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# Health impact assessment legislation in developing countries: A path to sustainable development?

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## Abstract

The sixth Global Environment Outlook argues that the planet is becoming seriously polluted, with huge consequences for the health and wellbeing of people. Legal instruments for assessing and reporting environmental impacts of projects have focused on environment impact assessments (EIAs). However, increasingly health impact assessment (HIA) is being used to emphasize the health dimensions of the environment and sustainable development. This article addresses the question: How can HIA legislation help developing countries to achieve the Sustainable Development Goals (SDGs)? A key aspect of the SDGs is to minimize trade-offs and enhance synergies. This could be to some extent operationalized by HIAs through enhancing synergies on health and reducing trade-offs on health. The article first sketches the relationship between EIAs and HIAs and provides an overview of the global distribution of HIA legislation. Second, it discusses the benefits and challenges of HIA legislation oriented towards sustainable development agendas by gathering lessons learned across the globe and highlighting those relevant to developing countries. The article concludes by sketching how HIA policy can be catalysed and operationalized to achieve the SDGs.

## 1 | INTRODUCTION

Developing countries face higher risks of environmental damage and human health loss from unprecedented urbanization. By 2030, Africa and Asia will have 90 percent of 2.5 billion new urbanites worldwide,<sup>1</sup> with increased risk of disease and death.<sup>2</sup> Annually, 12.6 million deaths are attributable to environmental challenges.<sup>3</sup> With

urbanization, there are urgent reasons to link environment to public health.<sup>4</sup> Urbanized areas concentrate people with higher degrees of vulnerability and exacerbate modern environmental hazards,<sup>5</sup> such as air and noise pollution, greenhouse gas emissions and other forms of environmental degradation. There is an inequitable distribution of environment-related deaths per capita by region and countries. Low- and middle-income countries (LMICs) currently have 80 percent of global non-communicable deaths,<sup>6</sup> 92 percent of pollution-related

<sup>1</sup>United Nations (UN), *World Urbanization Prospects: The 2014 Revision, Highlights* (UN 2014).

<sup>2</sup>H Weisz and JK Steinberger, 'Reducing Energy and Material Flows in Cities' (2010) 3 *Current Opinion in Environmental Sustainability* 185; SA Khan, 'E-products, E-waste and the Basel Convention: Regulatory Challenges and Impossibilities of International Environmental Law' (2016) 25 *Review of European, Comparative and International Environmental Law* 248; World Health Organization (WHO), 'COP24 Special Report: Health and Climate Change' (WHO 2018).

<sup>3</sup>A Prüss-Üstün et al, 'Preventing Disease through Healthy Environments: A Global Assessment of the Burden of Disease from Environmental Risks' (WHO 2016).

<sup>4</sup>J Gupta et al, 'Communicating the Health of the Planet and its Links to Human Health' (2019) 5 *The Lancet Planetary Health* 204; H Frumkin, L Frank and RJ Jackson, *Urban Sprawl and Public Health: Designing, Planning, and Building for Healthy Communities* (Island Press 2004).

<sup>5</sup>CF Corvalán, T Kjellstrom and KR Smith, 'Health, Environment and Sustainable Development: Identifying Links and Indicators to Promote Action' (1999) 10 *Epidemiology – Baltimore* 656.

<sup>6</sup>A Alwan, 'Global Status Report on Noncommunicable Diseases 2010' (WHO 2011).

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deaths<sup>7</sup> and 90 percent of traffic-related deaths,<sup>8</sup> most of which affect the urban poor.

Hence, it is urgent to address environmental exposures leading to adverse effects in countries suffering unequal health burdens. For this, health arguments could be used to support environmental protection.<sup>9</sup> International environmental law supporting the link between health and the environment can be traced back to the 1972 United Nations (UN) Declaration on the Human Environment, which recognized the health dimension of environmental issues.<sup>10</sup> The International Court of Justice also recognized that 'the environment is not an abstraction but represents the living space, the quality of life and the very health of human beings, including generations unborn'.<sup>11</sup>

In the developing world, however, the domestic implementation of environmental treaties has failed to reinforce the synergies between health and environmental objectives.<sup>12</sup> Traditional legal approaches to air pollution, for instance, fail to respond to health threats because of data scarcity and weak mechanisms for ensuring compliance with international norms.<sup>13</sup> International law has also been unable to address the cumulative ecological challenges from the local to the global level, or address those who cause transboundary harm and provide reparation to those who suffer from such harm.<sup>14</sup>

Health impact assessments (HIAs) are increasingly being used as a tool to quantify and assess the impact of ecological damage on human health.<sup>15</sup> HIAs provide a framework to estimate and mitigate health risks through effective measures.<sup>16</sup> Despite the promising potential of HIA,<sup>17</sup> the coverage of HIA legislation across the world remains scarce and scattered.<sup>18</sup> Furthermore, inadequate research on

HIAs in developing countries is a barrier to the advancement of policy and practice.<sup>19</sup> Moreover, the role HIA legislation can play in solving environmental health complexities and its influence on sustainable development, more specifically on the Sustainable Development Goals (SDGs),<sup>20</sup> remains largely unexplored.

Therefore, this article addresses the following question: How can HIA legislation help developing countries to achieve the SDGs? To this end, the article sketches the relationship between environment impact assessments (EIAs) and health; provides an overview of the global distribution of HIA legislation in the world; discusses how legislation can advance HIA practice especially in developing countries; and argues how HIA policy can be catalysed and operationalized to achieve the SDGs.

## 2 | HIA AND THE SUSTAINABLE DEVELOPMENT GOALS

There is increasing interest in how HIA could support the 2030 Agenda for Sustainable Development.<sup>21</sup> This global agenda includes 17 SDGs and 169 targets to be achieved by 2030. SDG3 addresses health: 'Ensure healthy lives and promote well-being for all at all ages.'<sup>22</sup> Health is a cross-cutting concern across 10 out of the remaining 16 goals with 28 health-related targets and 47 health-related indicators.<sup>23</sup>

A key aspect of the SDGs is to minimize trade-offs and enhance synergies between economic, social and environmental challenges. This could be to some extent operationalized by HIAs through enhancing synergies between the health and non-health sectors and reducing trade-offs between addressing health risks and environmental change. The concept of sustainable development plays an important role in considering and promoting change (structural, environmental, etc.) that will not affect future generations. HIAs can help assess and mitigate impacts triggered by policies that are unsustainable. In fact, the Gothenburg consensus paper on HIA states

<sup>7</sup>PJ Landrigan et al, 'The Lancet Commission on Pollution and Health' (2017) 391 *The Lancet* 462.

<sup>8</sup>United Nations Environment Programme (UNEP), 'Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication' (UNEP 2011).

<sup>9</sup>UNEP, *Global Environment Outlook-6* (UNEP 2019).

<sup>10</sup>'Declaration of the UN Conference on the Human Environment' UN Doc A/CONF.48/14 (5 June 1972) 11 *ILM* 1416.

<sup>11</sup>*Nuclear Tests (New Zealand v France)* (Judgment) [1974] ICJ Rep 253 para 63.

<sup>12</sup>W Onzivu, 'Rethinking Transnational Environmental Health Governance in Africa: Can Adaptive Governance Help?' (2016) 25 *Review of European, Comparative and International Environmental Law* 107.

<sup>13</sup>Y Yamineva and S Romppanen, 'Is Law Failing to Address Air Pollution? Reflections on International and EU Developments' (2017) 26 *Review of European, Comparative and International Environmental Law* 189.

<sup>14</sup>Khan (n 2).

<sup>15</sup>SA Osofsky and MJ Pongsiri, 'Operationalising Planetary Health as a Game-Changing Paradigm: Health Impact Assessments are Key' (2018) 2 *The Lancet Planetary Health* 54; B Harris-Roxas et al, 'Health Impact Assessment: The State of the Art' (2012) 30 *Impact Assessment and Project Appraisal* 43; T Diallo et al, 'Is HIA the Most Effective Tool to Assess the Impact on Health of Climate Change Mitigation Policies at the Local Level? A Case Study in Geneva, Switzerland' (2017) 24 *Global Health Promotion* 2.

<sup>16</sup>J Kemm, J Parry and S Palmer, *Health Impact Assessment: Concepts, Theory, Techniques and Applications* (Oxford University Press 2004).

<sup>17</sup>R Banken, 'Strategies for Institutionalizing HIA' (WHO Europe 2001); M Wismar et al, 'The Effectiveness of Health Impact Assessment: Scope and Limitations of Supporting Decision-Making in Europe' (European Observatory on Health Systems and Policy 2007); JH Lee, N Robbel and C Dora, 'Cross-Country Analysis of the Institutionalization of Health Impact Assessment: Social Determinants of Health' (WHO 2013).

<sup>18</sup>N Linzalone et al, 'Institutionalizing Health Impact Assessment: A Consultation with Experts on the Barriers and Facilitators to Implementing HIA in Italy' (2018) 218 *Journal of Environmental Management* 95.

<sup>19</sup>TE Erlanger et al, 'The 6/94 Gap in Health Impact Assessment' (2008) 28 *Environmental Impact Assessment Review* 349; M Winkler et al, 'Untapped Potential of Health Impact Assessment' (2013) 91 *Bulletin of the World Health Organization* 4; M Thondoo et al, 'Systematic Literature Review of Health Impact Assessments in Low and Middle-Income Countries' (2019) 16 *International Journal of Environmental Research and Public Health* 11.

<sup>20</sup>UNGA 'Transforming Our World: The 2030 Agenda for Sustainable Development' UN Doc A/RES/70/1 (25 September 2015).

<sup>21</sup>ibid; see M Joffe, 'The Role of Strategic Health Impact Assessment in Sustainable Development' (2010) 1 *International Journal of Green Economics* 1; J Drewry and R Kwiatkowski, 'The Role of Health Impact Assessment in Advancing Sustainable Development in Latin America and the Caribbean' (2015) 77 *Journal of Environmental Health* 16.

<sup>22</sup>UNGA (n 20) Goal 3.

<sup>23</sup>SS Lim et al, 'Measuring the Health-Related Sustainable Development Goals in 188 Countries: A Baseline Analysis from the Global Burden of Disease Study 2015' (2016) 388 *The Lancet* 1813; K Buse and S Hawkes, 'Health in the Sustainable Development Goals: Ready for a Paradigm Shift?' (2015) 11 *Globalization and Health* 1, 13.

that sustainable development is one of the four ground values that links HIA to the policy environment.<sup>24</sup> In addition to affecting the health of populations, the exposure pathways addressed by HIA are crucial indicators of Agenda 2030, as health itself is a determinant, outcome and indicator of sustainable development.<sup>25</sup> Hence, HIA is important in addressing all health-related goals, including those addressing social and environmental determinants of ill health.

### 3 | ENVIRONMENT IMPACT ASSESSMENTS AND HEALTH

Environment impact assessments (EIAs) are the most developed, recognized, legally binding and institutionalized impact assessment tools affecting environment-related decision making in different countries.<sup>26</sup> Initiated in the 1970s by the National Environmental Policy Act (NEPA)<sup>27</sup> in the United States, the EIA process was an 'action forcing device'<sup>28</sup> requiring project developers to report in writing to decision makers on the expected consequences of a project on the environment. In the Rio Declaration on Environment and Development,<sup>29</sup> the UN Convention on Environmental Impact Assessment<sup>30</sup> and the Draft Articles on Prevention of Transboundary Harm from Hazardous Activities,<sup>31</sup> EIA is recognized as a national instrument assessing activities which can be subject to the decision of the national authority. EIA is also an instrument used in the context of international law based on the International Court of Justice's 2010 judgment in the *Pulp Mills* case.<sup>32</sup> As of 2012, 191 out of 193 UN member countries have a law requiring EIAs.<sup>33</sup>

In promoting 'the widest range of beneficial uses of the environment without degradation, risk to health or safety',<sup>34</sup> EIAs explicitly include the possibility of examining health effects.<sup>35</sup> Various case studies show that EIAs have been used to address the complex

health–environment equation.<sup>36</sup> In developing countries, they were particularly intended to estimate the health impacts of the design, construction and operation of large development projects.<sup>37</sup> Yet, increasing concerns have been raised about their adequacy in responding to health issues.<sup>38</sup> Evidence shows that EIAs inadequately cover health risks and rarely consider health impacts generated by social and economic determinants inducing changes in the built environment.<sup>39</sup> They rarely incorporate the assessment of pathways between environmental exposures and health pathways, do not adopt a systematic approach to health and do not provide information on impacts on different population groups.<sup>40</sup> A review of 42 federal HIAs in the United States shows that 62 percent of EIAs do not mention health impacts while the remaining inadequately support health-related analysis.<sup>41</sup> Similarly, a study from the Republic of Korea reports that across 74 EIA unit projects, health was not properly considered or ignored.<sup>42</sup>

These shortcomings are also reflected in other impact assessments initially designed to anticipate the implications of policies on the environment and health.<sup>43</sup> For instance, the strategic environ-

<sup>36</sup>K Suwanteep, T Murayama and S Nishikizawa, 'Environmental Impact Assessment System in Thailand and its Comparison with those in China and Japan' (2016) 58 *Environmental Impact Assessment Review* 12; BK Dutta and S Bandyopadhyay, 'Environmental Impact Assessment and Social Impact Assessment – Decision Making Tools for Project Appraisal in India' (2009) 5 *World Academy of Science, Engineering and Technology* 39.

<sup>37</sup>N Linzalone et al, 'Health Impact Assessment Practice and Potential for Integration within Environmental Impact and Strategic Environmental Assessments in Italy' (2014) 11 *International Journal of Environmental Research and Public Health* 12683; MS Winkler et al, 'Assessing Health Impacts in Complex Eco-epidemiological Settings in the Humid Tropics: Modular Baseline Health Surveys' (2012) 33 *Environmental Impact Assessment Review* 15.

<sup>38</sup>R Bhatia and A Wernham, 'Integrating Human Health into Environmental Impact Assessment: An Unrealized Opportunity for Environmental Health and Justice' (2008) 116 *Environmental Health Perspectives* 991; P Harris, F Vilianni and J Spickett, 'Assessing Health Impacts within Environmental Impact Assessments: An Opportunity for Public Health Globally Which Must Not Remain Missed' (2015) 12 *International Journal of Environmental Research and Public Health* 1044.

<sup>39</sup>K Davies and B Sadler, 'Environmental Assessment and Human Health: Perspectives, Approaches, and Future Directions' (Office of Environmental Health Assessment Ottawa Canada 1997); PJ Harris et al, 'Human Health and Wellbeing in Environmental Impact Assessment in New South Wales, Australia: Auditing Health Impacts within Environmental Assessments of Major Projects' (2009) 29 *Environmental Impact Assessment Review* 310.

<sup>40</sup>Bhatia and Wernham (n 38).

<sup>41</sup>A Steinemann, 'Rethinking Human Health Impact Assessment' (2000) 20 *Environmental Impact Assessment Review* 627.

<sup>42</sup>I Kim, Y Han and SW Han, 'Introduction Scheme of Health Impact Assessment in Korea' (2007) 16 *Journal of Environmental Impact Assessment* 514.

<sup>43</sup>JM Davies and A Mazumder, 'Health and Environmental Policy Issues in Canada: The Role of Watershed Management in Sustaining Clean Drinking Water Quality at Surface Sources' (2003) 68 *Journal of Environmental Management* 273; P Moy et al, 'Options for Management of Municipal Solid Waste in New York City: A Preliminary Comparison of Health Risks and Policy Implications' (2008) 87 *Journal of Environmental Management* 73; C Silveira et al, 'Assessment of Health Benefits Related to Air Quality Improvement Strategies in Urban Areas: An Impact Pathway Approach' (2016) 183 *Journal of Environmental Management* 694; IK Tetteh, E Frempong and E Awuah, 'An Analysis of the Environmental Health Impact of the Barekese Dam in Kumasi, Ghana' (2004) 72 *Journal of Environmental Management* 183; B Tilt, Y Braun and D He, 'Social Impacts of Large Dam Projects: A Comparison of International Case Studies and Implications for Best Practice' (2009) 90 *Journal of Environmental Management* 249; A Wernham, 'Inupiat Health and Proposed Alaskan Oil Development: Results of the First Integrated Health Impact Assessment/Environmental Impact Statement for Proposed Oil Development on Alaska's North Slope' (2007) 4 *Ecohealth* 500; Harris et al (n 39).

<sup>24</sup>WHO, 'Health Impact Assessment: Main Concepts and Suggested Approach: A Gothenburg Consensus Paper' (December 1999).

<sup>25</sup>UNGA (n 20).

<sup>26</sup>Diallo et al (n 15).

<sup>27</sup>National Environmental Policy Act (NEPA) Pub. L. 91-190, 42 USC 4321–4347 (1 January 1970) §§2–209 (signed 1 January 1970); see AF Wichelman, 'Administrative Agency Implementation of the National Environmental Policy Act of 1969: A Conceptual Framework for Explaining Differential Response' (1976) 16 *Natural Resources Journal* 263.

<sup>28</sup>Banken (n 17).

<sup>29</sup>Rio Declaration on Environment and Development in 'Report of the United Nations Conference on Environment and Development' UN Doc A/CONF.151/26 (vol I) (12 August 1992) Principle 17.

<sup>30</sup>Convention on Environmental Impact Assessment in a Transboundary Context (adopted 25 February 1991, entered into force 10 September 1997) 1989 UNTS 309 (Espoo Convention).

<sup>31</sup>Draft Articles on Prevention of Transboundary Harm from Hazardous Activities in UNGA 'Report of the International Law Commission on the Work of its Fifty-Third Session, 23 April–1 June and 2 July–10 August 2001' UN Doc A/56/10 (2001).

<sup>32</sup>*Pulp Mills on the River Uruguay (Argentina v Uruguay)* (Judgment) [2010] ICJ Rep 14 para 282.

<sup>33</sup>RK Morgan, 'Environmental Impact Assessment: The State of the Art' (2012) 30 *Impact Assessment and Project Appraisal* 5.

<sup>34</sup>TB Fischer and B Cave, 'Health in Impact Assessments – Introduction to a Special Issue' (2018) 36 *Impact Assessment and Project Appraisal* 1.

<sup>35</sup>Diallo et al (n 15).

mental assessment (SEA) has also been reported to insufficiently consider health impacts.<sup>44</sup> In contrast to EIAs, SEAs are legally formalized in very few countries. The development of SEAs was influenced by the European Union (EU) Directive 2001/42<sup>45</sup> and the Espoo Convention's Protocol on SEA,<sup>46</sup> which entered into force in 2010. While SEAs also address explicit environmental issues, they focus on a higher policy or planning level rather than on infrastructural or individual projects. This may be one of the factors complicating the ability of SEAs to address health explicitly and thoroughly; thereby providing space for the emergence of HIA as a solution to environmental health challenges.

## 4 | STATE OF THE ART OF HIA

### 4.1 | HIA: A brief description

An HIA is defined as an assessment process combining mixed methods to judge the potential health effects a proposed policy, programme or intervention might have on different sections of a population.<sup>47</sup> HIAs are elaborated on in several toolkits and guidance documents.<sup>48</sup> HIA processes may differ in type, methodology and form,<sup>49</sup> but following the World Health Organization (WHO), the HIA procedure consists of at least five basic steps: screening, scoping, appraisal, reporting and monitoring.<sup>50</sup> The screening process establishes whether HIA is relevant and needed in a particular policy context or project. The scoping process identifies the key health-related concerns and sets the limits and focus of the assessment. The appraisal process relies on evidence (data on the affected population, prediction, exposure levels and baseline situation) to assess the health impacts. The reporting phase is used to disseminate findings and recommendations for mitigating the negative effects on health. The monitoring phase consists of following existing evidence and patterns and to monitor actual impacts where feasible and appropriate. The process leading to the decision to practice HIA is currently non-standardized and varies based on the actor, the project and level at which one undertakes a HIA.

In LMICs, the main topics covered by HIAs are diverse and include air pollution, construction, development projects, diabetes, excreta management, nutrition, public and green space,

urban transport planning, vaccination, infectious diseases, clinical waste, housing and economic investment programmes.<sup>51</sup> Different pathways affecting exposure to environment pollutants (environmental exposure pathways) and social factors have been examined, for instance access to social services, economic opportunities, adequate housing and healthy nutrition, and strong social cohesion.<sup>52</sup>

### 4.2 | The rise of HIA

The intergovernmental conference of Alma-Ata in 1978, which established that a wide range of non-health determinants should be considered in health policy, provided a strong foundation for the rise of HIA.<sup>53</sup> The conference drove the formal recognition of HIA by the international and scientific community as a valid way of tackling environmental health challenges. HIAs were further promoted in the 1980s with the Ottawa Charter of Health Promotion<sup>54</sup> and were officially defined and framed in the Gothenburg Consensus Paper in 1999.<sup>55</sup> In 2010, Krieger and colleagues published an informative figure featuring the major landmarks of HIA on a 30-year timeline and across regions and sectors.<sup>56</sup> The landmarks were distinguished following HIA development in the public versus the private sector. Public-led initiatives were primarily spurred by the WHO, with the adoption of the Bangkok Charter on Health Promotion (2005), the establishment of the WHO Commission on the Social Determinants of Health (2008) and the release of the WHO Guide for Development Lending and Community Health (2010). By contrast, HIA evolution in the private sector has been led by the World Bank and the International Finance Corporation.

A closer look at these landmarks leads to three important observations on the rise of HIAs. First, the development of HIA policy was driven by public initiatives in high-income countries. Indeed, one of the first formal commitments to HIAs was strengthened by the EU, with the conclusion of the Amsterdam Treaty,<sup>57</sup> which led several countries (including Finland, the Netherlands and Sweden; see Table 1) to develop formal HIA policies.<sup>58</sup> In parallel, non-EU countries such as Australia, Canada, New Zealand,<sup>59</sup>

<sup>51</sup>Thondoo et al (n 19).

<sup>52</sup>B Harris-Roxas and PJ Harris, 'Learning by Doing: The Value of Case Studies of Health Impact Assessment' (2007) 18 *New South Wales Public Health Bulletin* 161.

<sup>53</sup>GR Krieger et al, 'Barbarians at the Gate: Storming the Gothenburg Consensus' (2010) 375 *The Lancet* 2129.

<sup>54</sup>WHO, 'Ottawa Charter for Health Promotion' (1986) 1 *Health Promotion* iii.

<sup>55</sup>WHO (n 24).

<sup>56</sup>Krieger et al (n 53).

<sup>57</sup>F Laursen, *The Amsterdam Treaty: National Preference Formation, Interstate Bargaining and Outcome* (Syddansk Universitetsforlag 2002).

<sup>58</sup>RJ Quigley and LC Taylor, 'Evaluating Health Impact Assessment' (2004) 118 *Public Health* 544.

<sup>59</sup>RK Morgan, 'Institutionalising Health Impact Assessment: The New Zealand Experience' (2008) 26 *Impact Assessment and Project Appraisal* 2.

<sup>44</sup>R Fehr et al, 'Health in Impact Assessments' (WHO Regional Office for Europe 2014).

<sup>45</sup>Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the Assessment of the Effects of Certain Plans and Programmes on the Environment [2001] OJ L197/30.

<sup>46</sup>Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context (adopted 21 May 2003, entered into force 11 July 2010) 2685 UNTS 140.

<sup>47</sup>WHO (n 24).

<sup>48</sup>KA Hebert et al, 'Health Impact Assessment: A Comparison of 45 Local, National, and International Guidelines' (2012) 34 *Environmental Impact Assessment Review* 74.

<sup>49</sup>B Harris-Roxas and E Harris, 'Differing Forms, Differing Purposes: A Typology of Health Impact Assessment' (2011) 31 *Environmental Impact Assessment Review* 396.

<sup>50</sup>WHO (n 24).

Switzerland and the United States, were also practising HIA within formal frameworks.

Second, the advocacy of HIA in developing countries was driven by private industrial corporations and major financial institutions and influenced by the scramble for access to natural resources. Indeed, most HIAs conducted in developing countries focus on large development projects led by the private sector rather than on public initiatives led by local governments.<sup>60</sup> However, HIA has been institutionalized in the Thai constitution<sup>61</sup> and is being incorporated in the Vietnamese Health Action Plan.<sup>62</sup> No standalone HIA policy exists in Laos, Cambodia and Malaysia, but HIA legislation forms part of their EIA processes.<sup>63</sup> In Latin America, only Mexico and Brazil have published national-level guidelines on HIA,<sup>64</sup> but no country in Africa actively promotes or regulates HIAs.<sup>65</sup> HIA activity has been identified in Middle Eastern countries<sup>66</sup> but HIA policy has only been reported in Iran, which has expressed an interest in integrating HIA into its Fifth Economic, Social and Cultural Development Plan.<sup>67</sup>

Third, it is possible that the tension between private and public approaches to HIAs has blurred the leadership components needed for governments to decide on how to introduce HIA via public policies and environmental legislation and how to make companies accountable.

### 4.3 | HIA legislation in the world

The global distribution of HIA is uneven. In several countries, HIAs are now required by law, either as stand-alone processes, or as part of the EIA process (see Table 1). Some countries considered as pioneers in the field of HIA do not have formal HIA legislation but have published national guidelines and frameworks to facilitate the practice of HIA. Table 1 shows that while many high-income countries have adopted some form of HIA legislation (17 countries), very few LMICs have done so (eight countries). The table is adapted from previous studies.<sup>68</sup>

<sup>60</sup>Harris-Roxas et al (n 15).

<sup>61</sup>D Sukkumnoed et al, 'Health Impact Assessment Training Manual: A Learning Tool for Healthy Communities and Society in Thailand, Southeast Asia, and Beyond' (Health Systems Research Institute 2007).

<sup>62</sup>N Kessomboon, 'Health Impact Assessment (HIA) Development in ASEAN Community' (US Mission to ASEAN 2017).

<sup>63</sup>Winkler et al (n 19); E Kang, HJ Park and JE Kim, 'Health Impact Assessment as a Strategy for Intersectoral Collaboration' (2011) 44 *Journal of Preventive Medicine and Public Health* 201.

<sup>64</sup>CAR Pereira et al, 'Health Impact Assessment in Latin American Countries: Current Practice and Prospects' (2017) 65 *Environmental Impact Assessment Review* 175.

<sup>65</sup>D Tetteh and L Lengel, 'The Urgent Need for Health Impact Assessment: Proposing a Transdisciplinary Approach to the e-Waste Crisis in Sub-Saharan Africa' (2017) 24 *Global Health Promotion* 35.

<sup>66</sup>Thondoo et al (n 19).

<sup>67</sup>A Fakhri, P Harris and M Maleki, 'Proposing a Framework for Health Impact Assessment in Iran' (2015) 15 *BMC Public Health* 335.

<sup>68</sup>Winkler et al (n 19); Pereira et al (n 64); D Caussy, P Kumar and U Than Sein, 'Health Impact Assessment Needs in South-East Asian Countries' (2003) 81 *Bulletin of the World Health Organization* 439; JR Kemm, *Health Impact Assessment: Past Achievement, Current Understanding, and Future Progress* (Oxford University Press 2013).

There has been some reasoning on the contextual and administrative factors that may hinder the introduction of legal provisions for HIA. Some of them include the lack of knowledge and low training capacity in HIA practitioners, limited technical guides and frameworks for best practice, lack of operational tools, data limitations, and blurriness on HIA utility and use.<sup>69</sup> As mentioned in Section 2.1, although the WHO has suggested a five-step process for a basic HIA, referred to as common HIA standards, there is still variation in the modalities to conduct a HIA. This inconsistency in practice is commonly reported in EIAs, but unlike HIAs, the lack of uniformity in EIA practice is not complemented by weak policy coverage. The core issue for HIAs hence remains that developing countries, claiming the highest fraction of death and disease avoidable by environmental improvement<sup>70</sup> – that is, countries who are most in need of HIAs – are not conducting them.

### 4.4 | The implications of the HIA policy vacuum in developing countries

The lack of HIA legislation in developing countries is a major barrier to the advancement of the field. About 94 percent of all HIAs are conducted in high-income countries.<sup>71</sup> In an increasingly globalized world, where poor countries are often the factories of the rich countries or where they are at the receiving end of ecological damage caused for example by climate change, the lack of HIA legislation may exacerbate their vulnerability. If HIAs are not conducted, countries may build infrastructure that increasingly threatens health. Additionally, resource-constrained countries cannot benefit from crucial HIA outcomes that can avert negative economic and social consequences.

The presence of national legislation can boost HIA practice and lead to successful regulation of HIA implementation.<sup>72</sup> Because HIAs can predict the health impact of public policies before they are framed and implemented, it is crucial for emerging economies to step up HIA implementation and increase their ability to cope with environmental disasters faster and more efficiently. The premature deaths caused by exposure to air pollution have been estimated at 9 million global premature deaths per year,<sup>73</sup> but the health burden and impacts of other exposures such as climate change, especially in developing countries, are still difficult to predict and estimate.<sup>74</sup>

<sup>69</sup>Linzone et al (n 18).

<sup>70</sup>Prüss-Ustün et al (n 3).

<sup>71</sup>Erlanger et al (n 19).

<sup>72</sup>AL Dannenberg, 'Peer Reviewed: Effectiveness of Health Impact Assessments: A Synthesis of Data from Five Impact Evaluation Reports' (2016) 13 *Preventing Chronic Disease*; Banken (n 17); Lee et al (n 17); Wismar et al (n 17).

<sup>73</sup>Landrigan et al (n 7).

<sup>74</sup>WHO (n 2).

TABLE 1 Countries with HIA legislation

Developing country	L/G/F	SA/I	N/SN	Name of legislation/guideline/framework
Brazil	G	-	N	Avaliacao de impacto a saude AIS: metodologia adaptada para aplicacao no Brasil (2014) <sup>a</sup>
Cambodia	L	I	N	Law on Environmental Protection and Natural Resources Management (1996)
China	F	-	N	National Environment and Health Action Plan (2005–2015) <sup>b</sup>
India	G	-	N	Draft National Health Bill (2009) <sup>c</sup>
Iran	L	SA	N	Law on the Fourth Five-Year Economic, Social and Cultural Development Plan of the Islamic Republic of Iran (2004–2009)
Laos	L	I	N	National Environmental Action Plan (1993)
Malaysia	L	I	N	Environmental Quality Act (1974)
Mexico	G	-	N	Analysis de impacto en salud (2012) <sup>d</sup>
Mongolia	L	I	N	Law on Environmental Impact Assessment (1998)
Philippines	L	I	N	Code on Sanitation of the Philippines and the Inter-Agency Committee on Environmental Health (1991)
South Africa	G	I	N	Environmental Health Impact Assessment in South Africa (2010)
Thailand	L	SA	N	Thai Constitution (2007) and the National Health Act and the Enhancement and Conservation of National Environmental Quality Act (1992)
Vietnam	L	I	N	Law on Environmental Protection (2014)
Developed country	L/G/F	SA/I	N/SN	Name of legislation/guideline/framework
Australia	L	I	N	National Framework for Environmental and Health Impact Assessment in the National Environmental Health Strategy (1999)
Canada	L	I	N	Impact Assessment Act (2019)
Denmark	L	I	N	EIA Directive (2014) and SEA Directive (2011)
Estonia	F	-	SN	Healthy Cities Network (2012) <sup>e</sup>
Finland	L	SA	N	Constitution Act of Finland (1999)
France	L	SA	N	Law 2004-806 on Public Health Reform (2004)
Germany	L	SA	SN	Public Health Service Act (1997)
Ireland	G	-	N	Health Impact Assessment Guidance (2009) <sup>f</sup>
Italy	L	I	N	Comitato Interministeriale per la Programmazione Economica CIPE (2011)
Lithuania	L	SA	N	Law on Public Health Care of the Republic of Lithuania (2002)
Netherlands	L	SA	N	Public Health Decree (2008)
New Zealand	L	I	N	Resource Management Act (1991)
Norway	L	SA	N	Norwegian Public Health Act (2011)
Slovakia	L	SA	N	Public Health Act (2007) and the Ministry of Health Ordinance (2014)
South Korea	L	I	N	Impact Assessment Act (2005)
Spain	L	SA	N	National Law 33 on Public Health (2011)
Sweden	L	I	N	Public Health Objectives (2002)
Switzerland	L	SA	SN	National Health Service Act (2006)
United Kingdom	G	-	N	Health Impact Assessment: Evidence on Health (2010) <sup>g</sup>
United States	L	I	N	National Environmental Policy Act (1970)

L = Legislation; G = Guideline; F = Framework; SA = Stand-alone; I = Integrated in EIAs; N = National; SN = Subnational.

<sup>a</sup>Pereira et al (n 64).

<sup>b</sup>LY Chan, CY Chan and Y Qin, 'The Effect of Commuting Microenvironment on Commuter Exposures to Vehicular Emission in Hong Kong' (1999) 33 Atmospheric Environment 1777; Z Huang, 'Health Impact Assessment in China: Emergence, Progress and Challenges' (2012) 32 Environmental Impact Assessment Review 45.

<sup>c</sup>A Kumar et al, 'Health Impact Assessment in India: Need of the Hour' (2011) 9 Journal of Third World Medicine 1.

<sup>d</sup>Pereira et al (n 64).

<sup>e</sup>G Gulis et al, 'Strengthening the Implementation of Health Impact Assessment in Latvia' (WHO Regional Office for Europe, 2012).

<sup>f</sup>O Metcalfe, C Higgins and T Lavin, 'Health Impact Assessment Guidance' (Institute of Public Health in Ireland 2009).

<sup>g</sup>Environmental Protection Agency, 'Report: Investigation into the Assessment of Health Impacts within National Environmental Regulation Processes' (EPA 2015).

Further, HIAs enable the assessment of health effects across different sectors and policies.<sup>75</sup> Therefore, the establishment of legislation can allow for HIAs to be integrated in key processes that inform both public policies and private projects. There is growing evidence that developing countries are in need of anticipating and proactively managing project-related health impacts, particularly in the extractive sector.<sup>76</sup> Without HIA legislation, developing countries will continue to conduct large private projects without the regulatory capacity to tackle a broad range of adverse health effects, such as high incidence rates of sexually transmitted infections, pollution of drinking water or elevated transmission of vector-borne diseases.

Last but not least, HIAs legislation can support developing countries in achieving health across different population groups (health equity) and within larger operational frameworks such as the 'Health in All Policies' (HiAP) approach.<sup>77</sup> HiAP is one of the most widely recognized approaches in public health. The WHO defines HiAP as an approach to increase accountability of policymakers for health impacts at all levels of policymaking. It underlines that public policies have consequences on health systems and on determinants of health; HiAP also contributes to sustainable development.<sup>78</sup> At the international level, the adoption of the HiAP approach<sup>79</sup> underlined a general consensus that policymakers, project leaders, stakeholders, practitioners and regulators should consider all risks and benefits of interventions likely to affect health and its determinants.<sup>80</sup> It facilitates synergies across non-health sectors in order to improve population health and health equity.<sup>81</sup> In Switzerland,<sup>82</sup> for instance, HiAP was recognized as a paradigm that could help advance the productive feedback loop between HiAP and HIA applications.<sup>83</sup> Similarly, HiAP approaches operationalized by HIA can ensure far-reaching effects of environmental protection in developing countries.

## 5 | HIA LEGISLATION: AN OPPORTUNITY FOR DEVELOPING COUNTRIES TO ACHIEVE THE SUSTAINABLE DEVELOPMENT GOALS?

Literature supports HIA as an effective tool to help achieve SDGs. In Burkina Faso, Ghana, Mozambique and Tanzania, Winkler and colleagues show that HIA can contribute to mitigating the health impacts of natural resource extraction projects in relation to eight different SDGs: SDG1 (No poverty), SDG2 (Zero hunger), SDG3 (Good health and wellbeing), SDG4 (Quality education), SDG5 (Gender equality), SDG6 (Clean water and sanitation), SDG10 (Reduced inequalities) and SDG16 (Peace, justice and strong institutions).<sup>84</sup> Authors examining the Latin American region also promote HIAs for sustainable development projects; they provide examples from Mexico, Brazil and Peru, where HIAs address SDG-related targets such as air contamination, infectious disease, human migration, wastewater reuse and mining.<sup>85</sup> Finally, Ramirez-Rubio and colleagues describe HIAs conducted in Mozambique, Bolivia, Mauritius and Morocco within the context of 15 SDGs directly (SDGs 2 and 11) and indirectly related to urban health (SDGs 1–2, 4–10, 12–13 and 16–17).<sup>86</sup> These case studies highlight the importance of HIA practice in the context of SDGs. They mandate further reflection on the benefits that HIA legislation would have for developing countries aiming to achieve them by 2030.

### 5.1 | Benefits of HIA legislation for developing countries in the context of SDG achievement

There are various benefits of HIA legislation for developing countries. First, HIA legislation encourages an integrative approach necessary to achieve the SDGs. Developing countries can benefit greatly from HIA's ability to gear decisions towards cross-cutting health issues and social sensitivities in non-health sectors. HIA legislation can also address the root causes of health and environmental disparities while accounting for sustainability-driven agendas.<sup>87</sup> Evidence shows that HIA legislation can address obstacles to development by fostering partnerships and inter-sectoral collaboration crucial for capacity building and strengthening of technical skills. Studies from the United States show that HIAs lead to evidence-based decision making and improve collaboration among stakeholders from different sectors and from different backgrounds.<sup>88</sup> HIA is promoted for its capacity to address multiple exposures and diverse health effects to influence policies and

<sup>75</sup>TH de Sá et al, 'Health Impact Modelling of Different Travel Patterns on Physical Activity, Air Pollution and Road Injuries for São Paulo, Brazil' (2017) 108 *Environment International* 22.

<sup>76</sup>MS Winkler et al, 'Baseline Health Conditions in Selected Communities of Northern Sierra Leone as Revealed by the Health Impact Assessment of a Biofuel Project' (2014) 3 *International Health* 232; AM Knoblauch et al, 'Experience and Lessons from Health Impact Assessment Guiding Prevention and Control of HIV/AIDS in a Copper Mine Project, Northwestern Zambia' (2017) 6 *Infectious Diseases of Poverty* 114.

<sup>77</sup>J Simos et al, 'The Role of Health Impact Assessment in Phase V of the Healthy Cities European Network' (2015) 30 *Health Promotion International* 71.

<sup>78</sup>WHO, 'Health in All Policies (HiAP) Framework for Country Action' (WHO 2014) <<https://www.who.int/healthpromotion/hiapframework.pdf>>.

<sup>79</sup>L Rudolph et al, 'Health in All Policies: A Guide for State and Local Governments' (American Public Health Association 2013); T Ståhl et al, 'Health in All Policies: Prospects and Potentials' (Finnish Ministry of Social Affairs and Health 2006).

<sup>80</sup>Winkler et al (n 19); MJ Nieuwenhuijsen, 'Urban and Transport Planning, Environmental Exposures and Health – New Concepts, Methods and Tools to Improve Health in Cities' (2016) 15 *Environmental Health* 38.

<sup>81</sup>Ståhl et al (n 79).

<sup>82</sup>T Mattig et al, 'HIA in Switzerland: Strategies for Achieving Health in All Policies' (2015) 32 *Health Promotion International* 149.

<sup>83</sup>L den Broeder et al, 'Community Participation in Health Impact Assessment: A Scoping Review of the Literature' (2017) 66 *Environmental Impact Assessment Review* 33.

<sup>84</sup>MS Winkler et al, 'Health Impact Assessment for Promoting Sustainable Development: The HIA4SD Project' (2020) 38 *Impact Assessment and Project Appraisal* 225.

<sup>85</sup>Pereira et al (n 64); Drewry and Kwiatkowski (n 21).

<sup>86</sup>O Ramirez-Rubio et al, 'Urban Health: An Example of a "Health in All Policies" Approach in the Context of SDGs Implementation' (2019) 1 *Globalization and Health* 1.

<sup>87</sup>E Sanz Tolosana, 'Reduciendo las Desigualdades Sociales en Salud: El Uso de la Evaluación de Impacto en Salud en las Áreas Rurales' (2015) 24 *Saúde Social* 515.

<sup>88</sup>AL Dannenberg et al, 'Use of Health Impact Assessment in the US: 27 Case Studies, 1999–2007' (2008) 34 *American Journal of Preventive Medicine* 241; Dannenberg (n 72).

actions.<sup>89</sup> HIAs can also be applied at different levels (project, local, national and regional) and in various policy sectors.<sup>90</sup> In China, HIA has been recommended to address the inadequacies of weak health protection and promotion in the face of the escalating emergence of environmental pollutants (SDG11) and health inequality (SDG10).<sup>91</sup> In India, HIA has been promoted to decrease negative impacts of urban transportation on health,<sup>92</sup> but also to increase the impacts of community health practices.<sup>93</sup> In different countries in Africa, HIAs have been used for addressing the health and socio-economic effects of the e-waste crisis<sup>94</sup> and expansion of the extractive industry.<sup>95</sup>

Second, developing countries can benefit from HIA legislation promoting regulatory HIAs. Such HIAs involve regulatory (as opposed to voluntary) approaches integrating HIA into existing EIA processes. Existing EIA statutes provide procedural rules and legal levers for HIA practice. Countries such as Australia, Canada and the United States have developed official guidance for regulatory HIAs (see Table 1).<sup>96</sup> Evidence shows that regulatory HIAs facilitate community engagement in government decision making and provide a firm base for the involvement of a range of institutions and the engagement of various sectors in the protection of health.<sup>97</sup> Decision makers have access to information on the health, environmental and economic impacts of a project through one process and at one point in time to better inform project approval.<sup>98</sup> Studies from Australia<sup>99</sup> and Canada<sup>100</sup> report that regulatory HIAs promote interdisciplinary work and successfully bring health determinants into non-health policy agendas. When considering the SDGs, it is worth considering HIA/EIA integrated practice as it would involve stronger collaboration between agencies responsible for EIAs and public health as well as technical staff engaged in examining potential health effects of sustainability-related projects and policies.

Third, HIA legislation can lead to economic savings for initiatives connected to the SDGs. HIAs estimate health costs attributable to changes in built environments or systems by undertaking cost analysis and providing financial estimates.<sup>101</sup> When well-conducted, HIAs facilitate the uptake of cost evaluation outcomes by policymakers. This is of particular relevance in developing countries, where pollution-related diseases drain nearly 7 percent of the proportion of GDP attributed to health compared to only 1.7 percent in high-income countries.<sup>102</sup> A HIA in São Paulo showed that if the city could diminish air pollution from particulate matter (PM<sub>2.5</sub>) by 5 g/m<sup>3</sup>, this could lead to a cost saving of US\$4.96 billion annually in health costs.<sup>103</sup> HIAs reveal that air pollution abatement to meet WHO standards would save up to approximately US\$114 billion in 13 Chinese cities.<sup>104</sup> Increasingly, HIAs of urban planning and transport (SDG11) are mandated by cities and governments in developing countries.<sup>105</sup> One study reports that the economic development of transport will cause an additional 51,000 extra hospital admissions and more than 850,000 restricted activity days in India.<sup>106</sup> These studies show that by attributing economic values to health effects, HIAs are practical and helpful to estimate advances made in different indicators relevant to sustainable development.

## 5.2 | Challenges of HIA legislation for developing countries in the context of SDG achievement

There are various challenges of HIA legislation for developing countries. First, countries with HIA legislation promoting stand-alone HIAs (voluntary HIAs) face challenges caused by the lack of uniformity in HIA practice. Reviews from the United States show that voluntary HIAs vary significantly in purpose, scope and focus.<sup>107</sup> Similarly, a case study evaluation across five European countries (France, Hungary, Italy, Spain and the United Kingdom) highlights that the most recurrent problem in the practice of HIA is related to its unclear voluntary status; this creates reluctance to apply, unfamiliarity with the methodology and the perception that HIA is an added burden.<sup>108</sup> HIAs are often conducted without clear elaboration of the theoretical framework(s) guiding their implementation, the set of analytic methods chosen and without interdisciplinary expertise. It is also

<sup>89</sup>Osofsky and Pongsiri (n 15); N Krieger et al, 'Assessing Health Impact Assessment: Multidisciplinary and International Perspectives' (2003) 57 *Journal of Epidemiology and Community Health* 659; Harris-Roxas and Harris (n 52); Nieuwenhuijsen (n 80).

<sup>90</sup>Harris-Roxas and Harris (n 52); A de Blasio, G Giran and Z Nagy, 'Potentials of Health Impact Assessment as a Local Health Policy Supporting Tool' (2011) 132 *Perspectives in Public Health* 216; Simos et al (n 77).

<sup>91</sup>L Wu, S Rutherford and C Chu, 'The Need for Health Impact Assessment in China: Potential Benefits for Public Health and Steps Forward' (2011) 31 *Environmental Impact Assessment Review* 420.

<sup>92</sup>V Conti and A Mahendra, 'Assessments of Health Impacts of Transportation Projects in an Urban Indian Context' (2014) 2452 *Transportation Research Record* 81.

<sup>93</sup>J Gaber and S Kapur, 'Health Impact Assessments in India: Exploring a Possible Community Health Policy Innovation' (2014) 5 *Indian Journal of Public Health Research and Development* 276.

<sup>94</sup>Tetteh and Lengel (n 65).

<sup>95</sup>Winkler et al (n 76); J Utzinger et al, 'Community Health Outreach Program of the Chad-Cameroon Petroleum Development and Pipeline Project' (2004) 4 *Clinics in Occupational and Environmental Medicine* 9.

<sup>96</sup>Bhatia and Wernham (n 38).

<sup>97</sup>Dannenberg (n 72); Wernham (n 43).

<sup>98</sup>E Peterson and T Kosatsky, 'Incorporating Health into Environmental Assessments in Canada' (2016) 59 *Environmental Health Review* 4.

<sup>99</sup>JSF Wright, 'HIA in Australia' in Kemm et al (n 16) 224.

<sup>100</sup>M Orenstein et al, 'Case Study of an Integrated Assessment: Shell's North Field Test in Alberta, Canada' (2010) 28 *Impact Assessment and Project Appraisal* 147.

<sup>101</sup>TJ Mansfield and J MacDonald Gibson, 'Estimating Active Transportation Behaviors to Support Health Impact Assessment in the United States' (2016) 4 *Frontiers in Public Health* 63.

<sup>102</sup>R Roy, 'The Cost of Air Pollution in Africa' (OECD 2016).

<sup>103</sup>K Camasmie Abe and SG El Khouri Miraglia, 'Health Impact Assessment of Air Pollution in Sao Paulo, Brazil' (2016) 13 *International Journal of Environmental Research and Public Health* 7.

<sup>104</sup>D Sun, J Fang and J Sun, 'Health-Related Benefits of Air Quality Improvement from Coal Control in China: Evidence from the Jing-Jin-Ji Region' (2018) 129 *Resources, Conservation and Recycling* 16.

<sup>105</sup>VH Vu et al, 'Application of GIS and Modelling in Health Risk Assessment for Urban Road Mobility' (2013) 20 *Environmental Science and Pollution Research* 5138.

<sup>106</sup>Conti and Mahendra (n 92).

<sup>107</sup>Dannenberg et al (n 88).

<sup>108</sup>Simos et al (n 77).

challenging to assess HIA influence on policymaking and concrete opportunities for stakeholder participation.<sup>109</sup> Finally, the conditions and prerequisites for ensuring HIA effectiveness in differing situations have been difficult to define.<sup>110</sup> If developing countries are to develop national legislation in the context of the SDGs, they will need to consider the limitations triggered by high variability in HIA practice. Lessons learned from European countries such as Finland and Sweden can be helpful, as they have applied stand-alone HIAs from the start despite having strong EIA histories (see Table 1).<sup>111</sup> The experiences in these countries have been helpful in establishing the requirements defining whether HIA should be conducted and how to ensure their effectiveness in particular situations.

Second, appropriate HIA legislation requires a solid understanding of the distribution of power within systems. An effective legislative framework in developing countries needs to tackle the issue of power: health integration depends on the unequal distribution of power between governments, project proponents, civil society and special interest groups. Health is more or less likely to be considered depending at which hierarchical level decisions are made and who bears the cost. For instance, integration of health considerations may differ if decisions are taken at the programme or at the policy level. The implications and possibility for communities to be looped in on the activities of public health and environmental authorities (see SDG16, Participatory decision making) are also important to consider by HIA practitioners or stakeholders mandating HIAs. In sum, the way that responsibilities and tasks are distributed at national, regional and local administration levels can complicate how and who should handle health issues.<sup>112</sup> A study from Australia and New Zealand shows that HIAs are not being conducted because stakeholders have a misconception that HIA costs a lot more than what it actually achieves<sup>113</sup> and that there is lack of clarity about who bears the costs and who benefits. In general, the company or stakeholder may bear the costs and the public may benefit; alternatively, if the company or stakeholder does not bear the costs, the public may suffer.

Third, if HIA legislation is established in developing countries, institutional capacity as well as the technical ability of the system need to be adapted. The capacity of a system to deal with cross-cutting determinants of health (social, environmental, economic, etc.) is critical. Factors such as tradition, administration and existing standard operation procedures may hinder such integration. Moreover, the lack of technical capacity, especially when addressing SDGs, can cause an important mismatch between policy frameworks and policy objectives, which in the long term can hinder health objectives. It is

crucial to keep in mind that a key aspect of the SDGs is to minimize trade-offs and enhance synergies. This could be to some extent operationalized by HIAs through enhancing synergies between health and non-health institutions and reducing trade-offs between health risks and the resources needed to increase technical capacities. For instance, these trade-offs can be minimized across different goals and targets. With the use of HIA, it is possible to level population health parameters (such as the number of hospitalizations per disease) with environmental exposure parameters (such as air pollution levels). This underlines the importance of HIA monitoring, which enables following up on previous impacts and factors that may change business-as-usual scenarios. If the SDGs are operationalized by HIAs, it may become possible to increase and monitor knowledge and data on interventions that directly or indirectly affect health and sustainability.

### 5.3 | Design issues in HIA legislation

When considering the future of HIA legislation in developing countries, several issues emerge on the design of such law: should HIA be mandatory or voluntary; for what types of projects, policies or interventions; led by whom; and who should pay? The HIA legislation in Thailand provides an interesting example on how a comprehensive HIA legal framework has been framed and institutionalized in a developing country seeking to implement HIAs favouring sustainable and citizen-oriented goals.

In Thailand, HIA legislation was incorporated in the National Health Act,<sup>114</sup> one of the few Thai laws resulting from a large citizen participation process (more than 400,000 people joining general and specific public hearings and provincial assemblies).<sup>115</sup> In the draft law submitted to the National Health System Reform committee, HIA was addressed as follows: 'guidelines and measures to establish the healthy public policy and the process of HIA from the public policy, aimed at joint learning of all sectors in the society, through the sufficient academic utilization, with the transparent and accountable mechanism'.<sup>116</sup> The draft also asserts that 'the right of Thai people to participate in accessing the information, suggesting, performing, using the assessment outputs and making decision on the approval and permission of the policy implementation and crucial projects that may have an impact on health'.<sup>117</sup>

<sup>109</sup>den Broeder et al (n 83).

<sup>110</sup>B Harris-Roxas and E Harris, 'The Impact and Effectiveness of Health Impact Assessment: A Conceptual Framework' (2013) 42 *Environmental Impact Assessment Review* 51.

<sup>111</sup>Kemm et al (n 16); Bhatia and Wernham (n 38).

<sup>112</sup>Fischer and Cave (n 34).

<sup>113</sup>F Haigh et al, 'The Effectiveness of Health Impact Assessment in Influencing Decision-Making in Australia and New Zealand 2005-2009' (2013) 13 *BMC Public Health* 1188.

<sup>114</sup>Thai National Health Act B.E. 2550 (2007).

<sup>115</sup>A Jindawatthana, S Pengkam and D Sukkumnoed, 'HIA in Law: The First Step of HIA in Thailand' (2007) 16 *Journal of Health Science* 662.

<sup>116</sup>Thai National Health Act (n 114).

<sup>117</sup>National Health System Reform Committee, 'The Draft Law of National Health as a Thais' Health Constitution' (Health System Reform Office 2002) Section 67.

There are three sections addressing HIA in the Health Act<sup>118</sup> with the intention of shaping HIA as a social learning framework, that is, available for all stakeholders in the society to examine the health impacts of policy, project or activity that may affect people. There are four ways HIA applications can be submitted and supported by law. First, actors from different health assemblies and social movements can apply HIA for policy formulation even for issues not required by law. Second, the use of HIA can be supported by the health commission office to be submitted to the cabinet. Third, individuals from civil society can demand HIAs through public policy monitoring platforms. Finally, the National Health Commission has the authority and function, according to Section 25 (see box 1), to set up the policy monitoring system for health impacts, and support the application of HIA before any decision is made.

By grounding legislation into citizen rights and public participation as core values of HIA, the Thai case shows a potential way forward. Some procedural challenges are bypassed by formalizing the process of data distribution and information availability to the public. Also, by providing the right to individuals and groups to request an assessment and to participate herein, the law is less subject to tensions between public and private approaches. Furthermore, concentrating the law on HIA makes it possible for stakeholders to tap into the benefits of voluntary HIAs, such as bypassing the high levels of procedural rigidity dominating the EIA process. Because there are different entry points for requesting HIAs, the Thai legislation is supportive of feedback loops that are sensitive to contexts where policy and governance systems are quickly changing. Additionally, by involving the National Health Commission centrally, the law provides a consistent level of political support to HIA practice – a crucial factor to successful implementation.<sup>119</sup>

The Thai HIA legislation affords the opportunity to discuss contested issues and implications for HIA policy and practice in different developing countries. The first issue relates to health impact thresholds that would make a HIA mandatory under all circumstances. The emergence of transboundary threats to health such as climate change and air pollution requires that countries adopt environmental policies addressing health risks within, but also beyond their territories. HIAs provide not only the tool but also the platform to address risks such as air pollution that can no

longer be perceived as a purely local or regional issue.<sup>120</sup> The globalizing nature of health risks will only grow as distant sources from different continents contribute to local deaths and disease. The 2020 COVID-19 outbreak is an illustrative example of the complexities and far-reaching impacts of health at national and global levels.

The second issue is related to HIA costs. Even if adequate HIA legislation is in place, who will pay for the HIA? So far, most HIAs in developing countries have been undertaken by experts that have found the necessary resources through their own organization. Legislation can extend the practice to public bodies, but this would mean that they would need to commission their own HIA and use their own staff to conduct them. To make HIA practice sustainable, it would be favourable that proposers of commercial or development projects pay for their own assessment, as it is currently done in EIA, but this funding mechanism would need to be clarified for statutory HIAs.

The final non-addressed issue lies in the question of monitoring HIA outcomes. So far, no concrete steps have been taken to monitor the advancement of HIA across nations. It may be effective to introduce an SDG-related indicator on whether countries legislate and use HIA so as to best monitor and evaluate the local, regional and international benefits of HIA. Establishing an SDG indicator would not make HIA mandatory for all nations, but could formalize national and international intentions towards safeguarding the health of people and the planet.

## 6 | CONCLUSION

The crossroads between health and environmental law presents a valuable opportunity to address the limitations of environmental policies. As global urbanization progresses, countries without HIA legislative frameworks face an acute risk of morbidity and mortality while getting locked into unsustainable systems. Countries show important variation in the coverage, timing and form characterizing HIA policy. This article exposes the urgent need for HIA legislation in developing countries, and displays how the process can be catalysed and operationalized in order to achieve the SDGs.

SDG-driven HIA legislation in developing countries can mitigate trade-offs between health and environmental change and enhance synergies between different goals and sectors. HIAs provide opportunities to make economic savings while also using existing frameworks such as EIAs to advance public health. The challenges of establishing HIA legislation lie in a lack of uniformity in HIA practice, the complexity of power distribution when addressing health and the implications of weak institutional capacity. The design of future HIA legislation in developing countries needs to address core issues triggered by transboundary health threats and funding gaps. With adequate

<sup>118</sup>Text on health impact assessments in the Thai National Health Act (n 114): Section 10: In the case where there exists an incident affecting health of the public, a State agency having information related to such incident shall expeditiously provide and disclose such information and the protection thereof to the public. Section 11: An individual or a group of people has the right to request for an assessment and participating in the assessment of health impact resulting from a public policy. An individual or a group of people shall have the right to acquire information, explanation and underlying reasons from state agency prior to a permission or performance of a programme or activity which may affect his or her health or the health of a community, and shall have the right to express his or her opinion on such matter. Section 25: (5) National Health Commission (NHC) shall have powers and duties to prescribe rules and procedure on monitoring and evaluation in respect of national health system and the impact on health resulting from public policies, both in the level of policy making and implementation.

<sup>119</sup>AL Dannenberg et al, 'Growing the Field of Health Impact Assessment in the United States: An Agenda for Research and Practice' (2006) 96 *American Journal of Public Health* 262.

<sup>120</sup>H Akimoto, 'Global Air Quality and Pollution' (2003) 302 *Science* 1716.

legislative frameworks, HIAs may enable developing countries to sprint towards achieving Agenda 2030 while safeguarding the health of people and the planet.

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