Maximum Pathway Approach –
Country experience from Ghana

Daniel Benefor – Ghana EPA
What we set out to do?

• Provides quantitative estimates of SLCPs and LLCPs on a single “dashboard”

• Evaluate health, crop and climate benefits (multiple benefits) for implementing SLCP-LLCPs mitigation measures.

• Near-term, local benefits and long-term global benefits.
Scope – integrated approach (air quality & climate change)

- Basket of gases – GHG, SLCPs and selected precursors (CH₄, CO₂, CO, NOₓ, SO₂, BC, OC, HFC???)
- Near-term and long-term gases
- Scale - national level
- Time frame – 2010 to 2040 (time dimension).
- National inventory system (“GHG inventory” vs “local air quality”).
- Five scenarios based on different packages of measures: Additional PAMs++, Additional PAMs+, Additional PAMs, Current PAMs Success, Current PAMs Failure (defined incremental ambition).
- LEAP-IBC tool.
E. g. Open-burning

- National GHG inventory
- UNFCCC – BUR every 2 years
- 2006 or 1996 IPCC guidelines
- ICA – Expert review and peer review
E. g. Open-burning

- LLCP and SLCP
- IPCC guidelines not cover all species
- Reporting precursors voluntary
- Local pollutants usually measured not estimated.
Data sources and institutional arrangement

• Mapping of data sources – national statistics

• Population data
• Economic data
• Energy consumption Household and industry
• Technology penetration and adoption data
• Agriculture facts and figures
• Road transport – vehicle population class, fuel consumption
• Industrial process – Mineral, Cement, Aluminium factory
• Waste – incineration, compost, landfilling etc
• Air Quality Measurements

• Same team used for National GHG inventory
**Grouped scenarios into package of measures**

<table>
<thead>
<tr>
<th>Sector</th>
<th>SLCP abatement measures</th>
<th>Rank</th>
<th>SLCP policy package</th>
<th>Measure outlook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>LPG for cooking (LPGC)</td>
<td>High</td>
<td>Additional PAMs</td>
<td>Low hanging fruits</td>
</tr>
<tr>
<td>Energy</td>
<td>Solar systems (SS)</td>
<td>High</td>
<td>Additional PAMs</td>
<td></td>
</tr>
<tr>
<td>Forest</td>
<td>Reduced forest burning (RFB)</td>
<td>Low</td>
<td>Additional PAMs+</td>
<td></td>
</tr>
<tr>
<td>Waste &amp; energy</td>
<td>Institutional Biogas (IB)</td>
<td>Low</td>
<td>Additional PAMs+</td>
<td></td>
</tr>
<tr>
<td>Transport</td>
<td>Promote CNG Buses (CNG)</td>
<td>High</td>
<td>Additional PAMs+</td>
<td></td>
</tr>
<tr>
<td>Waste</td>
<td>Stop open-burning (SOB)</td>
<td>Medium</td>
<td>Additional PAMs+</td>
<td>NDC measures</td>
</tr>
<tr>
<td>Waste</td>
<td>Landfill gas management (LFM)</td>
<td>High</td>
<td>Additional PAMs+</td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>Improved cookstoves (ICS)</td>
<td>High</td>
<td>Additional PAMs+</td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>Natural Gas for electricity (NGE)</td>
<td>High</td>
<td>Additional PAMs+</td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>Eco-friendly electricity (EFE)</td>
<td>Medium</td>
<td>Additional PAMs+</td>
<td></td>
</tr>
<tr>
<td>Energy &amp; forest</td>
<td>Efficient charcoal kilns (ECK)</td>
<td>High</td>
<td>Additional PAMs+</td>
<td></td>
</tr>
<tr>
<td>Agriculture</td>
<td>Quality livestock feeding (QLF)</td>
<td>Low</td>
<td>Additional PAMs++</td>
<td></td>
</tr>
<tr>
<td>Transport</td>
<td>Vehicle testing standards (VTS)</td>
<td>Medium</td>
<td>Additional PAMs++</td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>Cutting-edge stoves (CES)</td>
<td>Medium</td>
<td>Additional PAMs++</td>
<td></td>
</tr>
<tr>
<td>Industry</td>
<td>Gas in plastic industry (GPI)</td>
<td>Low</td>
<td>Additional PAMs++</td>
<td></td>
</tr>
</tbody>
</table>
Multiple benefits of 16 measures

- 2,560 premature deaths avoided under PAM++
- 1,500 premature deaths avoided under PAM+
- 40% reduction in crop loss under PAM++
- 22% reduction in crop loss under PAM+
- 55% reduction in global warming from Ghana’s emissions’
Evaluate benefits of measures: Emissions

Fig 25 - Carbon Dioxide emission under different policy scenarios
Evaluate benefits of measures: Impacts

Fig 19 - Climate impacts expressed in avoided temperature change

Fig 24 - Crop loss under different policy scenario
What does the approach means to us?

Smart communication tool
- Smart realistic, relevant and smart solutions of policy measures.
- Drum home central the message of the need for policy coherence.
- Importance of multiple benefits (economic and social benefits).
- Practical way to engage the general public.

Strengthens economic and social argument of climate-SLCP measures (influence allocation of national budget – tag in Ministry of Finance)
- “bargaining chip” for typically second-rated environmental issues.

Rally sub-regional governments to take action individually or jointly
- Advocate for rapid action, direct local benefits and global common good in the future.
- Development benefits of the climate actions.
- Near-term benefits of climate and SLCP mitigation measures make economic sense.
Thank you