td>
<td>42.3</td>
</tr>
<tr>
<td>Divorce (%)</td>
<td>242</td>
<td>4.2</td>
<td>1.2</td>
<td>1.9</td>
<td>9.4</td>
</tr>
<tr>
<td>Farmer (%)</td>
<td>242</td>
<td>23.96</td>
<td>29.86</td>
<td>0</td>
<td>94.06</td>
</tr>
<tr>
<td>Disease (%)</td>
<td>242</td>
<td>0.42</td>
<td>0.28</td>
<td>0.07</td>
<td>1.91</td>
</tr>
<tr>
<td>suicide mortality, total, per 100,000</td>
<td>242</td>
<td>1.27</td>
<td>1.43</td>
<td>0.04</td>
<td>7.52</td>
</tr>
<tr>
<td>suicide mortality, female, per 100,000</td>
<td>242</td>
<td>2.52</td>
<td>3.17</td>
<td>0.17</td>
<td>21.17</td>
</tr>
<tr>
<td>suicide mortality, male, per 100,000</td>
<td>242</td>
<td>2.52</td>
<td>2.86</td>
<td>0.06</td>
<td>15.97</td>
</tr>
</tbody>
</table>

### Baysian spatial analysis results: female

<table>
<thead>
<tr>
<th></th>
<th>Spatial analysis</th>
<th>Poisson analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef.</td>
<td>t-value</td>
</tr>
<tr>
<td>_cons</td>
<td>-1.48828</td>
<td>-2.09</td>
</tr>
<tr>
<td>highsch</td>
<td>0.00003</td>
<td>0.123</td>
</tr>
<tr>
<td>popdens</td>
<td>-0.00001</td>
<td>-1</td>
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<tr>
<td>beds</td>
<td>0.00372</td>
<td>0.6481</td>
</tr>
<tr>
<td>s_jhh</td>
<td>0.00664</td>
<td>1.5944</td>
</tr>
<tr>
<td>rent_jhh</td>
<td>0.01423</td>
<td>5.3902</td>
</tr>
<tr>
<td>crwm</td>
<td>0.01786</td>
<td>1.9779</td>
</tr>
<tr>
<td>popmove</td>
<td>0.00077</td>
<td>0.3556</td>
</tr>
<tr>
<td>single</td>
<td>-0.03212</td>
<td>-2.37</td>
</tr>
<tr>
<td>divorce</td>
<td>0.20607</td>
<td>5.7099</td>
</tr>
<tr>
<td>farmer</td>
<td>0.00455</td>
<td>1.383</td>
</tr>
<tr>
<td>cdisease</td>
<td>0.15561</td>
<td>0.9243</td>
</tr>
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</table>
### Bayesian spatial analysis results: male

<table>
<thead>
<tr>
<th>Spatial analysis</th>
<th>Poisson analysis</th>
<th>[35% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coeff.</strong></td>
<td><strong>t-value</strong></td>
<td><strong>Coeff.</strong></td>
</tr>
<tr>
<td><em>lcons</em></td>
<td>-0.70833</td>
<td>-1.114</td>
</tr>
<tr>
<td>highsch</td>
<td>-0.01138</td>
<td>-1.77</td>
</tr>
<tr>
<td>popdens</td>
<td>-0.00002</td>
<td>-2</td>
</tr>
<tr>
<td>beds</td>
<td>-0.00161</td>
<td>-0.33</td>
</tr>
<tr>
<td>s_jhh</td>
<td>0.00777</td>
<td>2.2053</td>
</tr>
<tr>
<td>rent_jhh</td>
<td>0.00927</td>
<td>4.013</td>
</tr>
<tr>
<td>crwm</td>
<td>0.01217</td>
<td>1.5971</td>
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<tr>
<td>popmove</td>
<td>0.00046</td>
<td>0.5897</td>
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<tr>
<td>single</td>
<td>-0.01115</td>
<td>-0.972</td>
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<tr>
<td>divorce</td>
<td>0.22812</td>
<td>6.9232</td>
</tr>
<tr>
<td>farmer</td>
<td>0.00635</td>
<td>0.1129</td>
</tr>
<tr>
<td>cdisease</td>
<td>0.31511</td>
<td>2.1687</td>
</tr>
</tbody>
</table>

### Bayesian spatial analysis results: total

<table>
<thead>
<tr>
<th>Spatial analysis</th>
<th>Poisson analysis</th>
<th>[35% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coeff.</strong></td>
<td><strong>t-value</strong></td>
<td><strong>Coeff.</strong></td>
</tr>
<tr>
<td><em>lcons</em></td>
<td>-1.77877</td>
<td>-3.537</td>
</tr>
<tr>
<td>highsch</td>
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<td>popdens</td>
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<td>-2</td>
</tr>
<tr>
<td>beds</td>
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<td>-0.63</td>
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<td>s_jhh</td>
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<td>2.2734</td>
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<td>-0.649</td>
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<td>divorce</td>
<td>0.20518</td>
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<td>farmer</td>
<td>0.00274</td>
<td>1.1048</td>
</tr>
<tr>
<td>cdisease</td>
<td>0.28539</td>
<td>2.127</td>
</tr>
</tbody>
</table>
Discussion and conclusion

- The spatial analysis gives different outputs from the ordinary poisson analysis.
  - Not considering the adjacent neighboring effect may give you biased results.
  - Having a chronic disease was negatively correlated to suicide mortality in the poisson analysis.

- Gender difference in the correlates with suicide mortality
  - Female: rent_hh(+), crwrm(+), single(-), divorce(+)
  - Male: popdens(-), s_hh(+), rent_hh(+), divorce(+), cdisease(+)

부록 • 519
• Unit of analysis-Is it appropriate?
  – The unit of analysis should be homogenous in SES environment within each observation.
  – The average population size of city/district is about 250,000.
  – But for smaller areas, NSO does not provide cause-specific deaths.

• Spatial patterning
  – Hard to claim any patterns
  – Age-specific analysis would be more informative.
  – “hot-spots” for female suicide
  – “safe resorts” against male suicide
• Ecological study like this may give different results from individual studies.
  – Future study should use a multi-level analysis to better understand the interaction
    between the area and individuals living within it.
• Rural-urban difference
  – Less urbanization(lower popden) is related to higher suicide rate. *Western-Eastern
    difference?

• Unemployment
  – Excluded in the analysis because it caused multicolinearity problem
  – Not significant factor in Taiwan *Another Western-Eastern difference?
• Social disintegration factors
  – Popmove not significant factor
  – But single, living alone were significant factors
33. 파키스탄 Dow 대학 Maria Shoaiib : 건강결과향상을 위한 의료진에 HIA 도입

Bringing HIA in Physicians to Improve Health Care Outcome – First step towards implementation of HIA

Maria Shoaiib
Dow University of Health Sciences
Karachi, Pakistan
OVERVIEW OF PRESENTATION
Our Case
Assessment and Collecting Evidence and Literature
Positive Outlooks
Limitations
What's Next in the Journey
Practical Recommendations

OUR SCENARIO
Assessed antibiotic susceptibility pattern and determine the non clinical factors that significantly impact it.
Civil Hospital, Karachi, Pakistan.
We found out a variable pattern in microbiological profile of individuals and different patterns of resistance to antibiotics.
There was lack of adherence to treatment and lack of counseling from doctors.
Lack of consensus in doctors knowledge.
RESULTS OF THE CROSS SECTIONAL SURVEY

Mean Age of affected individual was 36 years. Pseudomonas Was The Most Common Isolate Followed By Staphylococcus. Clustering Of Cases Was Seen During The Summer Season. More Than 80% Of Pseudomonas Was Sensitive To Carbapenems And Béte-lactamase Inhibitors While Fusidic Acid, Vancomycin And Linezolid Were Found To Be Most Sensitive For Strains Of Staphylococcus.
OUR ASSESSMENT
Health information system
Community profile
Literature scan
Affected patient Population
Doctors, Health Personnel, Students
Preparing the final report

PROBLEMS IDENTIFIED
Lack of a stable relationship between doctor and patients
Ethnic differences
Doctors empirical prescription with lack of counseling
Antibiotic misuse which led to multi drug resistant strains.
Treatment failures due to non adherence
**WHAT IMPACTS?**
Healthier and stable Physician Patient Relationship through
better counseling of the visiting population
updating physicians knowledge
Providing equal health care
Increasing patient capacity in the hospital
Use of evidence

**AREAS OF UNCERTAINTY?**
Time frame issues
A low scale would serve the purpose of HIA?
Is HIA the answer of our solution?
After proper implementation, how communities would take it?
Would agencies accept it for forming future policies?
THINGS LEAD TO SUCCESS
Hard to predict a definite outcome in current stage but will be judged in subsequent data collection and analysis.
Guiding doctors to foster a stable relationship between doctors of same ethnic as well other ethnic groups
Reminding them to counsel their patients properly.

LIMITATIONS
Lack of workforce to create Impact.
External agency for support and guidance.
Trained and assisted nursing staff.
Appropriate strategies.
Lack of Uniform health practices Big hospitals VS Small hospitals, Rural Urban Discrepancies.
Vague Statistics due to lack of studies and survey updates.
Budget and Investment.
RECOMMENDATIONS ACCEPTED AND IMPLEMENTED
Continuing the process among the newer physicians by the older physicians.
Counselling their patients as well their attendants.
Correcting their misconceptions.
Most senior among physicians should implement the recommendations on all
the new comings.
Consult with newer physicians about their needs and views about the potential
changes.

EVIDENCE INDICATES THAT
Patient satisfaction leads to a better outcome thus decreasing morbidity and
indirectly effecting other non health care outcomes such as absence from jobs,
disabilities etc.
Community participation Is necessary and will only be achieved if doctor
understands the needs of the patients.
Our scenario considered the fact and helped in improving relationship as well
knowledge status of the patients as well as doctors which was although small
but impactful.
FUTURE OF HIA
It should be incorporated in projects by Government agencies.
Funding needs to be introduced.
Should be made compulsory

HIA lacks in our region due to two main reasons
Lack of understanding by policy makers
Low technical competencies

ACKNOWLEDGEMENTS
- Muhammad Farhan Khaliq\(^1\)
- Zeeshan Raza\(^1\)
- Syed Bilal \(^1\)
- Dr. Ghulam Fatima\(^2\)
- \(^1\) Dow Medical College, Dow University of Health Sciences
- \(^2\) Central Lab Civil Hospital Karachi, Pakistan.
34. 한국보건사회연구원 최은진 박사: HIA에 대한 TWG의 비즈니스 간담회

**Business meeting of the TWG on HIA**

*11 October, 2012*

**Agenda**

- Progress of activities of TWG on HIA: Work plan (2010–2013)
- Evaluation of Institutionalization of HIA in the region: Prof. Richard Morgan
- Future development of workplan
History of Business meetings

- First business meeting in KIHASA, Seoul, April, 2010
- Approval of TWG on HIA by the Second Ministerial Regional Forum with Fifth High-Level Meeting, and Fourth Advisory Board Meeting, Jeju in ROK, July, 2010.
- Second business meeting back to back with the Third Asia-Pacific HIA conference at the University of Otago, New Zealand, November, 2010
- Joint TWG workshop with the TWG on Air Quality at KIHASA, Seoul, in July, 2011
- 4th Asia Pacific Conference in Seoul, October, 2012

Workplan 2010–2013 Objectives

- To share information and knowledge on HIA practices, guidelines and tools, evidence on health effects of various projects, programs, and policies
- To develop and promote HIA as an integral part of the decision making process in countries in the region.
- To enhance the skills and knowledge of professional staff and others involved in HIA and related areas by building capacity, promoting the dissemination of information and ideas and developing cooperative projects across countries in the region.
Activities of Workplan

- To share information and knowledge on HIA practices, guidelines and tools, evidence on health effects of various projects, programs, plans, and policies
- To promote the development of HIA as an integral part of the decision making process in countries in the region
- To enhance the skills and knowledge of professional staff and others involved in HIA and related areas

Share Information

<table>
<thead>
<tr>
<th>Activities</th>
<th>Timelines</th>
<th>Lead Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Collect - existing documents on HIA activities/practices - guidelines and tools - evidence - list of experts on HIA</td>
<td>2010</td>
<td>2011</td>
</tr>
<tr>
<td>1. Share information via regional website and TWG on HIA website</td>
<td>→</td>
<td>→</td>
</tr>
<tr>
<td>2. Collaborate with other TWG’s in collecting and sharing their information in HIA’s in their environmental concerns or context</td>
<td>→</td>
<td>→</td>
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<tr>
<td></td>
<td></td>
<td>MOH, Cambodia MOH, Mongolia/ MOH, the Philippines KIHASA, Korea MOH, Thailand/CHETRE, Australia KIHASA, Korea/KEI, Korea CHETRE, Australia KIHASA/UNEP/WHO/K EI, Korea/CDC, CHINA</td>
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### Development of HIA

<table>
<thead>
<tr>
<th>Activities</th>
<th>Timelines</th>
<th>Lead Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Document legislations and organizational arrangements for HIA in the region</td>
<td>2010 → 2011 → 2012</td>
<td>KEI, Korea / MOH, Laos PDR, University of New South Wales, University of Otago, and Curtin University</td>
</tr>
<tr>
<td>2. Make recommendations on institutionalization</td>
<td></td>
<td>KEI, Korea/Khun Kasun Univ., Thailand, University of New South Wales, University of Otago, and Curtin University</td>
</tr>
</tbody>
</table>

### Enhancing skills and knowledge

<table>
<thead>
<tr>
<th>Activities</th>
<th>Timelines</th>
<th>Lead Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Collect recent training programs and materials and develop a training module, if necessary (if not redundant)</td>
<td>2010 → 2011 → 2012</td>
<td>MOH, Vietnam/MONRE, Vietnam/MOPH, Thailand/CHTRE, Australia/Univ. of Otago, New Zealand</td>
</tr>
<tr>
<td>2. Conduct regional technical workshops</td>
<td></td>
<td>KIHASA, Korea/KEI, Korea/Univ. of Otago, New Zealand</td>
</tr>
<tr>
<td>3. Collaborate with other TWGs in planning and conducting joint technical workshops</td>
<td></td>
<td>KIHASA, Korea/KEI, Korea/UNEP/WHO/Curtin Univ., Australia</td>
</tr>
</tbody>
</table>
Expected Outputs

- To share information and knowledge on HIA practices, guidelines and tools, evidence on health effects of various projects, programs, plans, and policies
  - Compilation of information on HIA practices/guidelines/tools/evidence
  - Website for HIA

- Promote incorporation of the development of HIA into decision making process of the countries in the region
  - Compilation of information on legislations and organizational arrangements for HIA institutionalization
  - Recommendations and guidelines on HIA institutionalization

- Capacity building
  - Compilation of training programs and materials including training modules for HIA
  - Reports of technical workshops

Monitoring and Reporting of TWG

- The regular reports to the High-level meeting and Regional Forum will give an overview of:
  - Activities implemented over the last term based on Activities and Outputs listed above
  - Activities planned for the coming term
Resources for the activities

<table>
<thead>
<tr>
<th>Outputs</th>
<th>Required Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Compilation of information on HIA practices/guidelines/tools/activities</td>
<td>(1) Existing resources within the member countries and international partners</td>
</tr>
<tr>
<td></td>
<td>(2) Documents written in English</td>
</tr>
<tr>
<td>2. Website for HIA</td>
<td>(1) Technical knowledge on creating and managing a website</td>
</tr>
<tr>
<td></td>
<td>(2) Documents written in English</td>
</tr>
<tr>
<td></td>
<td>(3) Budget ($100,000/year)</td>
</tr>
<tr>
<td></td>
<td>(4) Personnel</td>
</tr>
<tr>
<td>3. Compilation of information on legislations and organizational arrangements for HIA institutionalization</td>
<td>(1) Existing resources within the member countries and international partners</td>
</tr>
<tr>
<td></td>
<td>(2) Documents written in English</td>
</tr>
<tr>
<td>4. Recommendations and guidelines on institutionalization of HIA</td>
<td>(1) Workshops of member countries and international partners</td>
</tr>
<tr>
<td></td>
<td>(2) Budget ($30,000*2)</td>
</tr>
<tr>
<td>5. Compilation of training programs and materials including modules for HIA</td>
<td>(1) Existing resources within the member countries</td>
</tr>
<tr>
<td>6. Reports of technical workshops</td>
<td>(1) Budget ($50,000*2)</td>
</tr>
</tbody>
</table>

Some Impacts and Progress in Korea

- Health Plan 2020 launched in 2011
  - HP2020 included health impact assessment for the first time

- Korean and English HIA website developed by KIHASA
General direction

**HP2010**
- Extend healthy lifespan and achieve health equity
- Strengthen health potential
- Reduce diseases and early death
- Narrow the gap of health among population groups

**HP2020**
- Encourage self-care among individuals and secure health as a fundamental human right
- Reorientation of focus areas based on determinants of health and adopt changing social health issues

Strategies and tools

**HP2010**
- Standardization of health promotion programs based on health behavior change, and health service change
- Human resource development
- Health education and campaign
- Support long term research

**HP2020**
- Consideration of aging population and rising health care cost due to chronic diseases, and health disparity
- Targeting vulnerable groups including multicultural family, disabled people, and low income family
- Development of measurable objectives and monitoring system
아태지역 및 유럽지역의 건강영향평가 동향 및 정책과제

Implementation system

**HP2010**
- Organizing National Health Promotion Commission
- Evaluation system for local health promotion projects
- Support private health sector, professional groups

**HP2020**
- Management of system and support health promotion programs
- Encourage other ministries in the health promotion projects
- Encouraging local governments’ planning for health promotion
- Linking public sector with private sector

Focus areas

**HP2010**
- Promotion of healthy lifestyle
- Preventive health management
- Population health management
- Health equity

**HP2020**
- Promotion of healthy lifestyle
- Chronic disease management
- Infectious disease management
- Safe environment
- Population health
- System management
**Summary of objectives**

**HP2010**
- General objective: healthy life expectancy and health equity
- Health equity objective included reduced death rate gap between social classes and health behavior (daily smoking rate and physical activities)
- Focus areas: 24
- Objectives: 169
- Leading indicators: 12

**HP2020**
- General objective: healthy life expectancy and health equity
- Health equity objectives are spread in focus areas’ objectives, and developed focus area for vulnerable groups
- Focus areas: 32
- Objectives: 151
- Leading indicators: 16

**Focus areas and projects**

**Healthy lifestyle**

<table>
<thead>
<tr>
<th>Focus areas</th>
<th>Objectives</th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Alcohol</td>
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<td>Exercise</td>
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<tr>
<td>Nutrition</td>
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<table>
<thead>
<tr>
<th>Focus areas</th>
<th>Objectives</th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco</td>
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### Chronic Disease Management

<table>
<thead>
<tr>
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<td>Cancer</td>
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<td>Arthritis</td>
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<tr>
<td>Heart disease and stroke</td>
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<tr>
<td>Diabetes</td>
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<td>Obesity</td>
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<tr>
<td>Oral health</td>
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### Infectious Disease Management

**HP2010**

<table>
<thead>
<tr>
<th>Focus areas</th>
<th>Objectives</th>
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</thead>
<tbody>
<tr>
<td>Immunization and infectious disease control</td>
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<tr>
<td>Vector born disease</td>
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<tr>
<td>Tuberculosis, respiratory and drug resistance</td>
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<td>AIDSs and STDs and blood born diseases</td>
<td>10</td>
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</tr>
<tr>
<td>New infectious disease</td>
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**HP2020**

<table>
<thead>
<tr>
<th>Focus areas</th>
<th>Objectives</th>
<th>Projects</th>
</tr>
</thead>
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<td>Health screening</td>
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<td>Arthritis</td>
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<td>Heart disease and stroke</td>
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<tr>
<td>Obesity</td>
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<td>Mental health</td>
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<td>Oral health</td>
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<td>Immunization</td>
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<td>Emergency infectious disease control</td>
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<td>Nosocomical infection control</td>
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<td>AIDS</td>
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### Safe Environment

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### Population Health

<table>
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<tr>
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<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal health</td>
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<td>3</td>
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<tr>
<td>Infant and child health</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Elderly health</td>
<td>3</td>
<td>4</td>
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<tr>
<td>Health for workers</td>
<td>6</td>
<td>6</td>
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<tr>
<td>School health</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Multicultural family health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health care visit program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disabled people’s health</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Focus areas</th>
<th>Objectives</th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal health</td>
<td>4</td>
<td>5</td>
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<td>Infant and child health</td>
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<td>Elderly health</td>
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<td>3</td>
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<td>Health for workers</td>
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<td>Military health</td>
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<td>School health</td>
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<td>Multicultural family health</td>
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<td>Health care visit program</td>
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<td>Disabled people’s health</td>
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</table>
**Focus areas and projects**

**System management**

**HP2010**

<table>
<thead>
<tr>
<th>Focus areas</th>
<th>Objectives</th>
<th>Projects</th>
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<tbody>
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**HP2020**

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<th>Projects</th>
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<td>Information and statistics</td>
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</table>

**Health Impact Assessment plan in HP 2020**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>2005</th>
<th>2008</th>
<th>2020</th>
<th>사항명</th>
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<tbody>
<tr>
<td>Central government adopt HIA</td>
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<td></td>
<td></td>
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<tr>
<td>Number of Central government</td>
<td>—</td>
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<tr>
<td>Local governments adopt HIA</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of local governments</td>
<td>—</td>
<td>3</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>(2009)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Private sectors adopt HIA</td>
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<tr>
<td>Number of private sector (number of organizations)</td>
<td>—</td>
<td>—</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

1. Technology and skill support system for HIA
2. Provision of Institutionalization of HIA
3. Provision of policy environment for HIA in local governments and private sectors
Further development of activities

- Compilation of practices and institutionalization in the region
- Health Equity oriented approach
- Linking HIA in other forms of HIA
- Funding for HIA practice

Thank you.
35. 뉴질랜드 오타고 대학 Richard Morgan 교수 : 남동&동아시아지역의 HIA 제도화

Institutionalization of Health Impact Assessment in SE and E Asia region: evaluation and reflection

Richard K. Morgan

Centre for Impact Assessment Research & Training
Department of Geography, University of Otago,
Dunedin, New Zealand

Meaning of institutionalization

“To become part of the rules and procedures normally followed by the different decision-making bodies involved.” (Banken, 2003)

- Tend to focus on statutes, procedures, but “soft” institutionalization is also very important
Which decisions does HIA inform?

- **policy**
  - for promoting wider health concerns
  - for health protection
- **projects**
  - broader (environmental/social)
  - narrower (environmental health focus)

---

**Policy level**

1. **“Health in all Policies”**
   - ensuring health is recognised in all non-health policy development, to maximise health benefits, minimise adverse health outcomes
   - **Broad model of health, emphasis on health promotion, working with policy developers to educate/advocate the health case.....**
     - e.g. developing an urban transport policy
     - e.g. working with Healthy Cities programme
2. Health protection and policies
   - ensuring those policies that might have implications for public health have appropriate safeguards
     - evidence-based information on possible health consequences; limits, thresholds, environmental standards
       - e.g. a national policy on water resource management, or on sewage treatment/disposal

Project-level

- Assessing the health implications of major projects (dams, smelters, etc.)
  - “broader” HIA: include socio-economic and cultural changes that might then have health consequences
  - “narrower” HIA: focus on direct health impacts on people, via air, water, land contamination, food safety, etc.

- Use EIA process
  - Health within EIA, or separate HIA
Decision-type and HIA

- The form of HIA must reflect the decision-processes it seeks to influence
  - methods used in policy-oriented HIA will not usually suit the decisions involved at the project level
- Danger that the concept of HIA becomes fuzzy
  - different settings, different roles, different users...
  - management by focal organisation will be challenging

National experiences

- Thailand
- Cambodia
- Lao PDR
- Mongolia
- S Korea
- Vietnam
- Philippines
- China

My apologies in advance for any gaps, inaccuracies in facts, interpretation!!
Thailand

- HIA given constitutional and statutory recognition
  - 4 forms/pathways for HIA
- National Health Commission Office
  - to encourage, and advise on, participatory HPP processes, and to support HIA
- Ministry of Health:
  - support government department use of HIA
  - develop HIA for project level use

Comments on Thai experiences

- Strong policy emphasis
  - HIAP, etc.
- Project level: through EIA
  - More of a challenge, but good progress

- Strategic approach by lead group
  - Identified decision-making opportunities
  - Took advantage of “policy window”
  - Worked to get a mandate
  - Established strong community recognition
Cambodia

- HIA policy still awaits approval by National Committee for Environment and Health
- Seeking to get health into EIA process
  - Env Protection & Nat Res Management Law
    - Procedures now recognise “health and public welfare” as issue to be addressed
  - Laws on solid waste management, water pollution, etc.
    - Refer to “public health” as issue
- MoH:
  - Looking to build intersectoral support, practitioner base

Mongolia

- Looking to customise EIA process
  - 2010 procedures refer to EHIA
    - But not a statutory requirement yet
  - Developing guidelines, “learning by doing” with major mining EIAs, etc.
- Other legal pathways to explore:
  - Poisons/haz chems...risk assessment
  - Water: EIA for water resource use
Lao PDR

- 2006 National Policy on HIA
  - Health to be addressed within IEE/EIA for development projects/plans
  - Subject to guidelines from HIA Unit, MoH

Philippines

- Environmental Health Impact Assessment 1997
  - National framework and guidelines
    - Work through EIS system (est 1978)
Vietnam

- Struggle to get health into Law on Env Protection
  - Seen as MoH concern, or H&S
  - ’93 tentative, ’05 none, ’11 decree brings health back into EIA
  - Law being revised...chance to embed?
- HEMA (MoH unit) building HIA
  - Law on infect disease control: role for HIA
  - Working with MoNRE on NEHAP...

S Korea

- Health within EIA system
  - EIA Act ’93 (amended 97, 09)
    - Types of projects include those with clear health concerns
    - Issues to be addressed include “Sanitation and Health”, but also wider determinants
- Strategic level
  - Env Health Act ’08:
    - Framework Act on Env Policy/EIA Act to address impacts of admin plans/develop projects on national health
      - Environ hazard/risk assmt emphasis...
- HIA
  - KIHASA studies: non-mandatde, contribute to decisions, policy making, etc. Stronger social dimension...
  - Health Plan 2020 (’11): HIA included...
Comments

- There is significant progress
  - But of course speed varies!
- National circumstances unique
  - Cannot expect same models to apply, same rate of progress
- All seek to work with EIA systems
  - Varying degrees of success
  - Vary in models of health used
- Policy level less common
  - But may be occurring more widely, just less obvious
  - Different routes available...

Wider considerations

- Institutionalizing HIA is being affected by:
  - organisational cultures
    - public sector institutions, both health and non-health: co-operation or resistance to change?
      - Maybe also political considerations at local, regional and central government level?
  - the level of awareness among bureaucrats of
    - the nature of health determinants, and
    - how decision-making on policies and projects can affect public health
champions/policy entrepreneurs
  - presence of active promoters of HIA, within organisations, and driving the overall HIA development/adoption programme
    - Focal unit essential, and continuity...
    - Seek contacts on other departments
    - Build soft institutions: civil society, Universities, resource developers/business groups, etc....

ongoing resourcing and support
  - need investment of money in support staff, development resources, guidelines, etc.
    - Regional support networks vital...
    - Thai support for ASEAN members significant step

capacity building
  - for practitioners and decision makers

Thank you for listening!
간행물회원제 안내

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▶ 문의처
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6. 기업문화포럼 연구 및 발간목록