INTERVENTION 1

Addressing Seasonal Crop Burning

SUMMARY

An increasing number of cities are finding themselves impacted by thick clouds of smoke blowing in from nearby agricultural areas during periods when farmers are burning stubble to prepare the land for another crop. The scale and intensity of the fires can cause air quality levels in the affected cities to become very poor for weeks at a time. There are usually alternative ways to manage the crop residues and to prepare the land for planting, but farmers, especially small farmers, are very reluctant to change traditional methods.

Air Quality and Health benefits: Medium to high. The benefits from preventing the smoke from seasonal burning would be high, if the burning could prevented. The health benefits of removing intermittent pollution are not well understood.

Carbon benefits: Medium to high. Stubble fires release large amounts of black carbon, as well as CO_2.

Costs: Medium. Alternative methods of stubble management can be used, which are as effective or more so, once implemented. The costs of transition to new methods can be significant and the government would normally contribute.

Political Feasibility: Long-term efforts are required to achieve large scale changes in farming practices, but newer and better methods can be instituted.

Key players: National government needs to take the lead since agricultural areas are often outside city boundaries and other local governments often show little interest in taking action.

EXAMPLES

AGRICULTURE AND BURNING, DELHI. The burning of paddy straw after harvest by farmers of Haryana, Punjab, and Uttar Pradesh during October and November, and wheat straw in April and May to clear the

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fields is a source of air pollution in Delhi. A study by NASA scientists based on analysis of satellite data over a 15-year period (2002-2016) established a link between the burning of straw in Haryana and Punjab and an increase in PM2.5 concentrations in Delhi. Large-scale open burning of post-harvest crop residue and wood in nearby rural regions contributes to severe haze pollution in Delhi during winter and autumn with estimates of 42% ± 17%. In contrast, in summer about 83% of black carbon in Delhi's air is from fossil fuel sources

Government initiatives include awareness and capacity building, technological interventions, and creation of sustainable entrepreneurship models. The government is also offering subsidies of up to 50% for farmers to buy straw management machines. There are also financial incentives for farmers to retain paddy residue in fields as mulch for wheat crops. Recent reports indicate that straw burning is continuing as many farmers consider burning as a convenient and cheap option and the subsidized straw management machines are considered to be expensive to operate. In addition, there may be only a short window of time (about 3-4 weeks) between the harvest of a crop and the planting of the next crop, and this makes collection and transport of the straw offsite challenging.

POLAND AND UKRAINE. Poland had traditionally used stubble burning in some of its extensive wheat areas but has phased out the practice. Ukraine with similar agricultural conditions lags in upgrading burning.

CAIRO. Stubble burning has been identified as the cause of seasonal smoke clouds that impact seriously city air quality.