INDOOR AIR POLLUTION AND HEALTH FORUM NEPAL

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Human Rights Based Approach to Health and Environment:

A TOOL FOR CONFRONTING INDOOR AIR POLLUTION (IAP)

Human Rights violations are not necessarily limited to physical torture, detention of innocents and direct restriction of fundamental rights. Protection and respect of human rights requires ensuring the implementation of both substantive and procedural rights as per statutory provisions.

A clean environment – whether indoor or ambient – is functionally related in many ways with public health and human rights. Situations that force people to live in an extremely polluted environment violate the basic rights such as right to live in a clean environment and the right to good health. Ideally, public health programmes promote human rights by creating an enabling situation where people can enjoy their participatory rights in environmental management.

Major human rights treaties address the right to better health, yet concern for environmental rights in the same treaties is lacking. For example, the main international treaty on the right to health, ICESCR (International Covenant on Economic, Social and Cultural Rights), mentions the word "environment" at a single place, in the context of industrial hygiene (Art 12(2b)). The Universal Declaration of Human Rights ignores the concept completely, as does the CEDAW (Convention on the Elimination of All Forms of Discrimination against Women). On the other hand, the linkages between the environment and human rights have been affirmed in many international environmental and human rights instruments. Article 1 of Declaration of the United Nations Conference on the Human Environment (also known as Stockholm Declaration) explicitly asserts that aspects of people's environment that is essential to their well-being and thier enjoyment of basic human rights. Subsequently, several links between the environment and human rights were developed in the Vienna Declaration at the World Conference on Human Rights, 1993 (Article 11, 36) and the Rio Declaration (Principle 1) Agenda 21 (Chapters 7, 25 and 26). Additionally, the Millennium Declaration obliges on both environment and human rights (Chapters IV and V).

Nepal is one among the very few countries where environment and health rights are clearly stated as fundamental rights in the constitution. Article 16 (1) of the Interim Constitution of Nepal guarantees a fundamental right to live in clean environment while Article 16 (2) stipulates that every citizen shall have the right to basic health services for free as prescribed by the state law. Inclusion of these rights in the interim constitution provides an added legitimacy to advocate for both substantive and procedural rights of several environmental health related issues, including Indoor Air Pollution (IAP) which is so far neglected by the state as well as the international community.

About 85 per cent of households in Nepal that use solid fuels have recorded a maximum level of indoor air pollution nearly 15 times higher than the WHO set indoor air quality standard of 50 $\mu g/m^3$ for particulate matter. These WHO environmental guidelines and standards do not have adequate legal binding at national levels. However, these guidelines can be used to define the content of substantive environmental rights and contextualise abuse of these rights. Substantive rights cannot be fully entertained unless the procedural rights are genuinely addressed. At this point, procedural rights form an important part to reciprocate the problem of IAP from the state level which reveals the rights to information, education, participation, and association for meaningful contribution in decision making processes.

The role of the judiciary in Nepal has been remarkably outstanding for several landmark verdicts in favour of public interest against environmental damages. For instance, the verdict on Ambient Air Quality Standard (AAQS) by the Supreme Court addressed the substantive rights of people by making the Ministry of Population and Environment (MoPE)

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Report on Activities of the Forum

project

"Conducting Indoor Air Pollution Study in Child Health Research Project" by Winrock

Addressing the inadequacy in the link with between the health benefits of clean energy Winrock International in Nepal is promoting investment in clean and renewable energy options through its energy related activities. In this regard, the organisation has been working closely with the government and other institutions to highlight health impacts of indoor air pollution and promote household energy technologies.

One such important collaboration of Winrock International has been with the Child Health Research Project (CHRP), a community and hospital based clinical trial to assess the efficacy of zinc during pneumonia and severe pneumonia in children. This project is being jointly carried out by the Center for International Health, University of Bergen, Norway; Department of Child Health, Institute of Medicine, Tribhuvan University; and the Department of Epidemiology Research, Statens Serum Institute, Denmark.

The project "Conducting Indoor Air Pollution Study in Child Health Research Project, Bhaktapur, Nepal" is carried out by Winrock International and CHRP with technical support from University of California, Berkeley. It aims to study the link between indoor air pollution and pneumonia in children. The study seeks to help establish a closer link between the use of household energy and health benefits, which in turn would help scale up improved and cleaner technologies and fuels in the country.

The activities of this project include preparation of a methodology to carry out the study, monitoring of indoor air quality in sample households in the CHRP project area and analysis of the data to investigate links between indoor air pollution and pneumonia in children.

Meeting with National Planning Commission

Indoor Air Pollution and Health Forum Nepal jointly with Practical Action Nepal organised a consultative meeting with the National Planning Commission (NPC) on 8 November 2007. The main objective of the meeting was to discuss on the IAP issues to address and prioritise them in the upcoming Three Year Interim Plan (2064/65-2066/67) of the Nepal Government.

Following the meeting, the team proposed following recommendations to NPC for its consideration to include in the upcoming Three Year Interim Plan as well as in other policies and plans to be developed under the Interim Plan in the near future:

- Recognise IAP as one of the priority themes for policy issue that requires immediate attention from the state level
- Internalise IAP reduction initiatives in policies and programmes of key ministries
- Set national standards for different pollutants of IAP
- Recommend IAP level as one of the indicators of Living Standard Survey and monitor accordingly
- Fully adopt and promote Human Rights Based Approach to Health and Environment through national plans and programmes
- Formulate a high level commission with representation from government and non-government organisations to coordinate all independent and small scale initiatives undertaken on IAP by several agencies and organisations
- Provide targeted subsidy and institutionalise micro-credit programmes to promote the adoption of technology (ies) that reduces IAP.

The NPC officials recognised IAP as an important issue and appreciated the role of IAPH Forum for leading this initiative. Concluding the meeting the participants from NPC agreed to revisit the Interim Plan position paper in order to include IAP issues in the relevant sector – potentially environment and health sector programmes.

Participation in Indoor Air Pollution Monitoring and Kitchen Improvement Training

Eight Nepali practitioners, representing ENPHO, Practical Action Nepal, STARIC Nepal, GREAN Studio, BSP Nepal, ESAP/AEPC Nepal, Rural Rison and Agro Forestry Development Centre (RRAFDC) and CRT each participated in the training on "Measuring Change: Indoor Air Pollution and Household Energy Monitoring" in Hanoi, Vietnam from 7 to 11 August 2007. The training was organised by Partnership for Clean Indoor Air (PCIA) in association with Asia Regional Cookstove Programme (ARECOP) and Hanoi Architectural

University. In total, 40 participants from 10 Asian countries took part in the training. . The participants learned to develop study design, calculate sample size, administer socio-economic impact surveys, and collect and analyse carbon monoxide and particulate matter samples to assess the impact of various types of IAP reducing and household energy interventions.

Following the training a 4 day long ARECOP's Kitchen Improvement Training was held from 12 to15 August 2007. Six Nepali practitioners participated in the training. The training introduced a system analysis approach to understand the kitchen and its functions. Other topics discussed included environmental health status of the kitchen, behaviour and beliefs of people, design application, and monitoring of such applications.

Indoor Air Pollution Monitoring: Technology & Challenges

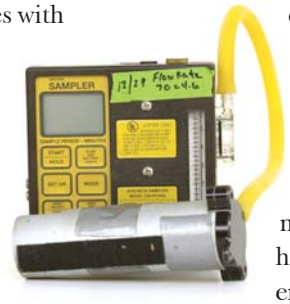
- Ajay Pillarisetti[1]

Particulate matter (PM) in air consists of a complex mixture of small and large particles of varying origins, sizes, and compositions. Most PM is generated from the combustion of fossil fuels and is typically classified by its size. Inhalable, coarse particles ($PM_{10-2.5}$) refer to particles with diameters less than 10 microns (PM_{10}) and greater than 2.5 microns. Fine particles ($PM_{2.5}$) refer to particles with diameters less than 2.5 microns. Health effects associated with PM have been well documented, resulting in increased monitoring of PM levels worldwide.

Exposure to PM has been correlated with a number of health outcomes – ranging from mild eye irritation to exacerbated chronic obstructive pulmonary disease (COPD). In addition, PM exposures have been shown to be associated with increase in both acute and chronic mortality.

Much of this exposure burden arises from indoor air pollution due to the use of low quality fuels, such as biomass and coal. Monitoring exposures to PM pollution in these environments is challenging due to the cost and complexity of the sampling equipment.

Particulate sampling generally relies on drawing air through a pre-weighed collection filter using a pump. The filter collects particulate matter and then is weighed post collection to determine particulate mass, a technique known as gravimetric analysis. Additional chemical analysis can be performed to determine the constituents of the collected particulate pollution. Samplers can be designed to collect a specific size fraction of particulate matter that may be of relevance to health outcomes or environment. This type of analysis is well described in the literature and is the 'gold-standard' in air pollution studies. However, it is time-consuming, can be expensive, and requires analysis by trained laboratory technicians.



A second type of sampling relies on continuous monitoring of particulate pollution levels. In the developing world, the most relevant application of this technology uses light scattering to determine mass concentration of PM. However, this technology is sensitive to relative humidity, temperature, and must be calibrated to specific monitoring conditions and aerosols. The need for calibration to specific aerosols limits the usability of this technology in the developing world. Finally, the cost of these monitors and limited battery life make their deployment at scale difficult.

New technology has been developed at the University of California at Berkeley that combines modern microelectronics with standard smoke alarm technology to yield a low-cost particulate monitor called the UCB. The monitor uses an ionization chamber and a photoelectric chamber. The combination yields data that is both effective at monitoring coarse and fine particles. There are a number of caveats – each device, like the light scattering devices discussed above, should be calibrated for the aerosol of interest. Variability between individual UCBs is another potential short coming of this technology. Despite these limitations, the new UCB monitor looks promising and has been used to monitor indoor particulate pollution in a number of studies.

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technology update

Daxu Stove – a high efficiency cooking stove from China

The Daxu Stove - first prize winner in the Ashden Award is developed and manufactured by Beijing Shenzhou Daxu Bio-energy Technology Company Ltd, China. The Daxu stove is specifically designed to use both loose or compressed crop wastes as well as wood. The stove is claimed to have over 40 per cent efficiency in fuel use and produces less smoke which is achieved by burning the fuel using a controlled supply of air that produces gas which then rises to meet 'secondary' air causing the fuel to burn more thoroughly. This ensures that the fuel burns more efficiently and that heat is transferred to the pot more quickly allowing a meal to be cooked within 15 -20 minutes with minimum level of smoke. Its two hotplates allow a stir-fry dish and steamed rice to be cooked at the same time, thus reducing the cost of cooking and heating by 50 per cent either in case of using crop waste or wood chops.

Some of the Daxu stoves also come with a back boiler, bringing running hot water and central heating system to rural families. It is estimated that using a Daxu stove, instead of a traditional stove, reduces the production of over 8 tonnes/year CO_2. The Daxu stove model has proved so efficient that it achieved the highest efficiency entrant in a stove competition organised by the China Association for Rural Energy Industries and the Shell Foundation in 2006.

The full price of the recent Daxu stoves is about NRs.8800.00 (US$ 139).

(Source: (i) Ashden Awards & HEDON websites)

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accountable. Similarly, in a recent verdict against a Public Interest Litigation (PIL), the Supreme Court ordered Ministry of Environment, Science and Technology (MoEST) and Ministry of Health and Population (MoHP) to form a joint panel to study and submit the report on whether hospitals and private nursing homes are following international norms while disposing medical wastes.

To ensure the state's liability over environmental health issues, right-holders should strongly advocate the concerned institutions for the right to redress. The state should immediately come forward with following sets of concrete action to insure human rights of every citizens: (i) set Indoor Air Quality Standard (IAQS), (ii) Formulate Clean Air Act and its enactment, (iii) formulate and implement Equitable Energy Policy for the poorest of the poor, and (iv) revise National Health Policies to address the problem of IAP with fully operated health service systems.

Forthcoming Events

National

- Center for Energy Studies, Institute of Engineering, Nepal is organising the 3rd International Conference on Renewable Energy Technology for Rural Development (RETRUD-08) in Kathmandu, Nepal from 12 to 14 October 2008. For details visit http://ces.ioe.edu.np
- Practical Action Nepal and Indoor Air Pollution and Health Forum are organising a visit programme to Practical Action's project sites in Rasuwa district from 30 November to 2 December 2007. The objectives of this visit programme are to: (i) learn and share indoor air pollution issues (ii) observe the technologies and programmes being implemented to address the IAP problem; and (iii) strengthen knowledge sharing, coordination and networking opportunities for various stakeholders.

International

- The 7th Meeting of the Global Forum on Sustainable Energy (GFSE) is taking place from 21 to 23 November 2007 at the Vienna International Centre, Austria. The focus this year will be on "Energy Efficiency in Developing Countries - Strong Policies and New Technologies". For details visit www.gfse.at
- Winrock International India (WII) is organising the 5th International Biofuels Conference from 7 to 8 February 2008 at New Delhi, India. For details visit http://www.winrockindia.org/pdf/5th_intl_bio-con.pdf
- Climate Change and Household Energy - HEDON CarbonSIG and Eco Ltd are holding two week online conference from 9 to 23 January 2008. For details visit http://www.hedon.info/goto.php/CarbonSIGConferenceJanuary2008.

news & events

- **Khoj** - a Nepal television programme covered indoor air issues in the 6th October 2007 . It highlighted the underlying issues and discussed views of the major political parties in solving the indoor air pollution related problems.
- District Development Committee Rasuwa and Practical Action Nepal jointly organised an awareness workshop on "Indoor Air Pollution and Health" at Dhunchhe Rasuwa on 27 September 2007 in which 29 participants from Rasuwa representing District Development Committee, Women Development Office and District Hospital participated.
- Intergovernmental Panel on Climate Change (IPCC) organised the South Asia dissemination workshop from 11 to 12 October 2007, Kolkota, India to disseminate their fourth Assessment Report on Climate Change Mitigation. During the workshop South Asian Network for Development and Environmental Economics (SANDEE) shared about related researches undertaken in South Asia. Mr. Min Bikram Malla, Project Officer from Practical Action Nepal presented a paper on "Improving Indoor Air Quality and Meeting a Global Need" in the workshop.
- Environment and Public Health Organisation (ENPHO) in coordination with Clean Air Network-Nepal (CAN-N) organised a Talk Programme on 15 October 2007 in Kathmnadu. Prof. Dr. Kirk Smith from University of California, Berkely, USA provided the talk on impacts of limate Change on human health.
- ENPHO with the Energy Sector Assistance Programme (ESAP) of Alternative Energy Promotion Center (AEPC) and other partners are working to monitor the environment and health impacts of mud brick improved cooking stoves in Nepal. Till now more than 200,000 such stoves have been installed in Nepal. ENPHO has designed the research study with technical assistance from the University of California, Berkeley and has already conducted one round of monitoring in Dolakha district and is now planning to do the same in the mid-hill and terai regions.
- Environmental Camps for Conservation Awareness (ECCA) has been awarded for innovation by the US-based Tech Museum for Solar Tuki promotion in Nepal. Solar Tuki comprises of a white light emitting diode, nickel metal hydride rechargeable batteries, 3 watt solar photovoltaic panel which provides lighting for 8 hours. With the popularity of the Solar Tuki in the rural villages, it is replacing less efficient kerosene-based wick lamp.
- Aprovecho Research Center and Shengzhou Stove Manufacturer, China signed a long term agreement to provide high-quality, low emission and very affordable cooking stoves. The stoves will be produced at Shengzhou and shipped from a port near Shanghai to customers all over the world. Shipping to farthest ports will add about 30 cents per stove to the final cost.
- Practical Action has published Volume 2 of 'Smoke, health and household energy' subtitled 'Researching pathways to scaling up sustainable and effective kitchen smoke alleviation'. The report covers scaling-up method, monitoring and assessment of smoke alleviating technologies, health impacts and cost benefit of interventions.

FOR FURTHER INFORMATION
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