

## **Inclusive Crop Residue Management and Sustainable Agriculture**

*In collaboration with ESCAP Subregional for South and South-West Asia*

***This panel is not accepting abstracts***

The burning of crop residue is one of the contributors to severe air pollution in certain countries of South Asia. It affects the health of farmers and people in rural and urban areas where smoke travels, contributes to climate change with the emission of Greenhouse Gases (GHG) and affects agricultural production and food security by deteriorating soil health. Moreover, in the Indo-Gangetic plain region, seasonal crop residue burning increases the concentration of particulate matter and black carbon in the air which adversely affects glaciers in the Himalayas.

Mechanised paddy rice production requires large volumes of water and over time has depleted underground water and aquifers. GHG emitted from burning also contribute to global warming and climate change. All of these factors adversely affect attainment of the Sustainable Development Goals as crop residue burning harms health and well-being (SDG 3), has implications on food security (SDG 2), affects air quality of city inhabitants (SDG 11), and contributes to climate change (SDG 13).

Addressing emissions from open burning requires a holistic approach involving adoption of sustainable farming practices and the utilisation of technological innovations. At the same time, it has other socioeconomic dimensions for farmers whose agricultural income is inadequate to sustain livelihoods and cannot afford technology or mechanised solutions to tackle this problem. ESCAP research has identified some key strategies:

- **Sustainable Post-Harvest Practices:** Since crop straw is rich in fibre, lignin, starch, protein, enzymes, and nutrients, it can be used as fertilizer, fodder, bio-energy, base stock, industry material, etc. Crop residues are being utilised differently, varying with the country and its socioeconomic status, type of cultivated crop, number of crops grown per year, etc. Implementing organic post-harvest techniques can help reduce GHG emissions, enhance soil health, and improve biodiversity.
- **Conservation Agriculture:** Techniques such as minimal tillage, cover cropping, and crop rotation can further reduce emissions and enhance soil fertility. These practices improve soil structure, increase organic matter, and reduce the need for chemical fertilizers.
- **Biogas Production:** Utilising agricultural waste for biogas production can significantly mitigate methane emissions, a potent GHG. Biogas systems convert organic residues into renewable energy for cooking and heating, thus reducing reliance on fossil fuels and promoting cleaner energy sources.

Currently with a 37.4% workforce employed in this sector, the agricultural industry contributes 24% to GDP making up a substantial part of the economy where rural households rely heavily on traditional methods.

Pakistan contributes 0.9% to GHG emissions. However, practicing open burning of crop residues contributes to air pollution deteriorating air quality and exacerbating environmental and public health concerns. By utilising agriculture waste as biomass for clean cooking can reduce the reliance on conventional fuels. Moreover, the use of modern biomass cookstoves or biogas digesters can convert crop residues into a cleaner form of energy, reducing indoor air pollution. Adopting these technologies promotes sustainable agriculture and rural energy



access which also aligns with the National Climate Change Policy. Integration of these sustainable practices can reduce its carbon footprint while enhancing rural livelihoods and contributing to national and global climate targets.

Many states have introduced incentives as well as penal provisions for crop residue burning, however, the burning continues. This multi-stakeholder discussion aims to facilitate a comprehensive dialogue on the challenges and pathways forward while ensuring that the voices of farmers from both Pakistan and India are actively heard and exchanged. This panel discussion will bring together policy makers, researchers, farmers' representatives, and civil society groups, to enhance understanding and drive effective solutions to mitigate the environmental and health impacts of crop residue burning, ultimately contributing to sustainable agricultural practices in the region.

The panellists will dwell on the following questions:

- How can ecological policies be made more pragmatic, easily implementable, and inclusive for crop residue management?
- What actions are required for effective utilisation of mechanised solutions for small landholding farmers, who cannot afford the finance to purchase large and costly machines?
- What collaborative efforts are necessary to share best practices and experiences to ensure a balanced outcome in economic sustainability and food security? What roles can think tanks, development partners, and other stakeholders play?

#### **Panel Organisers**

Mr Rana Junaid Zahid, Director, Food Security and Agriculture, Sustainable Development Policy Institute, Islamabad

Email: [junaid@sdpi.org](mailto:junaid@sdpi.org)

Dr Rajan Sudesh Ratna, Deputy Head and Senior Economic Affairs Officer, South and South- West Asia Office, United Nations Economic and Social Commission for Asia and the Pacific, New Delhi, India

Ms Jing Huang, Economic Affairs Officer, South and South- West Asia Office, United Nations Economic and Social Commission for Asia and the Pacific Office, New Delhi, India