Presentation Overview

• Building Capacity for WHO Guidelines for Indoor Air Quality: Household Fuel Combustion Implementation

• Energy Access in Health Care Facilities

• Energy in Cities: The Urban Health Initiative
Health Sector Role:
Synthesize Evidence; Develop Guidelines; Track Progress

- Provide evidence on health impacts of sustainable development & green economy strategies/technologies
- Develop evidence-based guidelines supporting effective interventions
- Use Health Impact Assessment (HIA) to assess policies
- Define and monitor health indicators to measure results
Building Capacity for WHO Guidelines for Indoor Air Quality: Household Fuel Combustion Implementation
A Few Examples of the Household Energy ‘Nexus’

**WOMEN AND CHILDREN**
accounted for over 60% of all premature deaths from HAP in 2012.

**BLACK CARBON**
The rapid transition of three billion people from using polluting to clean fuels and technologies could be one of the most effective black carbon mitigation opportunities of all.

**HEALTH TOLL**
HAP is responsible for 3.8 million premature deaths annually from NCDs.

**TIME LOST**
Girls in households that cook with polluting fuels spent up to 35 hours a week collecting wood and water.
WHO is developing a **Clean Household Energy Solutions Toolkit (CHEST)** with tools, guidance and other materials that can be used at the local, national or regional level to support countries implement the *WHO Guidelines for indoor air quality: household fuel combustion (IAQG)*

**Why?**
- The IAQG call for tools and guidance to be available for the *health* and *other* sectors for household energy policy planning including:
  - Needs assessment
  - Tools to evaluate intervention options
  - Standards, testing and regulation
  - Monitoring the use and impacts of household energy solutions including through household surveys, air quality and health measurements
- Countries have indicated they lack the ‘**know-how**’ and tools to effectively engage and contribute to such inter-sectoral work on HHE and lack resources
Clean Household Energy Solutions Toolkit

COUNTRY

ACTION PLAN
Multisectoral ‘task group’

- Survey and AQ measurement tools
- M&E strategy, capacity and resources
- Catalogue of Methods
- Policy (finance, market, etc.) for adoption and sustained use
- Standards, testing and certification
- Emissions model
- HAPIT tool
- WHO HH Energy Database
- Intervention options assessment
- Needs assessment and mapping
### Inputs

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stove1 emissions rate (mg/min)</td>
<td>40.0</td>
</tr>
<tr>
<td>Stove2 emissions rate (mg/min)</td>
<td>10.0</td>
</tr>
<tr>
<td>Stove3 emissions rate (mg/min)</td>
<td>0.2</td>
</tr>
<tr>
<td>Stove1 cooking time (min/day)</td>
<td>120</td>
</tr>
<tr>
<td>Stove2 cooking time (min/day)</td>
<td>60</td>
</tr>
<tr>
<td>Stove3 cooking time (min/day)</td>
<td>20</td>
</tr>
<tr>
<td>Stove1 fraction of emission mixing in room (%)</td>
<td>10%</td>
</tr>
<tr>
<td>Stove2 fraction of emission mixing in room (%)</td>
<td>100%</td>
</tr>
<tr>
<td>Stove3 fraction of emission mixing in room (%)</td>
<td>100%</td>
</tr>
<tr>
<td>Air exchanges (per minute)</td>
<td>0.25</td>
</tr>
<tr>
<td>Room volume (m³)</td>
<td>30</td>
</tr>
<tr>
<td>Ambient/Background (ug/m³)</td>
<td>10</td>
</tr>
<tr>
<td>Time spent in kitchen (min)</td>
<td>180</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stove1 per event Cooking time per event</td>
<td>40</td>
</tr>
<tr>
<td>Stove2 per event Cooking time per event</td>
<td>20</td>
</tr>
<tr>
<td>Stove3 per event Cooking time per event</td>
<td>6</td>
</tr>
<tr>
<td>Total cooking time (min)</td>
<td>198</td>
</tr>
<tr>
<td>Emissions per day (mg)</td>
<td>5404</td>
</tr>
</tbody>
</table>

### Outputs

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 hour mean kitchen (ug/m³)</td>
<td>110</td>
</tr>
<tr>
<td>24 hour mean exposure (ug/m³)</td>
<td>23</td>
</tr>
</tbody>
</table>

### Chart

![Chart showing emissions rates and exposure](chart.png)

### PM2.5 HAP targets (µg/m³)

<table>
<thead>
<tr>
<th>PM2.5 HAP target (µg/m³)</th>
<th>ALRI RR target</th>
<th>COPD RR target</th>
<th>IHD RR target</th>
<th>Lung Cancer RR target</th>
<th>Stroke RR target</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1.00</td>
<td>1.03</td>
<td>1.11</td>
<td>1.04</td>
<td>1.04</td>
</tr>
<tr>
<td>32</td>
<td>1.25</td>
<td>1.25</td>
<td>1.29</td>
<td>1.20</td>
<td>1.46</td>
</tr>
<tr>
<td>53</td>
<td>1.50</td>
<td>1.23</td>
<td>1.37</td>
<td>1.31</td>
<td>1.73</td>
</tr>
<tr>
<td>101</td>
<td>2.00</td>
<td>1.38</td>
<td>1.49</td>
<td>1.53</td>
<td>1.94</td>
</tr>
<tr>
<td>398</td>
<td>3.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Open

<table>
<thead>
<tr>
<th></th>
<th>90% meeting target</th>
<th>50% meeting target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emission Rate (mg/min)</td>
<td>0.2</td>
<td>-</td>
</tr>
<tr>
<td>Emission Rate (mg/min)</td>
<td>0.7</td>
<td>1.9</td>
</tr>
<tr>
<td>Emission Rate (mg/min)</td>
<td>1.2</td>
<td>3.1</td>
</tr>
<tr>
<td>Emission Rate (mg/min)</td>
<td>2.4</td>
<td>6.3</td>
</tr>
<tr>
<td>Emission Rate (mg/min)</td>
<td>8.7</td>
<td>23.5</td>
</tr>
</tbody>
</table>

### Chimney

<table>
<thead>
<tr>
<th></th>
<th>90% meeting target</th>
<th>50% meeting target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emission Rate (mg/min)</td>
<td>0.8</td>
<td>-</td>
</tr>
<tr>
<td>Emission Rate (mg/min)</td>
<td>2.5</td>
<td>8.2</td>
</tr>
<tr>
<td>Emission Rate (mg/min)</td>
<td>4.6</td>
<td>13.2</td>
</tr>
<tr>
<td>Emission Rate (mg/min)</td>
<td>8.4</td>
<td>26.2</td>
</tr>
<tr>
<td>Emission Rate (mg/min)</td>
<td>31.0</td>
<td>99.0</td>
</tr>
</tbody>
</table>
Energy and Health Care Facilities
Importance of energy to health services (in particular access to electricity)

- Prolonged opening hours
- Wider range of services
- Better functionality of medical devices
- Better communication
- Improved records management
- General hygiene improved
- Enhanced safety
- Staff and patient sense of security and safety

- Easier recruitment and training
- Better staff morale
- Continued medical education
- Improved cold chain
- Laboratory testing
- E-health
- Staff recruitment and retention
- Medical Services
- Adminstration and logistics
- Disease prevention and treatment
- Health and safety

Access to electricity a significant concern

Percentage of Healthcare Facilities with Electricity Access

% of Healthcare Facilities with Electricity Access
- <25
- 25 - 50
- 50 - 75
- 75 - 90
- > 90
- Data not available
- Not applicable

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.
75 countries together account for > 95% of maternal and child deaths worldwide
Health facilities an essential setting for addressing preventable maternal and newborn mortality

- Improving quality of facility based care at time of birth a central strategy
- Electricity is a critical determinant of quality of care provided
Focus of hospital energy audits

A. To determine minimum energy requirements of essential package for maternal and child health

CHILD BIRTH
PRENATAL CARE
BLOOD BANK
LABORATORY
INFECTION PREVENTION
SURGERY
EMERGENCY RECUSCITATION

Determine minimum electricity needs based on WHO and national standards of quality of care
B. Analyze options for enhancing energy services in the target hospitals

- GRID + GENERATOR
- GRID + GENERATOR + SOLAR
- GRID + SOLAR
- SOLAR ONLY

Examine differences in cost, reliability, and climate and other environmental emissions (e.g. air pollution)
Opportunities to finance "green energy" infrastructure in health facilities
Energy in Cities: The Urban Health Initiative
Urban Health Initiative – Support for Policies with Health benefits, Air Pollution & Climate Change Mitigation

Transport, energy, land use policies / Combustion, agriculture

Injuries, physical activity, noise, diet
Air pollution (PM)
Climate change (SLCPs)
Climate change (CO2)

Local/short term health impacts
Global/long term health impacts

Progress – model for work with cities
Urban policies that fulfill multiple social objectives

Focus: main sources of air pollutants

- Transport
- Waste burning
- Home energy
- Buildings
- Land use plans
- Industry

1. Health benefits from improving
   - Air pollution
   - Injuries,
   - Physical activity,
   - Noise,
   - Diets…

2. Air and Climate pollutant reductions
Thank You

Energy can make our world healthier & liveable

Thank You and any Questions?
adairrohanih@who.int