

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
PRINCIPAL BENCH, NEW DELHI

Original Application No.663 of 2023

**In Re: News Item published in Indian Express dated
07.10.2023 titled "GRAP stage 1 cicks in as air
quality dips to poor, condition likely to prevail till
Sunday"**

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New Delhi
Dated: 05.12.2023

Filed By

THROUGH

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ACTION PLAN

1. The Hon'ble NGT(PB), New Delhi *vide* its order dated 29.11.2023 in Original Application No. 663 of 2023 titled as News item published in Indian Express dated 07.10.2023 titled "GRAP Stage 1 kicks in as air quality dips to poor, condition likely to prevail till Sunday" *inter alia* directed as under:
*"...comprehensive plan is required to be disclosed for entire NCR to cover the air shed.
7. The Learned Counsel for the Commission for Air Quality Management seeks time to file the comprehensive plan for air quality management for entire NCR within one week..."*
2. The present Report is being filed in respectful compliance of the Order dated 29.11.2023 of this Hon'ble Tribunal regarding the comprehensive plan for air quality management for entire NCR.
3. The Commission has been constituted under the Commission for Air Quality Management in NCR and


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- Adjoining Areas Act, 2021 towards better coordination, research, identification and resolution of problems surrounding the air quality index and for matters connected therewith or incidental thereto.
4. Apart from a full-time Chairperson, the Commission consists of Members namely representative of the Secretary to the Government of India in the Ministry of Environment, Forest and Climate Change, Chief Secretaries, or Secretaries in-charge of the department dealing with environment protection in the National Capital Territory of Delhi, States of Punjab, Haryana, Rajasthan and Uttar Pradesh, one full-time Member who is or has been a Joint Secretary to the Government of India, three full-time independent technical Members having specific knowledge and experience in matters relating to air pollution, technical Member from the Central Pollution Control Board, technical Member from the Indian Space Research Organisation (ISRO), three Members from non-Governmental organisations having experience in matters concerning combating of air pollution, one representative of the National Institution for Transforming India, not below the rank of Joint Secretary or Adviser, one Joint Secretary rank officer as full time Member Secretary and three members being stakeholders from such sectors as agriculture, industry, transport or construction.
 5. The Act also provides for three Statutory Sub-Committees on (i). Monitoring and Identification, (ii). Safeguarding and Enforcement and (iii). Research and


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Development towards prevention, control and mitigation of air pollution. The Commission has also constituted other Sub-Committees for specific purposes besides constitution of Expert Groups for certain tasks towards abatement of air pollution in the region.

6. Towards this objective, since its inception, the Commission has been rigorously taking up the issue of air pollution in NCR and adjoining areas and has identified various contributors to air pollution with a core focus on the following major sectors:

- i. Industrial Pollution,
- ii. Pollution from Diesel Generator (DG) sets,
- iii. Pollution from thermal power plants within 300 km of Delhi
- iv. Pollution from vehicles and transport sector,
- v. Agricultural Stubble Burning,
- vi. Municipal Solid / Plastic Waste burning, Biomass Burning,
- vii. Fires in Sanitary Landfills and other episodic events,
- viii. Management of Dust from Construction and Demolition Project activities
- ix. Management of dust pollution from Road and Open Areas,
- x. Miscellaneous dispersed sources, household emissions, pollution due to anthropogenic activities.



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7. In this respect, important policy initiatives and measures have been identified for each of the sectors through various directions / orders and advisories issued from time to time. The Commission has held regular consultative and review meetings with the Ministries concerned in the Central Government, States, authorities and various other stakeholders, besides the statutory meetings of the Commission and its sub-committees.
8. The Hon'ble Supreme Court of India Order dated 16.12.2021 in Writ Petition (Civil) No. 1135 in the matter of "Aditya Dubey (minor) & Anr. V/s Union of India & Ors." directed as under:
- "with a view to find a permanent solution to the air pollution menace occurring every year in Delhi and National Capital Region, we direct the said Commission to invite suggestions from the general public as well as the experts in the field."*
- "the suggestions received shall have to be considered by an expert group, to be constituted by the Commission for the said purpose, before finalization of the policy to curb air pollution".*
9. In pursuance of the above noted order of the Hon'ble Supreme Court, the Commission invited suggestions from general public as well as experts in the field to this effect through a public notice on 24.12.2021. The Commission also constituted an Expert Group which examined the suggestions received, interacted with


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interveners and experts as well as various stakeholders and State Government representatives. The Expert Group apart from taking into account the suggestions, also reviewed the existing scientific literature, relevant policies, regulations, programmes and funding strategies of the State and Central Governments in various sectors, the current status of action and best practice / approaches etc. towards a suggestive policy framework.

10. The report of the Expert Group was considered by the Commission in its meeting held on 25.05.2022 and after detailed deliberations, a comprehensive policy detailing sector-wise interventions and quantified targets and timelines was formulated by the Commission. The policy document has been shared with various stakeholders including Central Government Ministries/Departments, NCR State Governments, GNCTD and Government of Punjab for necessary action and targeted implementation. Towards wider dissemination of the Policy, the same has also been uploaded on the Commission's website (caqm.nic.in).
11. It is submitted that the scope of this plan is to control air pollution primarily in Delhi and NCR based on a common "Airshed" approach. However, owing to a deficit in infrastructure and systems across the sub-regions of NCR, wide variations in baseline action and varying level of urbanisation, a differentiated approach

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and timelines have been suggested for various sub-regions namely:

- a) NCT of Delhi
 - b) NCR Districts near to Delhi (Gurugram, Faridabad, Sonapat, Jhajjar, Rohtak, Ghaziabad, Gautam Buddha Nagar and Baghpat)
 - c) Other NCR Districts
 - d) Entire State of Punjab and Non-NCR Districts of Haryana, primarily for addressing the episodic events of stubble burning.
12. To guide and direct various actions towards abatement of air pollution in the region, the Commission from time to time has so far issued **78 Statutory Directions**, beside various Advisories and executive orders.
 13. The present report is filed to apprise this Hon'ble Tribunal about the comprehensive plan and actions to abate pollution from each identified source of pollution.
 14. The Commission, since its inception, has been trying to comprehensively address the issue of air pollution in NCR and adjoining areas in a collective, collaborative and participative mode involving all the major stakeholders. In this respect, the commission has held long ranging deliberations and discussions, in addition to various progress review meetings with the concerned Ministries in the Central Government, States, authorities / agencies and other stakeholders.
 15. A series of measures that were initiated / progressed by the Commission in the intervening period, towards abatement of air pollution in the region across various


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contributory sectors, are as elaborated in ensuing paras.

POLICY BASED KEY SECTOR-WISE ACTION PLAN

ABATING AIR POLLUTION CAUSED BY VEHICULAR SECTOR

16. Abatement of vehicular pollution has been one of the focus areas of the Commission in its number of deliberations with the NCR state governments and GNCTD.
17. Seamless and efficient Traffic Management and minimizing traffic congestions in the respective jurisdictions of the NCR State Govts. / GNCTD is key to addressing the ever-increasing concerns on vehicular pollution in the region. The Commission has called for the state governments / Govt. of NCT of Delhi to constitute dedicated task forces with representatives of the Departments concerned to continuously monitor and take corrective steps towards smooth traffic management, including expediting development of an "Intelligent Traffic Management System" (ITMS) to inter-alia addresses the following:
 - i. Traffic congestions due to encroachments on right of way/roads.
 - ii. Haphazard parking, lack of adequate parking facilities and poor utilization of multilevel parking built.



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- iii. Removal of right of way encroachments, ensure utilization of multi-level parking and prevent unauthorized parking on roads.
18. Towards an effective long-term strategy of controlling vehicular emissions, transition to e-mobility has been identified as an important tool by the Commission. With all the NCR States and GNCTD coming up with their respective medium / long term targeted EV Policies, the Commission has also issued an advisory for “Mandating procurement of zero emission and e-vehicles” in identified sectors like Govt. procurements, e-commerce platforms for door-to-door deliveries, service agencies etc. to give a further push to clean technologies in transport sector. Equally important is the need to build requisite infrastructure to support e-mobility i.e., battery charging stations, battery swapping points and for disposal of large volume of batteries which is likely to be generated in the ensuing years. In this regard, Nos. of electric vehicles currently registered in NCR, as reported by the State Govts. / GNCT of Delhi are as under:

Delhi - 2,38,056	Haryana - 75,837
UP - 84,716	Rajasthan - 13,784

19. As per the available data total 3,100 battery charging stations and 4,793 charging points are already in place in the territory of Delhi and 467 charging stations are available in other areas in NCR.



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20. For the purpose of easing congestion at border points in Delhi, all the identified 124 border entry points of Delhi have now been provided with RFID system (with 13 heavy traffic entry points being fully automated) to facilitate cashless toll/cess collection thus avoiding huge traffic congestions and resultant heavy air pollution at the border points.
21. Regular certification of vehicles towards compliance of emission standards is a must and in this context the Commission has directed the NCR State Govts. and GNCTD for effective implementation of the new "Pollution Under Control" (PUC) Certificate regime, including periodic audits of the PUC Certificate issuing agencies, in compliance of the Central Motor Vehicles Rules (Amendment) Rules, 2021 dated 14.06.2021. Drives on a continual basis have been asked for in the NCR for ascertaining the compliance of PUC norms. To this effect, details of challans for PUC violation, visibly polluting / over loaded vehicles etc. issued so far during 2023 in the NCR are as under:

Delhi - 1,64,000	Haryana - 11,135
UP - 22,579	Rajasthan - 6,154

22. Towards controlling vehicular pollution caused by older vehicles owing to much relaxed / poor emission standards / norms, the Commission has taken up with the states concerned and GNCTD to strictly ensure that Petrol/Diesel vehicles more than 15/10 years old do not



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ply in NCR, in consonance with the Hon'ble NGT directions, also upheld by the Hon'ble Supreme Court. Numbers of overaged vehicles impounded in the NCR by concerned agencies during 2023, are as under:

Delhi - 14,687	Haryana - 220
UP - 3,058	Rajasthan - 148

23. It is important for the NCR States to further focus on conversion of transport to cleaner fuels and to this effect this matter was also taken up with MoPNG to ensure that licensees of NCR complete the laying of natural gas infrastructure in NCR expeditiously.
24. A boost in public transport infrastructure and facilities is a need of the hour to ease congestions on roads and abate vehicular pollution. GNCTD and NCR State Governments have been accordingly advised to prioritize public transport, auto-rickshaw, buses, feeder services, delivery fleets and government vehicles while mandating e-mobility and to also augment the charging infrastructure. Delhi and NCR States have also been asked by the Commission to fast track procurement of Public Transport Buses (only electric/ PNG) and gradually phase out diesel operated public transport system from NCR.
25. Auto rickshaws are a preferred economical mode of transport, these are also major contributors of particulate matter emissions and while all auto rickshaws in the NCT of Delhi, have been already



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mandated to be CNG fuelled / electric, diesel fuelled auto rickshaws are still plying in the NCR across the States of Haryana, Uttar Pradesh and Rajasthan. The Commission accordingly issued a Statutory Direction dated 30.11.2022, mandating that only CNG / electric autos would be registered across NCR w.e.f. 01.01.2023 and State Governments of Haryana, Uttar Pradesh and Rajasthan shall also ensure to phase out diesel auto rickshaws in a staggered but time bound manner.

26. Delhi also needs to expedite procurement of Low Floor E-buses. As of now, total size of the bus fleet for public transport system in Delhi is 7,389 which includes 800 E-buses. By 2025, total number of buses are expected to be 10,925, with about more than 50% E-buses.
27. Towards efficient and cleaner public transport services particularly intra-city and inter-city bus services within NCR, the Commission took up the matter with the NCR States to endeavour running of bus services between any NCR city / town in the State of Haryana, Rajasthan and Uttar Pradesh and Delhi only through EV/CNG/BS-VI Diesel buses in the immediate term and only through CNG / EV buses in the medium / long-term. To this effect, in due consultation with and in agreement by the NCR States, the Commission through Statutory Direction No. 78 dated 19.10.2023 directed that all bus services between any NCR city / town in the State of Rajasthan / Uttar Pradesh and Delhi and all bus services between any city of Haryana and Delhi shall be operated only through EV/CNG/BS-VI Diesel buses w.e.f. 01.11.2023.

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**ABATEMENT OF DUST POLLUTION FROM
CONSTRUCTION & DEMOLITION ACTIVITIES**

28. Construction and Demolition activities contribute significantly to air pollution in the region. The Commission accordingly issued directions for “Control/Prevention of Air Pollution from Construction and Demolition activities” with illustrative dust control / mitigative measures like monitoring through a dedicated Web-portal including Video fencing and installation of low-cost Air quality sensors in respect of projects with plot area more than 500 sq mtr. and self-audit / certification by such project proponents, installation of Anti-smog guns in construction sites, dust screens at all construction sites, use of dust-suppressants and water mist, transportation of C&D materials in covered vehicles etc. including compliance of various rules and guidelines related to effective dust mitigation measures at C&D sites.
29. Salient features of the **Web Portal** for remote monitoring of Dust Control measures at Construction and Demolition sites in NCR are as under:
- i. Provision of video fencing with remote connectivity to the web portal.
 - ii. Standardized check-list on the portal.
 - iii. Project proponents to carry out self-audits/ upload self-declaration fortnightly.


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- iv. Reliable low cost PM2.5 and PM10 sensors at the project site.
- v. Inspection agencies to carry out scheduled/incognito inspections.
- vi. Levying environmental compensation /directing stoppage of work for non-compliances.
30. The Web Portals are now fully functional in Delhi, Haryana, Uttar Pradesh and Rajasthan which are regularly being monitored by the DPCC and concerned State Pollution Control Board. As informed by the concerned state authorities the status of registration of construction sites in Web Portal as on August, 2023 is as following:

	No. of Sites Registered on the portal	No. of Self Audit Reports on the Web-Portal
Delhi	1034	340
Uttar Pradesh	484	284
Haryana	572	379
Rajasthan	72	11



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31. The Commission further mandated deployment of adequate numbers of anti-smog guns, in proportion to the area of the construction as under:
- i. At least 1 for a total construction area between 5000 - 10000 sqm.
 - ii. At least 2 for a total construction area between 10001- 15000 sqm.
 - iii. At least 3 for a total construction area between 15001- 20000 sqm.
 - iv. At least 4 for a total construction area above 20,000 sqm.
32. Besides monitoring by the Commission, the State PCBs in NCR and DPCC have also been directed to conduct regular physical inspections of different construction and demolition projects in their respective jurisdiction towards appropriate dust mitigation measures, adherence to stipulated guidelines for transportation of construction materials and demolition waste, covering of construction materials and demolition waste, regular water sprinkling, deployment of adequate number of anti-smog guns and compliance of various environmental pre-requisites like Consent To Establish / Environment Clearance and registration / self-certification on the web-portal for remote monitoring, wherever applicable. Details of the inspections conducted, non-conformances / violations observed and penal measures including Environmental Compensation (EC) charged against such projects, from 01.01.2023 to 30.09.2023 are as under:


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S. No.	Status of inspection of C&D sites	Delhi	Haryana	Uttar Pradesh	Rajasthan
1	No. of C&D sites physically inspected	4367 4	2612	1026	582
2	Total no. of sites against which EC was levied for non-conformities	2557	96	71	30
3	No. of sites ordered for closure / stoppage of work.	206	74	5	21

MANAGEMENT OF DUST FROM ROADS AND RIGHT OF WAYS

33. Like the construction and demolition activities, dust from roads, sidewalks and open areas contribute significantly to the dust and particulate emissions. To mitigate the effect of such sources, the Commission issued Directions to the NCR states, GNCTD and agencies like NHAI, DDA and municipal corporations / councils in NCR for setting-


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up of "Dust Control and Management Cells" tasked with monitoring and implementation of various dust control measures in all such road projects/activities and management of dust from roads and open areas.

34. The directions focus mainly on:

- i. Optimum utilization of road sweeping machines,
- ii. Scientific disposal of dust collected in designated sites/landfills,
- iii. Sprinkling of water on roads/ROW to suppress dust especially after mechanized sweeping,
- iv. Augmentation of capacity of mechanized sweeping and sprinkling,
- v. Proper maintenance to keep the roads pot hole free.
- vi. Laying and repairing of roads to support mechanized sweeping,
- vii. Conversion of non-paved road sides to paved / green areas,
- viii. Greening of central verges,
- ix. Preference to cemented roads over the bituminous roads especially in Industrial Areas,
- x. Identification of hotspots of road dust and implementing specific targeted dust control measures.


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35. Sixty (60) Dust Control & Management Cells have been set up in the NCR, of which 11 are in NCT of Delhi, 18 in UP, 17 in Haryana and 14 in Rajasthan. Regular review meetings of these DCMCs were held by the Commission (more than 25 meetings so far in 2023) to evaluate the progress and efforts made in this direction towards road sweeping, water sprinkling, scientific disposal of dust, pot-filling / repair to roads including black topping and shoulder levelling besides greening of central verges and greening / paving of pathways / road sides.
36. Current availability of mechanized road sweeping machines in NCR is tabulated as under:

Availability of Mechanized Road Sweeping Machines	
Delhi	86
Uttar Pradesh	29
Haryana	43
Rajasthan	07

ABATEMENT OF INDUSTRIAL POLLUTION

37. Running of industrial operations on cleaner fuels has been an area of priority of concern since its inception. While within the NCT of Delhi, the identified industries had shifted to PNG, use of highly polluting fuels fossil fuels like coal, furnace oil, light diesel oil and the types


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dominated the industrial spectrum in the NCR beyond Delhi. To this end, the Commission convened several meetings with the concerned stakeholders (NCR States, GNCT of Delhi, CPCB, SPCBs of NCR States and Delhi Pollution Control Committee) for a road map to shift of industries to PNG/Cleaner fuels. A standard list of approved clean fuels was formulated by the Commission and statutory directions were issued for its implementation in the NCR, in a graded and phased response manner, targeting transition of all industries in the NCR to the approved fuels latest by 31.12.2022. Besides clean gaseous fuels like PNG/ CNG/ LPG etc., biomass fuels with stricter emission norms were permitted by the Commission for industrial applications in the NCR, beyond the jurisdiction of NCT of Delhi towards an affordable alternative and to minimize the uncontrolled burning of biomass / agricultural residue / straw etc. in fields and open areas.

38. Towards effective enforcement, statutory directions were also issued by the Commission to:
- i. Audit and inspect the industries already connected to PNG and ensure that those industries are not using other polluting fuels.
 - ii. Ensure transition of industries not running on approved fuels to any of the fuels in the approved fuel list.


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- iii. Maintain strict vigil to prevent use of unapproved fuels by enforcement agencies and stringent action against violators.
- iv. Develop a time bound comprehensive action plan, in consultation with the authorized entities to supply gas in industrial areas within NCR.

STATUS OF RUNNING OF INDUSTRIES ON CLEANER FUELS IN NCR

39. Pursuant to issue of a standard fuel list for NCR and a concerted drive for shifting more and more industries to approved fuels during the year, the current status of running of industries on approved fuels is as under:

	Haryana (NCR)	UP (NCR)	Rajasthan (NCR)	NCT of Delhi	Total in NCR
No. of fuel-based industries	3,141	2,273	522	1,823	7,759
No. of industries shifted to approved fuels	2,954	2,188	484	1,823	7,449
Balance	187	85	38	-	310


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40. The balance 310 units have reported temporary self-closure or through directions of the state authorities would be permitted to resume their operations only subject to their shifting and operating on approved fuels. State authorities have been asked to ensure that under no circumstances any industry should be permitted to operate on unapproved fuels.

REGULAR INSPECTION OF INDUSTRIES

41. Besides monitoring by the Commission, the State PCBs in NCR and DPCC have also been directed to conduct regular inspections of industrial units in their respective jurisdiction towards use of approved fuels, adherence to stipulated emission standards, effectiveness of emission / air pollution control devices and compliance of conditions of various environmental pre-requisites like CTE / CTO, Environment Clearance, authorization from agencies concerned etc. Details of the inspections conducted, non-conformances / violations observed and penal measures including Environmental Compensation (EC) charged against such units, from 01.01.2023 to 30.09.2023 are as under:


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Status of inspection of industrial units by State PCBs / DPCC				
Area	Delhi	Haryana	Uttar Pradesh	Rajasthan
Number of industries inspected during the period.	5,655	2,951	2,077	1,587
Number of Industries issued with closure directions for gross violations	0	86	60	23

PNG INFRASTRUCTURE AND SUPPLY IN NCR

42. Towards adoption of standard approved fuels for NCR, PNG infrastructure and supply is extremely critical, targeting as many industries to switch over to cleaner fuels like PNG for their fuel requirements for boilers, furnaces, heaters etc. The Commission accordingly pursued the matter with all stakeholders in this context i.e., the MoPNG, all City Gas Distribution Agencies in NCR and industrial associations etc. towards expeditious availability of infrastructure and supply of PNG in all industrial areas in NCR.
43. Up till now, out of total 240 industrial areas in the NCR, 211 industrial areas have been provided PNG infrastructure and connectivity and the work is in


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progress with respect to the balance 29 industrial areas (7 in Uttar Pradesh, 14 in Haryana and 8 in Rajasthan).

ABATING AIR POLLUTION CAUSED BY DIESEL GENERATOR SETS

44. Owing to not so reliable power supply arrangements, particularly in the industrial areas, rampant use of highly polluting Diesel Generator sets was observed by the Commission. Accordingly, to improve upon the power availability and reliability, particularly to abate air pollution in the winter months, all the DISCOMs operating in Delhi-NCR were issued statutory directions on 22.02.2022 towards ensuring uninterrupted power supply in Delhi-NCR to minimize use of DG Sets.
45. Further, the Commission also issued detailed Statutory Directions for regulating the use of Diesel operated Generator Sets in the NCR, as reviewed and amended from time to time including adoption and retro-fitment of various emission control system / devices in existing DG sets.
46. The Commission, in due consideration of the contentions and submissions made by various stakeholders, issues in ground level implementation, availability of RECDs / dual fuel systems / new gensets to CPCB-IV standards and various other techno-commercial considerations put forth by them, pursuant to a comprehensive review and in supersession of all extant directions / orders / guidelines on the regulations for DG sets, issued

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Direction No. 76 dated 29.09.2023 adoption of a Schedule for regulated operations of DG sets across all sectors in the NCR including Industrial, Commercial, Residential and Office establishments etc. w.e.f. 01.10.2023.

47. However, in the interest of not disrupting emergency services and permitting sufficient time for adopting the stipulated emission control mechanism in such existing DG Sets, the Commission, as a one-time exception, permitted DG Sets for all capacity ranges as stipulated in the Direction No. 76 (which have still not been equipped with emission control devices / systems as per the above noted schedule), to be run only for emergency services in the NCR, even under periods of restrictions under the GRAP, **only up to 31.12.2023** and strictly subject to adherence to the above noted schedule / measures for emission control thereafter.

PREPAREDNESS MEETING WITH DISCOMS TO ENSURE UNINTERRUPTED POWER SUPPLY IN NCR

48. Towards minimizing the use of diesel generator sets in the NCR, the Commission reviewed the position with the power DISCOMs operating in NCT of Delhi and NCR Districts of Uttar Pradesh, Haryana and Rajasthan to take stock of the power availability scenario and steps that are being taken by the DISCOMs to ensure reliable and uninterrupted power supply in the NCR.



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49. It is relevant to state here that the Commission had issued Statutory Directions way back in 2022 mandating DISCOMs to:
- i. Comprehensively assess the power demand in NCR;
 - ii. Ensure uninterrupted supply in the NCR, particularly for period between October – February.

OPEN BIO-MASS/MSW BURNING AND FIRES AT LANDFILL SITES

50. The Commission directed for formulation of action plans for control of Bio-mass/Municipal Solid Waste Burning and fires in Landfill Sites, focusing on deployment of enforcement teams, quick complaint redressals and corrective actions through IT enabled platforms etc. for strict compliance.
51. The need to prevent fires at various landfill sites in the region were observed and following policy interventions were directed for prevention / elimination of open burning and controlling landfill fires by the MCD and other concerned urban local bodies:
- i. Concrete and time bound plan for liquidating legacy solid waste at sanitary landfill sites through decentralized segregation, waste processing plants and by preventing dumping of fresh waste;
 - ii. Expediting the timelines for completion of infrastructure works and capacity


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- enhancement related to waste processing facilities in cities based on proper estimation of waste generation and by aiming for 100% source segregation;
- iii. Effective management and waste segregation at source (separating out days for collection of wet and dry waste, incentives collection and transportation of segregated waste, bulk waste generators to be liable for segregation and processing etc.);
- iv. Expansion of waste recycling capabilities, material recovery centers, compositing sites and timely completion of ongoing and planned infrastructure works.

**PREVENTION AND CONTROL OF STUBBLE BURNING
/ FARM FIRES**

52. High incidences of paddy stubble burning in Punjab and Haryana, year on year, have been a matter of serious concern and have been contributing adversely to the air quality scenario in the NCR particularly during the winter months which coincide with paddy harvesting. Accordingly, prevention and control of paddy stubble burning has been a high priority sector for the Commission.
53. To this end, following detailed deliberations and discussions with the State Governments of Punjab,


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Haryana, UP, Rajasthan, Government of NCT of Delhi, State Pollution Control Boards of NCR States and Delhi Pollution Control Committee (DPCC) and various other stakeholders and knowledge institutions like Indian Council of Agricultural Research (ICAR), Indian Agricultural Research Institute (IARI), Indian Space Research Organization (ISRO) etc. in 2021, the Commission developed a framework for prevention and control of paddy stubble burning and effective management techniques for paddy stubble.

54. Statutory Directions were thereafter issued to the State Governments of Punjab, Haryana and Uttar Pradesh to prepare detailed and monitorable state specific action plans, based on the following six major components / pillars of action, as provided under the framework:

i. **Plans / Schemes to reduce generation of paddy straw;**

- Crop diversification – to other crops like maize, millets etc.
- Promote Basmati variety as this is conveniently used as fodder
- Promote low straw and early maturing paddy varieties – to enhance time window between harvest and sowing of wheat crop
- Promote direct seeding of rice (DSR) method against transplant to shorten the crop cycle



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ii. ***In-situ* Crop Residue Management;**

- Procurement and allocation of adequate CRM machinery ensuring optimal utilization of the available machinery with CHCs & Cooperatives
- Staggering harvesting schedule in Village / Block to improve machine utilization
- Extensive use of Bio-decomposer developed by IARI

iii. ***Ex-situ* Crop Residue Management;**

- Use of paddy straw as an economic resource in Biomass Power Projects, Co-firing in Thermal Power plants, Feed stock for 2G Ethanol plants, Feed stock in Compressed Biogas plants, Fuel in Industrial Boilers / WTE plants / Brick Kilns, Packaging materials, Agri-panels, Compost and Processed cattle fodder etc.

iv. **IEC activities to educate and guard against stubble burning.**

- Sensitization and education through electronic media, social media, print media, Fixing of hoardings, Audio-visual clips on TV, Broadcast of radio jingles, PA system mounted vans, Demonstration camps, public addressing system etc.

v. **Effective monitoring/enforcement;**

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vi. **Prohibition of Stubble/Crop Residue Burning;**

True copy of Direction(s) No(s). 6-10 dated 10.06.2021 conveying the Framework which formed the basis for Action Plan are marked herewith and annexed as **ANNEXURE R-1 (page to)**

55. For ensuring a standard method for recording of paddy based Crop residue burning fire events, a Satellite based standard protocol was developed by ISRO for the Commission and Directions were issued to ensure adoption and application of the standard protocol for recording of Crop Residue Burning Fire Events, using Satellite Data. Based on the Framework developed and directed for by the Commission, respective State Action plans were prepared for the year 2021 and 2022.
56. Further, to promote ex-situ utilization of paddy straw as resource various Directions/advisories were issued by the Commission, as under:
- i. Advisories issued to the State Governments of Punjab, Haryana and Uttar Pradesh on 28.07.2021 on "Ex-Situ Stubble Management for tackling the problem of Stubble Burning", including the need to establish an ecosystem and robust supply chain mechanism to boost ex-situ utilization of straw in various possible applications.
 - ii. Statutory directions issued on 17.09.2021 to 11 Thermal Power Plants within 300km of Delhi for



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“Ex-Situ Paddy Straw Management through co-firing of biomass pellets/torrefied pellets (with focus on paddy straw) in coal based thermal power plants”.

- iii. Statutory directions issued in February, 2022 also permitting running of Industries in NCR (beyond Delhi) on Biomass fuels, thus targeting utilization of paddy straw as fuel in industrial boilers in NCR.
57. Based on field experience and learnings during execution of the plans of Action in 2021 and 2022, the Commission held various meetings with the Officials of the Rajasthan, Delhi, Haryana, Uttar Pradesh and Punjab as early as in February, 2023 including meetings with Chief Secretaries and DCs / DMs of Districts in these State so as to discuss further preventive and mitigative actions that could be taken to control stubble burning and update / review the Action Plan for 2023 in the following key areas:
- a) Mapping of available machinery in Custom Hiring Centres and cooperatives;
 - b) Optimized use of available CRM machinery including staggering harvesting schedule at village/ cluster level;
 - c) Speedy procurement of additional farm machinery through fund allocations made by MoAFW under the Crop Residue Management (CRM) Scheme;
 - d) Expanding bio-decomposer application to supplement in-situ stubble management measures;

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- e) Facilitating robust supply chain towards ex-situ utilization;
- f) Intensifying campaigns and IEC activities against stubble burning;
- g) Intensifying monitoring and enforcement actions;
- h) Co firing of Biomass in Thermal power Plants and use of paddy residue in industries.

58. The Commission closely monitored the fire counts owing to paddy stubble burning, based on the standard ISRO protocol, on a daily basis and took up with the State Governments concerned for appropriate action. Arising out the implementation and updation of the action plans during 2021, 2022 and 2023, the status of paddy residue burning events (for the period 15th September to 30th November) were reported as under:

State	Cumulative Fire Counts for the period of 15 th September to 30 th November			
	2020	2021	2022	2023
Punjab	83,002	71,304	49,922	36,663
Haryana	4,202	6,987	3,661	2,303
Uttar Pradesh (NCR)	407	252	198	212
Total (including fire counts of Delhi and area of NCR in the Rajasthan)	87,632	78,550 Reduction of 10.36% over 2020	53,792 Reduction of 32% over 2021	39,186 Reduction of 27% over 2022

59. The combined efforts of the Central Government, the Commission, Government of Punjab, NCR State


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Governments and other Stakeholders towards better in-situ management of crop residue through CRM machinery, use of PUSA bio-decomposer, facilitating ex-situ utilization of paddy straw and extensive IEC activities etc., helped in reducing the fire counts, as is evident from the data based on standard ISRO protocol.

EFFORTS FOR IN-SITU MANAGEMENT

60. To support the efforts of the Governments of Punjab, Haryana, Uttar Pradesh and NCT of Delhi to address air pollution caused due to stubble burning, a Central Sector Scheme on Crop Residue Management (CRM) had been introduced w.e.f. 2018-19 by the Central Government. Under this scheme, financial assistance @ 50% is provided to the farmers for purchase of crop residue management machinery and @ 80% is provided to Cooperative Societies, FPOs and Panchayats for procurement of such machines by Custom Hiring Centres (CHCs) for onward renting to needy farmers. The Scheme promotes the usage of machines such as Super Straw Management Systems, Happy Seeder, Super Seeder, Smart Seeder, zero till seed cum fertilizer drill, Mulcher, Paddy Straw Chopper, hydraulically reversible MB plough, Crop reapers and Reaper binders for in-situ management of crop residue and Balers & Rakes which are used for straw collection in the form of bales for other ex-situ uses of straw.


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61. Total funds to the tune of Rs.3,333.17 crore have been so far released by the Central Government under the CRM Scheme. The available data indicates that there are around 1,17,672 Crop Residue Management (CRM) Machines available in Punjab, 80,071 in Haryana, and 7,986 in the NCR areas of Uttar Pradesh. Additionally, around 23,000 such machines in Punjab, 7,572 in Haryana, and 595 in the NCR areas of Uttar Pradesh are to be procured by the State Governments in this season.

Availability of CRM machinery					
PUNJAB		HARYANA		UP NCR	
2022	2023	2022	2023	2022	2023
90,422	1,17,672	72,777	80,071	7,482	7,986

APPLICATION OF PUSA BIO-DECOMPOSER FOR IN-SITU MANAGEMENT

62. The Commission from time to time has made several communications and held meetings with the respective State Governments and bodies with respect to the use of Bio-decomposer technology. Directions dated 10.06.2021, issued by the Commission with respect to tackling the problem of stubble burning, also includes the use of Biodecomposer technology. However, from field results and feedback from the State Governments, it has been observed that the PUSA Bio-decomposer application would not be effective in an isolated manner


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and has to be used in conjunction with agricultural machinery which ensures the ploughing and mulching of the agricultural residue and the Bio-decomposer into the soil. Furthermore, it takes about 20-25 days for effective decomposition of straw, which according to the farmers is not satisfactory considering the short time window available between the paddy harvest and sowing of wheat crop. As per the action plans of state governments and as reported in various meetings, following targets for Bio-decomposer application have been provided for 2023:

PUNJAB	HARYANA	UP NCR
8,000 acres	5,000,00 acres	1,81,500 acres

63. Total quantity of paddy stubble planned to be managed through In-situ means, including Bio-decomposer application in 2023 is as under:

(in Million Tonnes)

PUNJAB	HARYANA	UP NCR
11.9	3.19	0.20

PROMOTING EX-SITU PADDY RESIDUE MANAGEMENT

64. The Commission issued advisories to the State Governments of Punjab, Haryana and Uttar Pradesh on "Ex-Situ Stubble Management for tackling the problem of Paddy Stubble Burning on 28.07.2021. The


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- Commission has also advised State Governments to establish an ecosystem and robust supply chain mechanism to boost ex-situ utilisation of paddy straw.
65. Directions were issued on 17.09.2021 to all the 11 Thermal Power Plants in NCR and adjoining areas within 300km of Delhi for “Ex-Situ Paddy Straw Management through co-firing of biomass pellets/torrefied pellets (with focus on paddy straw) in coal based thermal power plants”. Such co-firing has started in the power plants, though in much smaller quantities as against the respective targets and the progress on this front is being critically monitored and reviewed on a monthly basis in active coordination with Ministry of Power, NTPC and the other power plant operators.
66. The progress made by the identified Thermal Power Plants and issues related to increased utilization of biomass pellets was also reviewed periodically by the Commission during various meetings with the Power Plant operators, in association with the Ministry of Power.
67. In view of the compelling need to also control air pollution from coal based Captive Thermal Power Plants in the NCR, the concerns of burning of agricultural residue and the potential of its effective utilization as a resource, the Commission issued Direction No. 72 dated 17.03.2023 to all the coal based Captive Thermal Power plants including co-generating Captive Thermal Power Plants situated in NCR to initiate immediate


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- steps to co-fire biomass-based pellets (with focus on paddy straw utilization) with coal through a continuous and uninterrupted supply chain targeting at least 5% co-firing of biomass pellets, latest by 30th, September, 2023 and at least 10% co-firing by 31st December, 2023.
68. Vide Direction No. 62 dated 04.02.2022 and Direction No. 63 dated 18.05.2022, use of Biomass fuels was permitted by the Commission for existing and new industries in NCR, beyond the jurisdiction of NCT of Delhi, thus also promoting the use of paddy straw in boilers / furnaces of the industrial units.
69. Other than the ex-situ measures for utilization of paddy stubble listed above, one 2G Bio-ethanol plant in Panipat, Haryana is already commissioned / operational and the other upcoming 2G Bio-ethanol plant in Bhatinda, Punjab is also expected to be commissioned by January, 2024, which however, has started sourcing paddy straw in the current paddy harvesting season itself. These plants are expected to utilize around 2 lakh tonne of paddy straw, each annually, when running to their full capacities.
70. Utilization in paddy based Biomass power projects and Compressed Biogas plants has also increased significantly over the last few years, including in various other misc applications like Packaging, Card board, Panel board etc.



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71. All the above factors considered, projection for ex-situ management of paddy straw during 2023 vis-à-vis the utilization in 2022 is as under (in Million Tonnes):

PUNJAB		HARYANA		Total	
2022	2023	2022	2023	2022	2023
1.51	4.67	1.80	1.95	3.31	6.62

72. Substantial quantity of paddy stubble is also planned to be utilised for cattle fodder (around 1.1 MT in Punjab, 2.46 MT in Haryana and 0.48 MT in UP NCR) – **Total 4 million tonnes approximately.**
73. With persistent field level efforts and targeted policy initiatives in the short/ medium/ long term, it is expected that instances of paddy stubble burning in Punjab, Haryana & NCR areas of UP will see gradual but marked improvement, year on year, with a consequent improvement in the air quality of Delhi-NCR during the paddy harvesting season.

ABATING AIR POLLUTION FROM DISPERSED SOURCES IN DELHI

74. A Pilot project was carried out for assessment and abatement of pollution from various 'Non-Point' Dispersed sources, in the erstwhile SDMC jurisdiction, in association with an NGO. Based on the progress, learnings and encouraging outcome of the project, the project has been replicated in the entire municipal



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corporation of Delhi. A Standard Operating Procedure (SOP) has also been formulated to facilitate replication and upscaling of the project, envisaged along with improved inter-agency coordination amongst MCD, Departments /Agencies in the GNCTD, Delhi Pollution Control Committee (DPCC), Nodal Officers and support from other stakeholders.

75. Based on surveys or public complaints, dispersed / local sources causing air pollution are identified and are flagged to the concerned agency electronically through a mobile application (311 App of MCD). A Standard Operating Procedure (SoP) is in place focusing on registration, transfer and resolution of issues related to air pollution. Issues are categorized as short term / long term and focus is on expeditious resolution of short-term issues and planning for the long-term issues. Corrective action, once completed by the agency, is uploaded back on the portal. The issue stands resolved only after this step.
76. A total of 1,67,608 issues have been flagged so far, of which 1,34,875 issues (approx. 80.5%) have since been resolved fruitfully.

CREATING GREEN BELTS IN DELHI / NCR

77. Dust mitigation through greening and creation of forest sinks is vital to abate air pollution. This green walling is needed against desertification and ingress of dust and cleansing of toxic gases. Guided by this, the


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Commission took up the task of enhanced greening and plantation with NCR States and GNCTD, also involving various road owning agencies viz NHAI, CPWD, MCD etc. for target-oriented action plans for mass plantation drives, focusing on nurturing and better survival rate and protection of all categories of forest areas, besides Greening/ paving of central verges and sidewalks along the entire road network in NCR.

78. All ULBs in NCR were particularly impressed upon to prepare and implement action plans for expanding the net of "Nagar Van" and "Nagar Vatika", wherever feasible, in urban agglomerations and cities in NCR, including adoption of Miyawaki technique for dense plantation in limited urban spaces.
79. The Commission engaged with various stakeholders on a regular basis, also emphasizing on the involvement of students and residents in various plantation drives, in an endeavor towards increasing the green cover in the Delhi-NCR to curb air pollution. Following detailed consultations with these entities, greening and plantation action plans 2022-23 were formulated for all the NCR districts of Haryana, Rajasthan, Uttar Pradesh and Delhi.
80. The progress as per the targets laid down in the respective action plans was periodically monitored by the Commission. While the overall targets were met (as seen in the given table below), other qualitative aspects were also emphasized upon to improve the quality of plants and processes adopted. The Commission



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appropriately emphasized monitoring, post-plantation care, audit of survival rate, use of recycled water for watering plants, and plantation of native species as the key elements of the plantation program.

NCR Areas	Target	Plantation carried out
Delhi	31,89,191	39,49,980
Haryana	85,06,999	87,96,324
Rajasthan	9,84,992	10,58,236
Uttar Pradesh	1,69,29,310	1,73,93,359
TOTAL	2,96,10,492	3,11,97,899

81. The Commission focused on land areas in Delhi-NCR which were suited to increase green cover, including identifying areas for dense plantation, identification of suitable species for different locations and appointment of nodal officers towards better coordination and monitoring of plantation activities.
82. Dense Plantation through Miyawaki Technique - The Commission actively promoted dense plantation including Miyawaki Technique to create urban forests to abate air pollution. The Miyawaki technique, developed by renowned Japanese botanist and ecologist Dr. Akira Miyawaki, offers a pioneering approach to



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establish dense, native forests with accelerated plant growth. This technique aims to achieve plant growth rates tenfold faster and plantation densities thirty times denser than conventional methods.

83. Miyawaki Method is unique and innovative based on Potential Natural Vegetation concept, proven to work worldwide, irrespective of soil and climatic conditions. This method is 100% organic and uses local native plants which supports the local ecosystem. The methodology involves planting a diverse array of native species within a designated area, resulting in a self-sustaining ecosystem that requires minimal maintenance after the initial three-year establishment phase.
84. The methodology involves site selection, soil testing, biomass selection, forest survey, and species selection. The site is prepared by excavating soil, mixing biomass, and enhancing soil microbiology. Saplings are planted using a multi-layer method, supported with sticks and mulched with organic materials. Proper watering and ongoing monitoring and maintenance are essential for the success of the Miyawaki forest.
85. For effective utilization of open spaces and to safeguard public health, MCD undertook dense plantation projects using Miyawaki Technique during the year. The benefits of Miyawaki forests include increased urban biodiversity, reduced heat island effects, carbon sequestration, and support for climate change mitigation.



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86. Educational institutions including schools, colleges and research institutions in NCR have been involved during current year to promote large-scale greening/ dense plantation initiatives in their surroundings. These institutions have been advised to develop dense plantation barricades along the boundaries of their institutions. Industrial units have also been advised to develop dense plantation barricades along the boundaries of their industrial units.
87. The Commission also took up with the University Grants Commission (UGC) to have special budget provisions particularly for institutions in the NCR districts for increasing the green cover in view of the shortage of funds to conduct large-scale plantation drive and to carry out its maintenance.
88. The Commission held a series of consultations and review meetings to draw the roadmap and further finalize Greening/ Plantation Action Plan for the year 2023-24. After taking into account inputs provided by the NCR State Governments/ GNCTD, the target of plantation (including trees, shrubs, bamboo, etc.) for the year 2023-24 was finalized and the progress made till 31.10.2023 is as under:

States	Target for 2023-24	Plantation till 31.10.2023
Delhi	95,04,390	70,89,472
Haryana (NCR Districts)	98,93,797	76,26,728

Rajasthan (NCR Districts)	25,89,892	15,82,825
Uttar Pradesh (NCR Districts)	1,64,63,497	1,65,46,648
Total	3,84,51,576	3,28,45,673

89. Additionally, targets for plantation have also been set for different agencies of the Central Government for the year 2023-24 as under:

Central Agencies	Target for 2023-24
CRPF	1,20,000
DFCCIL	1,00,000
NCRTC	10,000
BSF	50,000
Northern Railway	3,00,000
CISF	30,000
Total	6,10,000

90. State Governments / GNCTD have been advised to prefer shrubs of good height so as to provide adequate barrier for trapping dust from the environment. Barricading on industrial areas, schools, colleges etc. with thick tree cover / shrubs will also help arrest dust.
91. The Commission have also advised to lay special emphasis on involving students, faculty members, staff and Residential Welfare Associations etc. in the

plantation drives. Monitoring, post plantation care, survival rate and plantation of native species are key elements emphasized upon in the plantation programme and regular follow up / review meetings are being conducted for effective implementation of the greening and plantation programme in the NCR.

RESEARCH AND DEVELOPMENT INITIATIVES

92. The Commission, with a view to obtain further insights into monitor, prevent, control and abate air pollution in Delhi-NCR, invited R&D proposals and pilot projects for field demonstration and evaluation of various technology interventions from Scientists / Researchers / Non-Government Organizations (NGOs) / CBOs / Consortia / Individuals, to be coordinated and proposed by an Academic/Research/ Scientific Institution of repute.
93. A total of 21 project proposals were received, of which 07 projects were sanctioned by the Commission for financial assistance during 2022-23. All these projects are underway at various stages.

GRADED RESPONSE ACTION PLAN, OCTOBER 2023

94. A comprehensive Action plan especially for winter months in the form of the Graded Response Action Plan (GRAP) provides specific set of response actions,


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depending on severity of air pollution levels, to be implemented by identified agencies for minimizing Air pollution, a situation that generally persists in the entire NCR during the peak winter months.

95. While the GRAP has been in force since 2017 when it was first notified by the MoEFCC, the Commission felt a need to comprehensively review the Schedule of preventive / restrictive activities under various Stages of GRAP, keeping in view the developments and actions initiated over last few years to abate air pollution in Delhi-NCR, technological advancements and the trend of air quality parameters as recorded for Delhi.
96. The earlier schedule of GRAP was invoked reactively on reaching a particular threshold air quality index. It was envisaged that invoking GRAP proactively would be a better approach to control the severity of air pollution and accordingly invoke appropriate stages of GRAP much earlier than the threshold levels are likely to be reached. To this end, development of a Decision Support System (DSS) and refinements in the Air Quality Early Warning System (AQEWS) modelling were coordinated by the Commission through IMD / IITM, to enable reasonably accurate prediction of air quality index for Delhi, for at least 3 days in advance.
97. The schedule of the GRAP to be implemented in the entire NCR, as comprehensively reviewed and revised in 2022, was classified under 4 different stages of adverse avg. air quality in Delhi viz.:

Stage – I 'Poor' (AQI of Delhi between 201 – 300)



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Stage – II 'Very Poor (AQI of Delhi between 301-400)

Stage – III 'Severe' (AQI of Delhi between 401-450)

Stage – IV 'Severe +' (AQI of Delhi >450)

98. Actions under Stages II, III and IV of the GRAP are required to be invoked at least three days in advance of the AQI reaching to the projected levels of that stage, based on the dynamic model and weather/meteorological forecast provided to the Commission by IMD / IITM on a day-to-day basis.
99. Restrictive actions undertaken as per previous stages are to be continued, in addition to the air pollution stage under which the restrictive actions are envisaged to be taken. For example, restrictive actions under the Stage III category, whenever invoked, shall be in addition to those under Stage I and II respectively and so on and so forth.
100. Preventive and restrictive actions, including bans on certain set of activities, also impacting the economy and livelihood options, are needed to be imposed in NCR in adverse air quality scenarios as laid down in the GRAP. However, owing to a relatively better air quality during 2022, the number of days for which GRAP Stage III and above were required to be invoked were much lesser as compared to previous years.
101. The schedule for GRAP was further reviewed by the Commission in 2023 and Direction No. 77 was issued on 06.10.2023 for implementation with immediate


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effect, whenever orders are issued by the Commission for invoking actions under various Stages, in the entire NCR.

102. The Commission has also constituted a Sub-Committee to plan for advance action and issue necessary orders for invoking various provisions of the GRAP, based on the prevalent air quality and the AQI forecast to be provided by IMD from time to time.
103. Implementing / enforcement agencies have been identified against each of the actions envisaged in the revised schedule of GRAP and such agencies are required to strictly implement / enforce these towards controlling further deterioration of air quality in the NCR.

True copy of GRAP is marked herewith and annexed as **ANNEXURE R-2 (Page to).**

ENFORCEMENT TASK FORCE – FLYING SQUADS FOR INCOGNITO INSPECTIONS

104. It is pertinent to highlight that, in exercise of the powers conferred under section 11(5) of the CAQM Act, 2021 and in exercise of the enabling provisions made thereunder, the Commission constituted a special Task Force namely Enforcement Task Force (ETF) on 02.12.2021 to monitor and supervise the



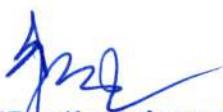
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implementation of the Statutory directions issued by it from time to time and related environmental statutes.

105. To assist the ETF, 40 Flying Squads/ Inspections Teams carry out incognito checks for identifying serious violations/ statutory Directions of the Commission and recommend appropriate action thereon, based on the seriousness of non-compliances.
106. The ETF meets frequently to review and take stock of the ground situation to closely monitor the field level implementation and compliances of the various directions and orders issued by the Commission. Non-conformities/ non-compliance in respect of various directions and orders identified by the Flying Squads and are presented before the Enforcement Task Force for detailed deliberations and deciding action against serious violations.
107. The status of Closure Directions approved by the Commission across different sectors and geographical jurisdictions in the NCR, since inception is as under:

Total sites inspected	No. of closures direction issued				State-wise closure cases			
	Industry	C&D Sites	DG Sets	Total	Delhi	Har	UP	Raj
16,037	562	296	41	899	141	268	393	97

108. Such units / activities were later permitted to resume operations by the Commission following due corrective and preventive measures by such units to address the


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gross violations and with a commitment to henceforth comply with all statutory directions / guidelines of the Commission and other related statutes to abate air pollution, details of which are as under:

Sector-wise Resumption Cases			Total	State-wise Resumption Cases			
Industry	C&D Sites	D G Sets		Delhi	Har	UP	Raj
459	222	37	718	111	197	323	87

109. To guide and direct various actions towards abatement of air pollution in the region, the Commission from time to time has so far issued 78 Statutory Directions beside various Advisories and executive orders to various agencies concerned in the NCR including State Governments of the NCR States, (including the Government of NCT of Delhi), State Government of Punjab and various bodies of the Central and State Governments in the region, which are required to be not only monitored but complied with by each of the implementing authority scrupulously.
110. A brief detail of Directions and Advisories issued by the Commission are as under:

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Direction No.	Dated	Direction
1 to 5	23.12.2020	Directions for Monitoring and Control/Prevention of Air Pollution from Constructions & Demolition (C&D) activities in NCR
6 to 10	10.06.2021	Directions providing a Framework, to develop a State Specific detailed Action Plan and to take appropriate steps to tackle the problem of Stubble Burning in Punjab, Haryana, Uttar Pradesh, Rajasthan and Delhi
11 to 18	11.06.2021	Directions to Haryana, Rajasthan, UP, Delhi, NDMC, North DMC, EDMC, SDMC for Monitoring of Dust Control Measures at Construction & Demolition Sites in NCR: Development of a "Web Portal" for remote monitoring of project sites in NCR
19 to 28	11.06.2021 and 15.06.2021	Directions to NHAI, DDA, Delhi, Haryana, Rajasthan, Uttar Pradesh and to NDMC, North DMC, EDMC, SDMC for Setting up Dust Control and Management Cell by Road Owning/Maintaining/Construction Agencies
29 to 31	12.08.2021	Directions to Haryana, Rajasthan, Uttar Pradesh for Shifting of Industries in NCR to PNG / Cleaner Fuels


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32 to 36	16.08.2021	Directions to Punjab, Haryana, Uttar Pradesh, Rajasthan and Delhi for implementation of a Standard Protocol developed by ISRO to estimate and record Crop Residue Burning Events using Satellite Data
37 to 41	16.09.2021	Directions to Punjab, Haryana, Uttar Pradesh, Rajasthan and Delhi for “Effective Implementation and regular Review of their Action Plan to Prevent and Control Paddy Stubble Burning”
42	17.09.2021	Direction to NTPC and all other Thermal Power Plants located within 300 Kms. radius of Delhi for “Ex-Situ Paddy Straw Management” by co-firing in Thermal Power Plants
43	09.11.2021	Direction to SDMC for “Full Automation of RFID infrastructure at 10 identified Delhi border entry points”
44	16.11.2021	Directions to NCR State Governments, Government of Punjab and GNCTD for effective control of Air Pollution in wake of prevailing adverse air quality scenario in Delhi-NCR
45	25.11.2021	Directions to NCR State Governments and GNCTD for running of Schools, Colleges and educational institutions in physical / online mode


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46	02.12.2021	Directions on Steps for Effective Control of Air Pollution in wake of prevailing air quality scenario in Delhi-NCR
47	07.12.2021	Directions on Shifting of Industries to PNG where gas infrastructure and supply is already available
48	15.12.2021	Exempting milk & dairy units and medical units for lifesaving equipment & medicines w.r.t Direction No-46
49	15.12.2021	rescheduling of operations of various industries and relaxation to Thermal Power Plants w.r.t Direction No-16
50	17.11.2021	Review of restrictions imposed on School, Colleges and Educational Institutions vide Direction No-46
51	17.12.2021	Construction & Demolition Activities in NCR
52	20.12.2021	Restrictions on Entry of Trucks and Construction & Demolition Activities in NCR by review of Directions No-49 and 51
53	04.02.2022	Review of Direction No-49 dated 15.12.2021 - Permitting Biomass based fuels for industrial application in NCR , beyond the NCT of Delhi
54 to 57	08.02.2022	Regulations for use of Power Generating Sets
58 to 61	22.02.2022	Uninterrupted power supply in NCR to minimize use of DG Sets


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62	17.03.2022	Standards for emissions in industrial processes in NCR using bio-mass fuels
63	18.05.2022	Use of Biomass fuels for new industries in NCR beyond the jurisdiction of GNCTD
64	02.06.2022	Permissible fuels for industrial applications in NCR
65	23.06.2022	Standard list of approved fuels for various applications across NCR with Addendum (03.04.2023)
66	05.08.2022	Sub-Committee for implementing Graded Response Action Plan (GRAP) in NCR
67	12.09.2022	Implementation & Review of the updated/revised action plan for prevention & Control of Stubble Burning in 2022
68	14.09.2022	Regulation for use of DG sets of capacity more than 800 KW
69	02.11.2022	Dust Control Measures in C&D projects - Use of Anti Smog Guns
70	30.11.2022	Abating Air Pollution From Public Transport Sector regulations on Diesel Operated Autorickshaws
71	09.02.2023	Regulations for use of DG sets for periods other than ban/restrictions under the GRAP in NCR


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72	17.03.2023	Co-firing of Biomass Pellets in Coal Based Captive Thermal Power Plants in NCR
73	02.06.2023	Regulations for use of DG sets in NCR
74	25.07.2023	Implementation and review of the updated revised plan of action for prevention and control of Paddy Stubble Burning in 2023
75	27.07.2023	Implementation of Graded Response Action Plan for NCR including NCT of Delhi, Revised in July, 2023
76	29.09.2023	Review of regulation for use of DG sets in NCR
77	06.10.2023	Revised Schedule of Graded Response Action Plan (GRAP) for NCR
78	19.10.2023	Migration of public transport services especially buses in NCR to cleaner modes.
Advisory No.	Dated	Advisory
1	03.02.2021	Advisory to Haryana, Uttar Pradesh, Rajasthan and Delhi for mandating procurement of E-Vehicles & Zero Emission Vehicles
2	12.02.2021	Advisory to Haryana, Uttar Pradesh, Rajasthan and Delhi for Dust Pollution Abatement measures from Roads and Open Areas along the right of way etc.


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3	22.02.2021	Advisory to NHAI and DDA for Dust Pollution Abatement measures from Roads and Open Areas along the right of way etc.
4	22.02.2021	Advisory to Haryana, Uttar Pradesh, Rajasthan and Delhi for setting up of a “Dust Control and Management Cell” by various road owning/ road constructions agencies for Abatement of Dust Pollution
5 to 7	28.07.2021	Advisory to Punjab, Haryana, Uttar Pradesh for exploring various options for Ex-situ Stubble Management and developing a robust supply chain logistics model and deriving commercial value out of paddy straw
8	06.04.2023	Advisory to NDMC, DDA, MCD, Gurugram, Faridabad, Ghaziabad and Noida Authority to Control and Prevention of Air Pollution from Construction & Demolition activities in the NCR
9	28.06.2023	Regulations for use of DG sets in NCR
10	19.07.2023	Cleaner Public Transport Services (buses) in NCR
11	30.08.2023	Advisor to TPPs and State Government of Haryana, Uttar Pradesh and Punjab for Co-firing of Bio-mass (focusing on paddy straw-based pellets) in Thermal Power Plants


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111. Towards effective implementation of various directions, advisories, targeted policy actions, rules / regulations and guidelines under various statutes for abatement of air pollution in the NCR, the Commission has been regularly holding progress review meetings. An account of important meetings of the Commission, its sub-Committees and other progress review meetings held since its inception from time to time up to November, 2023 is as under:

Period	Full Commission meetings	Sub-Committee meetings (including GRAP)	Other review meetings
Prior to 2022-23	09	25	55
During 2022-23	04	42	83
During 2023-24 (till Nov, 2023)	02	12	89

112. In light of the averments made above, it is evident that action plans / plans for abatement of air pollution from various sectors have been put in place by the Commission and to ensure implementation of such


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actions by the implementing authorities, regular follow up and review of actions taken are being done.

113. It is respectfully submitted that the Action Plans / Plans formulated for various sectors must be meticulously adhered to and implemented by GNCTD, respective State Government and the authorities concerned responsible for its implementation. The critical issue, therefore, now involved is focused, continuous and strict implementation of Directions / Plans / Action Plans put in place by the Commission for prevention, control and abatement of air pollution.

New Delhi

Dated: 05.12.2023

Filed By



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**COMMISSION FOR AIR QUALITY MANAGEMENT
IN NATIONAL CAPITAL REGION AND ADJOINING AREAS**

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F. No. A-110014/10/ 2020/CAQM-SB / 384-387

Dated: 10.06.2021

**SUBJECT: PROVIDING AN EFFECTIVE FRAMEWORK, ACTION PLAN AND STEPS TO
BE TAKEN TO TACKLE THE PROBLEM OF STUBBLE BURNING.**

1. Whereas, it is an established fact that the stubble burning especially in the months of October- November is an issue of grave concern in view of its direct contribution to Air Quality degradation in National Capital Region and Adjoining Areas by increasing the concentration level of pollutants like Particulate Matter, Carbon dioxide (CO₂), Carbon Monoxide (CO), Oxides of Sulphur (SO_x) and Oxides of Nitrogen (NO_x);
2. Whereas, Government of India, MoEF&CC, under the provisions of the Commission for Air Quality Management in National Capital Region and Adjoining Areas Ordinance 2021 (hereinafter referred to as Ordinance 2021) has constituted the Commission for Air Quality Management in NCR and Adjoining Areas (hereinafter referred to as Commission) vide Notification No. S.O. 1687 (E) dated 23rd April, 2021;
3. Whereas, Section 30 of the Ordinance 2021 provides that anything done or any action taken by the Commission under the Commission for Air Quality Management in National Capital Region and Adjoining Areas Ordinance 2020 (hereinafter referred to as Ordinance 2020) shall be deemed to have been done or taken under the corresponding

Direction No. 6

provisions of the Ordinance 2021;

4. Whereas, Section 12 of the Ordinance 2021 mandates the Commission to provide an effective framework, action plan and take appropriate steps to tackle the problem of stubble burning in the NCR and Adjoining Areas;
5. Whereas, the Commission has deliberated stubble burning/ Crop Residue Management (CRM) with major associated stakeholders in a series of meetings including with the State Governments of Punjab, Haryana, UP, Rajasthan, GNCTD, State Pollution Control Boards of NCR States, Punjab and Delhi Pollution Control Committee (DPCC), knowledge institutions like Indian Council of Agricultural Research (ICAR), Indian Agricultural Research Institute (IARI), Indian Space Research Organization (ISRO), NGOs and civil society groups etc. working in the National Capital Region;
6. Whereas the Commission has asked each of the NCR states and Punjab to draw up action plan for control/elimination of crop residue burning, *inter-alia*, based upon the discussions held/decisions taken in the Commission meetings and views communicated through letters;
7. Whereas, the action plan and/or the other inputs received from the state governments have been studied by the Commission;
8. Whereas, the Commission based upon the feedback, inputs and implementable action points emerged during the various meetings with stakeholders, has drawn up the following framework to control/eliminate stubble burning in order to improve the air quality in the National Capital Region and Adjoining Areas;
9. And therefore, the Commission in exercise of the powers conferred under the Ordinance 2021, directs the State Governments/GNCTD to formulate and implement suitable state specific detailed action plan,

based upon the local conditions and requirements, to control and eliminate stubble burning, broadly based on the following framework:

10. Framework for control of Stubble burning in National Capital Region and Adjoining Areas :-

- a) Background:- As per the Information provided by the Ministry of Agriculture and Farmers Welfare, the approximate area under rice cultivation in Punjab, Haryana, Uttar Pradesh and Rajasthan is 31,41,000 hectares, 15,59,000 hectares, 58,10,000 hectares and 2,19,000 hectares respectively. Paddy straw burning is widely practiced in Punjab, Haryana and Uttar Pradesh to clear the fields for next crop sowing, especially during October – November. The total paddy straw burning events reported by ICAR in the three States (Punjab, Haryana and Uttar Pradesh for the period 1st October to 30th November) during 2016-17, 2018-19, 2019-20 and 2020-21 were 1,27,774; 88,948; 75,563; 61,332 and 89,430 respectively. State Governments and Government of India have taken a number of steps to dissuade farmers from burning crop residue. Stubble burning especially in the months of October- November is an issue of serious concern in view of its direct contribution to Air Quality degradation in National Capital Region and Adjoining Areas as well as adverse impact on soil;
- b) There is a compelling necessity to eliminate this unsustainable agricultural practice and implement a comprehensive framework and action plan. The important components of the Framework and action plan for elimination of stubble burning are broadly as under: -
- A. In-situ / Crop Residue Management (CRM).**
 - B. Ex-situ Crop Residue Management (CRM).**
 - C. Prohibition of Stubble/Crop Residue Burning.**

Direction No. 6

D. Effective monitoring/enforcement.

E. Plans / Schemes to reduce the generation of paddy straw.

F. IEC activities for the Plan of Action.

11. In-situ Crop Residue Management (CRM)

In the *in-situ* Crop Residue Management practices, the harvested crop stalks/ stubbles are chopped into small pieces and incorporated *in-situ* into the soil to recycle the crop residue. In order to control crop residue/ stubble burning, a central sector scheme "on promotion of agricultural mechanization *in-situ* management of crop residue in State of Punjab, Haryana, Uttar Pradesh and NCT of Delhi" was approved by the Central Government. Funds amounting to Rs. 1726.67 crore were released during the last three years (2018-19, 2019-20 and 2020-21) under the scheme to the State of Punjab (Rs. 793.18 Crore), Haryana (Rs. 499.90 Crore), Uttar Pradesh (Rs. 374.08 Crore) and NCT of Delhi (Rs. 4.52 Crore). During the past three years 1,56,843 machines for crop residue management have been supplied. (Punjab – 71,410, Haryana – 51,049, Uttar Pradesh – 34,341 and NCT of Delhi - 43). In Punjab alone 50,815 CRM machines have been provided during 2018-19 and 2019-20 and the total machine count in Punjab has reached to 74,637 by December 2020 including the machines under Sub Mission on Agricultural Mechanization (SMAM).

Targeted Activities under the action plan for *In-situ* crop residue management are as under: -

- a) The State Governments to take full benefit of the centrally sponsored schemes to provide subsidy on agriculture equipment's and machinery used for various purposes to sufficiently augment the crop residue management machinery under Sub Mission on Agricultural Mechanization (SMAM) funded by Ministry of Agriculture and Farmers Welfare, Government of India.

- b) States to identify various need based, location specific interventions suitable to particular agro-ecological zones for management of crop residues and implement the same under the Annual Work Plan (AWP) of various ongoing schemes/programs/missions of ICAR. Besides, State Governments / UT to also avail financial assistance from Rashtriya Krishi Vikas Yojana (RKVY), which provides flexibility to the states for taking up any components/interventions required for holistic and integrated Government's development of agriculture including management of crop residue.
- c) Making machines available at the farmer's doorstep by: -
- (i) Village/Block/District wise mapping of the demand of CRM machinery.
 - (ii) Gap analysis as per the availability of CRM machines with each district of the state, to ensure that demand-supply mismatch at the level of village and individual farmer is identified and fixed.
 - (iii) Staggering the harvesting schedule at village level for ensuring better machine availability at the farmer's field.
 - (iv) Proper allocation of CRM machines (Super SMS, Happy Seeder, etc.) as per farmer's specific need, based on the staggered harvesting schedule, availability of machines with cooperatives and other agencies.
 - (v) Analysis of demand and supply of CRM machinery must be ensured and it should *inter-alia* include correlation analysis between district-wise fire count mapping and the number of machines deployed in a respective year. This will help to form a basis for the exact requirement, distribution and allocation of CRM machinery in future.

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- (vi) Ensuring focus on ideal mix of machines for an efficient crop residue management and economic viability, through a study entrusted to a competent Institution/organization.
- (vii) Focusing on Custom Hiring Centers (CHCs) and cooperatives to increase machine utilization through a program with specific machine utilization targets duly monitored. For this purpose, CHCs and Cooperatives be mandated to fill machine utilization data on an electronic platform decided by the State Government.
- (viii) Leveraging technologies to reduce friction in last mile delivery. In this regard, an electronic platform/ mobile application, as decided by the State Government, may be used/prepared to make available crop residue management machines /to allow farmers to book and use machines and an officer may be nominated for each Village for monitoring bookings on the platform and facilitating delivery of machines to the farmers.
- (ix) The State Government/UT to ensure that Small and Marginal farmers are provided a door step access (if possible, on free /concessional terms) to CRM machinery and straw baling equipment depending upon the residue management option chosen by them, as per local circumstances.
- d) State Governments to get assessment of village level non-Basmati crop acreage involving village pradhans and nodal officers/cluster officers and making on-line arrangement for access of crop residue management machinery along with accessories to the farmers from Custom Hiring Centers/Agriculture Service Centers. The on-line arrangement shall have the enabling provisions of automated SMS(s) to individual farmers for coordinating supply and access of crop residue management

- machinery with accessories;
- e) For effective *in-situ* management of crop residue, it is utmost essential that "Super SMS" is mandated to be used in combination with Combine Harvester and all new procurement of combine harvesters must be with the Super SMS attachment. This would facilitate minimizing the standing straw and better utilization of the chopped straw as mulch. Super SMS attachment also needs to be mandated to be retrofitted on the existing combine harvesters procured earlier without such an attachment.
 - f) The State Governments to ensure use of super seeder/happy seeder/ turbo seeder / shredder and zero-seed-cum-fertilizer drill etc. to facilitate *in-situ* management of crop residue and retaining the straw as surface mulching at the farmer's field;
 - g) The State Governments/ UT to promote and encourage use of crop residue as mulch for sowing of wheat and its incorporation in soil for planting of potato and other vegetable crops;
 - h) The State Governments / UT to encourage farmers to go for land preparation by using Hydraulic Reversible MB Plough that helps in upturning the crop stubbles and breaking the hardpan of the soil;
 - i) State Governments/ UT to note the available *In-situ* management of crop residue involving Bio-Decomposer technology options for decomposing the paddy straw by using Microbial Consortia and build possibilities to use bio-decomposer technologies, also in a complementary mode with CRM machines. ICAR has concluded that bio-decomposer can easily be blended with *in-situ* crop residue management machines and for effective *in-situ* decomposition after the spraying bio-decomposer, super seeder and rotavator can be operated for proper mixing of the residue in

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the soil and then a light irrigation is applied to ensure moisture in the fields.

- j) The State Government/UT to encourage farmers to collect and bundle crop residue using self-propelled Crop Reaper, Reaper Binders to place in the vicinity viz. in their own land/village common land/cattle ponds/Gaushalas etc. through suitable planning involving Panchayat Pradhans, village Nodal Officers, village revenue officials etc. under the supervision of the cluster officer. Such stacked rice paddy straw bales may be supplied to industries for Ex-situ management or treated with bio-decomposer as per laid down protocol to accelerate bio-decomposition and preparation of bio enriched compost/ vermin compost to be utilized as manure in the fields.
- k) The State Governments need to promote direct sowing of rice (DSR) method using short duration varieties in order to provide a longer window period for management of paddy straw. A staggered sowing/ transplantation schedule of various varieties of paddy also needs to be adopted on a village/ cluster basis, as advised by ICAR so as to optimally allocate the available CRM machinery for in-situ straw management.

12. Ex-situ Crop Residue Management (CRM).

Ex-situ crop residue management options have the potential to effectively utilize the agricultural residue/straw and add economic value, thereby minimizing the agricultural residue burning in and around NCR. Ex-situ options have been attempted both by the Government and private agencies. One of the important steps taken in this regard is by Public Sector Oil as well as Power Companies. Public sector oil companies are establishing bio-ethanol and compressed bio-gas plants.

For promoting such ex-situ crop residue management options, State Governments are required to:

- a) Develop a mechanism / policy for assured availability/supply of paddy straw material for various ex-situ projects in a time bound manner. It should include short term, medium term, and long-term actions in line with broad contours as below:
 - i. Map the districts and villages for the agricultural straw availability and demand from various industries (Biofuel projects, Thermal power projects, etc.) for optimum quantity allocation and utilization.
 - ii. Establish institutions / aggregators at Village/Block/District level with adequate and effective infrastructure that includes availability and deployment of CRM machinery at farmer's doorstep, storage of straw on and off-site, transportation of straw from the fields to the respective storage centers and from such centers to the industries.
 - iii. Develop appropriate decentralized mechanism for the collection, storage and transportation for industrial use of crop residue through empaneled aggregator agencies or through any other mechanism for tapping the real economic and commercial value of paddy residue.
 - iv. Develop a robust supply chain mechanism covering both supply side and demand side interventions and for ensuring quality of agricultural straw, primarily the moisture content in it.
 - v. Promote requisite infrastructure at the industrial sites for proper utilization of straw.
 - vi. Promote diversified ex-situ use of baled crop residue for various purposes like power generation, production of Bio-ethanol and Bio-gas, for making briquettes, torrefied charcoal, pellets, etc. as raw material/fuel for coal fired power plants etc.

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- vii. Facilitate the marketing of the agricultural straw-based products and services, so as to support the sustenance of the various ex-situ options.
 - b) To promote diversified ex-situ use of baled crop residue for various purposes like paper /board / panel/ packaging material making industries, composting, mushroom cultivation etc. through policy interventions;
 - c) To develop schemes to incentivize establishment of industries aiming at utilization of paddy straw as raw material by entitling them to all benefits as permissible under the fiscal incentives for industrial promotion schemes/programs in the respective States/UT;
 - d) To facilitate the transportation of paddy straw from surplus states to fodder deficit states through availing subsidy offered by Indian railways.

13. Prohibition of Stubble/Crop Residue Burning

- a) National green Tribunal vide order dated 10.12.2015 in OA No.118 of 2013 has prohibited the burning of paddy straw and passed detailed directions including imposing environmental compensation against defaulters.
- b) The Hon'ble Supreme Court vide Order date 04.11.2019 had directed the State Governments of NCR including the entire police machinery, Gram Pradhan and Sarpanch to ensure that no stubble burning instances take place.
- c) The state/UT Governments /Pollution Control Boards/Committee in exercise of the powers conferred under section 19 (5) of the Air (Prevention & Control of Pollution) Act are to notify prohibition orders (in respect of States/UT where such order has not been issued) banning the burning of agriculture residue.
- d) The state/UT Governments are to issue Orders for imposing Environmental Compensation against the defaulters in compliance of

NGT directions and authorize and empower officers for this purpose for timely realization of the environmental compensation charges.

- e) District Magistrates have been passing orders under section 144 Cr PC in the past to prohibit burning of paddy straw. The state /UT Governments may ensure notification of such prohibition orders, banning the burning of agriculture residue, in respect of States/UT where such order has not been issued and ensure its implementation.
- f) Pass orders making it mandatory for all the Combines to have Super SMS system fixed (in respect of States/UT where such order has not been issued) in order to encourage *in-situ* management of paddy straw, under section 31-A of Air (Prevention and Control of Pollution) Act, 1981.

14. Effective monitoring/enforcement: -

To ensure full compliance of laws and Orders/Judgments of the Hon'ble Supreme Court of India/ NGT/High Court /State Government /SPCBs on the banning of stubble burning and take strict action against violators/defaulters, State Governments/GNCTD through its various Departments / Agencies/Board are to:

- a) Follow a standard protocol (under finalization by ISRO) for reporting of incidents of farm fires during the paddy harvesting season, strictly monitor incidents of burning of paddy straw through Remote Sensing Centre and ensure that SMS alert is sent to field functionaries to take immediate action on incidents of stubble burning.
- b) Make the mobile and web-based application operational in paddy season, in which role-based Login (Village Nodal, Cluster, Sub division / Tehsil, district and State level) are provided to various officials for end-to-end reporting

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including action taken for each fire incidents.

- c) Set up a Control Room for the purpose of controlling stubble burning during harvesting season.
- d) PCBs shall ensure that all data with respect to burning of crop residue as obtained from Remote Sensing authorities and action taken on the incidents and various MIS reports are available through a web-based application with facility to have dashboard to drill down data.
- e) Appoint/deploy Officers on area specific basis to ensure that ban orders on stubble burning are complied with, end-to-end reporting of each fire incidents and also to ensure that in cases of crop residue burning, appropriate coercive and punitive action is taken including registering FIRs/launching of prosecution under Section 15 of the Environment (Protection) Act of 1986 and other relevant laws. Monitoring of the matter is to be done at various levels as under:
 - A. State Level
 - B. District Level Officer
 - C. Sub Division/Tehsil Officer
 - D. Cluster Officer
 - E. Village Nodal Officer
- f) Ensure that police authorities enforce and implement various directions and orders issued with respect to ban on burning of crop residue. The police shall particularly render special assistance to the District Administration for monitoring of hot spots where large scale incidents of burning of crop residue have been observed in previous years.
- g) Make liable the land owners and /or contract farmers (data

bank of contract farmers shall also be prepared) for any violation of the orders of ban on stubble burning.

- h) Contact and sensitize farmers who have given their land on contract to ensure compliance of the orders/directions on the ban on stubble/crop residue burning.
- i) Ensure that the Commission Agents, *Nambardaar*, Panchayat Members, Lease holders of the Panchayat Land or Shamlat Land of the villages, employees of Government Departments, Boards, Corporations and Autonomous Bodies will not burn crop residue. Strict action including suitable disciplinary action shall be taken against the employees for violation of ban on burning of crop residue
- j) Ensure that patwaris enter the *girdawri* register, or similar such records as prevalent in various states, with a red ink entry against the fields/farm owners where from the incidents of burning of crop residue have been reported. A system of penal measures and / or disincentives needs to be built-in and enforced for every violators/such red ink entry cases. The disincentives may include withholding of concessions of electricity charges, water charges, fertilizers etc.
- k) Identify vacant common village land or any other land for storage of paddy straw throughout the state.
- l) The Deputy Commissioner and SSPs of the district shall jointly hold District Level Monitoring meeting with all the stakeholders to strictly enforce the orders banning paddy stubble burning.
- m) Appoint one nodal officer for each village and one Cluster Officer for every 20 villages (or as per the need) to coordinate the efforts from the pool of employees available with various

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departments.

- n) Ensure appointments of various officials like Village Nodal officer, Revenue officer (Patwari), Cluster officer, Tehsildar, Police and SDM to monitor the stubble burning incidents. It may also be ensured that the information about such key officials is available in an appropriate technology platform, to be coordinated by a suitable government agency, in advance of the harvesting season.
 - o) Ensure visit to hot spots (villages where more than 75% area of the village burnt since last three year as per the stubble burning data) by senior officers of the Districts and make special arrangements to contain the burning of crop residues in these villages.
 - p) Ensure that nodal officer visits every site of the incident immediately, but definitely within two days to assess the situation and take appropriate action.
 - q) Monitor the progress of various Stakeholder Departments and send the consolidated progress reports to the Department of Environment on Email. Consolidated reports shall be sent to the Chief Secretary and Commission.
 - r) Ensure Implementation and Monitoring Mechanism by mobilization and effective coordination of the efforts of various Departments/Boards/ agencies of the State and by setting up mechanism at State Level, District Level, Sub-division Level as well as by appointing Cluster Officers and Village Nodal Officers.
- A. State Level Coordination and Monitoring: -
- (i) At the State Level, a Committee under Chief Secretary and comprising of the Administrative Secretaries of all the concerned

and relevant Departments will coordinate, monitor and decide various issues to ensure effective implementation of the ban on burning paddy straw:

- (ii) The State Government will depute Administrative Secretaries to various districts to monitor the implementation of the ban. They will be assisted by adequate number of Senior Officers;
- B. District Level Coordination and Monitoring: - There shall be a District Level Monitoring Committee under the chairmanship of Deputy Commissioner and comprising Senior Superintendent of Police, Chief Agriculture Officer and heads of various departments concerned. District Level Coordination and Monitoring Committee shall meet frequently and review the IEC activities, enforcement activities and other facilitation activities and take necessary action.
- C. Sub-Division Level Coordination and Monitoring: - There shall be a Sub-Division Level Monitoring Committee with Sub-Divisional Magistrate as Chairman consisting of Deputy Superintendent of Police and other concerned officers as Members. The Committee shall meet daily/ alternate day and review the progress of various activities and take necessary action.
- D. Cluster Officer: - Cluster officer will fill the data regarding challan number and date, challan amount and challan photo in the mobile base app and shall coordinate with Village Nodal Officer for various activities to control burning of stubble by the farmers
- E. Village Nodal Officer: - Nodal officer deployed in each Village will assist in bookings of CRM on the electronic platform/ mobile application and ensuring delivery of machines to the farmers.
The Village nodal officer will get the information for each fire

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incidents in his area from the SMS alert system already in operation. The village Nodal officer will visit the spot in the field, operate the mobile app and make entries along with picture of the fire incident sites in the mobile app. The Village Nodal officer will assist in various facilitation and enforcement activities at village level such as creation of awareness in village, identify those farmers who are likely to put fire to paddy residue to convince them not to burn, take action against farmers who have burnt the residue, report incidence of crop burning etc.

15. Plans / Schemes to reduce the generation of paddy straw: -

State Governments should take focused action to: -

- a) Promote Basmati variety also considering the fact that area under basmati variety has gone down significantly in some states.
- b) Discourage (and totally suspend) use of PUSA 44 variety of Paddy seeds and stop certification of its seeds so that non-Basmati acreage would be encouraged to shift to short duration rice varieties.
- c) Promote short duration and early maturing varieties since they can be managed quite efficiently and provide a much wider window for paddy straw management. Ministry of Agriculture and Farmers Welfare, Government of India has specifically recommended various short duration paddy varieties which are well suited to replace long duration varieties. The commission has also reiterated the need for the same and taken up with state Governments accordingly.
- d) Ensure adoption of short duration and early maturing varieties quickly in various paddy growing areas. Short duration varieties

have been well adopted by the farmers in some districts in Punjab but in many other districts the adoption is slow and sizeable area is under the long duration varieties.

- e) Promote crop diversification. Crop diversification program is being implemented in Punjab, Haryana and Uttar Pradesh as a sub-scheme of RKVV since 2013-14 to divert the area of water guzzling paddy to alternate crops. Though, various interventions like alternate crop demonstrations, farm mechanization and value addition, site specific activities and awareness training etc. are carried out under the crop diversification program, there is a compelling need to give a major boost to crop diversification.
- f) Identify crops that could compete with paddy-wheat crop cycle and provide remunerative and assured price to the farmers to substantially minimize the stubble generation from paddy. The possible options for the region may *inter-alia* include orchard with drip irrigation, vegetables, corn/maize, cotton, pulses and oil seeds etc. which consume less water, less power and also less fertilizers.

State Governments should work out an exhaustive policy framework on crop diversification, based on the experiences gained in implementation of Crop diversification program and seek appropriate assistance and support from Ministry of Agriculture and Farmers Welfare, Government of India.

16. IEC activities for the plan of Action: -

- a) Undertake detailed IEC activities and awareness programs about various measures to prevent crop residue burning through electronic media, social media and print media as well as publications, seminars and other available means etc. much

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before the beginning of harvesting season.

- b) Design and implement suitable location specific capacity building and targeted awareness modules and programs about ill effects of crop residue burning and its effective utilization and management.
- c) Notify district wise IEC campaign schedule through restructured CRM activities with full engagement and synergy by all the related departments, State Agricultural University, Gramin Krishi Mela's, District KVKs, Public/Private Institutes, Village Agriculture volunteers, Sarpanches, Experts/Farmer Unions and all active NGOs.
- d) Print and Multi- media advertisement may, *inter-alia*, include Jingles on Radio Channels, Production of Advertisement Films, Running of short films on TV Channels, Display Boards against straw burning including on State Roadways / SRTC Buses, Display Boards on Bus Stands, Market Committee Yards and Cooperative Societies in the State, Painting of walls in the villages with slogans against Paddy burning, Massive print media advertisement, Erection of hoardings and panels at prominent places, Plying publicity vans in the villages, Deputing of Nodal officer for each village, Distributing Pamphlets and leaflets to farmers etc.
- e) Involve students to communicate effectively the adverse effects of stubble burning and availability of management options.
- f) Support farmers by organizing bio-decomposer application requirements through guidance by IEC partners and extending help from block/village level agriculture machinery by designated Nodal Officers.

- g) Build strong Advocacy Campaign Modules during 2021 and thereafter so as to popularize advantages of Microbial Consortia Technology.
 - h) Organize field level training programs at KVKs and other similar notified locations viz. Kisan Mela's/Field Agriculture Extension Centres/ Agriculture University campuses etc. for efficient and effective use of farm machinery to facilitate collection, volume reduction, and transportation.
 - i) Organize Gram Sabha's for demonstrating crop residue resource conservation and management machinery on a large scale by the State Department of Agriculture and other Government Institutions.
 - j) Impart regular training to Agriculture and Line Departments, Call Centers and other technical staff working for the purpose of crop residue management by State Agriculture and Horticulture Universities.
 - k) Support NGOs working for management of paddy residue by Department of Agriculture and other relevant Government Department/ agencies by extending possible support for positive interventions by these NGOs at field level.
- 17.** A detailed/comprehensive plan of action, based on the contours of the frame-work as above, with clearly entrusted responsibilities to various Departments/Boards/ agencies of the State and other stakeholders needs to be immediately finalised by each of the state governments/GNCTD, duly identifying various qualitative and quantitative parameters and the respective targets against each of them, along with the time frame of implementation. The plan should

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endeavour to completely eliminate the practice of stubble burning and its consequential adverse effects on air quality. The plan of action shall be submitted by the respective states to the Commission by 30th June, 2021, progress on which shall be closely monitored by the Commission.


(Arvind Kumar Nautiyal)
Member Secretary
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To:

The Chief Secretary, Government of Punjab

Copy to:

1. The Principal Secretary, Environment, Government of Punjab
2. The Additional Chief Secretary, Agriculture, Government of Punjab
3. The Chairman, Central Pollution Control Board
4. The Member Secretary, Punjab Pollution Control Board


(Arvind Kumar Nautiyal)

**COMMISSION FOR AIR QUALITY MANAGEMENT
IN NATIONAL CAPITAL REGION AND ADJOINING AREAS**

**3rd Floor, Indian Oil Bhawan
1, Sri Aurobindo Marg, Yusuf Sarai,
New Delhi-110016**

F. No. A-110014/10/ 2020/CAQM-SB / 389-392

Dated: 10.06.2021

**SUBJECT: PROVIDING AN EFFECTIVE FRAMEWORK, ACTION PLAN AND STEPS TO
BE TAKEN TO TACKLE THE PROBLEM OF STUBBLE BURNING.**

1. Whereas, it is an established fact that the stubble burning especially in the months of October- November is an issue of grave concern in view of its direct contribution to Air Quality degradation in National Capital Region and Adjoining Areas by increasing the concentration level of pollutants like Particulate Matter, Carbon dioxide (CO₂), Carbon Monoxide (CO), Oxides of Sulphur (SO_x) and Oxides of Nitrogen (NO_x);
2. Whereas, Government of India, MoEF&CC, under the provisions of the Commission for Air Quality Management in National Capital Region and Adjoining Areas Ordinance 2021 (hereinafter referred to as Ordinance 2021) has constituted the Commission for Air Quality Management in NCR and Adjoining Areas (hereinafter referred to as Commission) vide Notification No. S.O. 1687 (E) dated 23rd April, 2021;
3. Whereas, Section 30 of the Ordinance 2021 provides that anything done or any action taken by the Commission under the Commission for Air Quality Management in National Capital Region and Adjoining Areas Ordinance 2020 (hereinafter referred to as Ordinance 2020) shall be deemed to have been done or taken under the corresponding

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provisions of the Ordinance 2021;

4. Whereas, Section 12 of the Ordinance 2021 mandates the Commission to provide an effective framework, action plan and take appropriate steps to tackle the problem of stubble burning in the NCR and Adjoining Areas;
5. Whereas, the Commission has deliberated stubble burning/ Crop Residue Management (CRM) with major associated stakeholders in a series of meetings including with the State Governments of Punjab, Haryana, UP, Rajasthan, GNCTD, State Pollution Control Boards of NCR States, Punjab and Delhi Pollution Control Committee (DPCC), knowledge institutions like Indian Council of Agricultural Research (ICAR), Indian Agricultural Research Institute (IARI), Indian Space Research Organization (ISRO), NGOs and civil society groups etc. working in the National Capital Region;
6. Whereas the Commission has asked each of the NCR states and Punjab to draw up action plan for control/elimination of crop residue burning, *inter-alia*, based upon the discussions held/decisions taken in the Commission meetings and views communicated through letters;
7. Whereas, the action plan and/or the other inputs received from the state governments have been studied by the Commission;
8. Whereas, the Commission based upon the feedback, inputs and implementable action points emerged during the various meetings with stakeholders, has drawn up the following framework to control/eliminate stubble burning in order to improve the air quality in the National Capital Region and Adjoining Areas;
9. And therefore, the Commission in exercise of the powers conferred under the Ordinance 2021, directs the State Governments/GNCTD to formulate and implement suitable state specific detailed action plan,

based upon the local conditions and requirements, to control and eliminate stubble burning, broadly based on the following framework:

10. Framework for control of Stubble burning in National Capital Region and Adjoining Areas :-

- a) Background:- As per the Information provided by the Ministry of Agriculture and Farmers Welfare, the approximate area under rice cultivation in Punjab, Haryana, Uttar Pradesh and Rajasthan is 31,41,000 hectares, 15,59,000 hectares, 58,10,000 hectares and 2,19,000 hectares respectively. Paddy straw burning is widely practiced in Punjab, Haryana and Uttar Pradesh to clear the fields for next crop sowing, especially during October – November. The total paddy straw burning events reported by ICAR in the three States (Punjab, Haryana and Uttar Pradesh for the period 1st October to 30th November) during 2016-17, 2018-19, 2019-20 and 2020-21 were 1,27,774; 88,948; 75,563; 61,332 and 89,430 respectively. State Governments and Government of India have taken a number of steps to dissuade farmers from burning crop residue. Stubble burning especially in the months of October- November is an issue of serious concern in view of its direct contribution to Air Quality degradation in National Capital Region and Adjoining Areas as well as adverse impact on soil;
- b) There is a compelling necessity to eliminate this unsustainable agricultural practice and implement a comprehensive framework and action plan. The important components of the Framework and action plan for elimination of stubble burning are broadly as under: -
- A. In-situ / Crop Residue Management (CRM).**
 - B. Ex-situ Crop Residue Management (CRM).**
 - C. Prohibition of Stubble/Crop Residue Burning.**

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D. Effective monitoring/enforcement.

E. Plans / Schemes to reduce the generation of paddy straw.

F. IEC activities for the Plan of Action.

11. *In-situ* Crop Residue Management (CRM)

In the *in-situ* Crop Residue Management practices, the harvested crop stalks/ stubbles are chopped into small pieces and incorporated *in-situ* into the soil to recycle the crop residue. In order to control crop residue/ stubble burning, a central sector scheme "on promotion of agricultural mechanization *in-situ* management of crop residue in State of Punjab, Haryana, Uttar Pradesh and NCT of Delhi" was approved by the Central Government. Funds amounting to Rs. 1726.67 crore were released during the last three years (2018-19, 2019-20 and 2020-21) under the scheme to the State of Punjab (Rs. 793.18 Crore), Haryana (Rs. 499.90 Crore), Uttar Pradesh (Rs. 374.08 Crore) and NCT of Delhi (Rs. 4.52 Crore). During the past three years 1,56,843 machines for crop residue management have been supplied. (Punjab – 71,410, Haryana – 51,049, Uttar Pradesh – 34,341 and NCT of Delhi - 43). In Punjab alone 50,815 CRM machines have been provided during 2018-19 and 2019-20 and the total machine count in Punjab has reached to 74,637 by December 2020 including the machines under Sub Mission on Agricultural Mechanization (SMAM).

Targeted Activities under the action plan for *In-situ* crop residue management are as under: -

- a) The State Governments to take full benefit of the centrally sponsored schemes to provide subsidy on agriculture equipment's and machinery used for various purposes to sufficiently augment the crop residue management machinery under Sub Mission on Agricultural Mechanization (SMAM) funded by Ministry of Agriculture and Farmers Welfare, Government of India.

- b) States to identify various need based, location specific interventions suitable to particular agro-ecological zones for management of crop residues and implement the same under the Annual Work Plan (AWP) of various ongoing schemes/programs/missions of ICAR. Besides, State Governments / UT to also avail financial assistance from Rashtriya Krishi Vikas Yojana (RKVY), which provides flexibility to the states for taking up any components/interventions required for holistic and integrated Government's development of agriculture including management of crop residue.
- c) Making machines available at the farmer's doorstep by: -
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 - (vii) Focusing on Custom Hiring Centers (CHCs) and cooperatives to increase machine utilization through a program with specific machine utilization targets duly monitored. For this purpose, CHCs and Cooperatives be mandated to fill machine utilization data on an electronic platform decided by the State Government.
 - (viii) Leveraging technologies to reduce friction in last mile delivery. In this regard, an electronic platform/ mobile application, as decided by the State Government, may be used/prepared to make available crop residue management machines /to allow farmers to book and use machines and an officer may be nominated for each Village for monitoring bookings on the platform and facilitating delivery of machines to the farmers.
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- machinery with accessories;
- e) For effective in-situ management of crop residue, it is utmost essential that "Super SMS" is mandated to be used in combination with Combine Harvester and all new procurement of combine harvesters must be with the Super SMS attachment. This would facilitate minimizing the standing straw and better utilization of the chopped straw as mulch. Super SMS attachment also needs to be mandated to be retrofitted on the existing combine harvesters procured earlier without such an attachment.
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 - g) The State Governments/ UT to promote and encourage use of crop residue as mulch for sowing of wheat and its incorporation in soil for planting of potato and other vegetable crops;
 - h) The State Governments / UT to encourage farmers to go for land preparation by using Hydraulic Reversible MB Plough that helps in upturning the crop stubbles and breaking the hardpan of the soil;
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the soil and then a light irrigation is applied to ensure moisture in the fields.

- j) The State Government/UT to encourage farmers to collect and bundle crop residue using self-propelled Crop Reaper, Reaper Binders to place in the vicinity viz. in their own land/village common land/cattle ponds/Gaushalas etc. through suitable planning involving Panchayat Pradhans, village Nodal Officers, village revenue officials etc. under the supervision of the cluster officer. Such stacked rice paddy straw bales may be supplied to industries for Ex-situ management or treated with bio-decomposer as per laid down protocol to accelerate bio-decomposition and preparation of bio enriched compost/ vermin compost to be utilized as manure in the fields.
- k) The State Governments need to promote direct sowing of rice (DSR) method using short duration varieties in order to provide a longer window period for management of paddy straw. A staggered sowing/ transplantation schedule of various varieties of paddy also needs to be adopted on a village/ cluster basis, as advised by ICAR so as to optimally allocate the available CRM machinery for in-situ straw management.

12. Ex-situ Crop Residue Management (CRM).

Ex-situ crop residue management options have the potential to effectively utilize the agricultural residue/straw and add economic value, thereby minimizing the agricultural residue burning in and around NCR. Ex-situ options have been attempted both by the Government and private agencies. One of the important steps taken in this regard is by Public Sector Oil as well as Power Companies. Public sector oil companies are establishing bio-ethanol and compressed bio-gas plants.

For promoting such ex-situ crop residue management options, State Governments are required to:

- a) Develop a mechanism / policy for assured availability/supply of paddy straw material for various ex-situ projects in a time bound manner. It should include short term, medium term, and long-term actions in line with broad contours as below:
 - i. Map the districts and villages for the agricultural straw availability and demand from various industries (Biofuel projects, Thermal power projects, etc.) for optimum quantity allocation and utilization.
 - ii. Establish institutions / aggregators at Village/Block/District level with adequate and effective infrastructure that includes availability and deployment of CRM machinery at farmer's doorstep, storage of straw on and off-site, transportation of straw from the fields to the respective storage centers and from such centers to the industries.
 - iii. Develop appropriate decentralized mechanism for the collection, storage and transportation for industrial use of crop residue through empaneled aggregator agencies or through any other mechanism for tapping the real economic and commercial value of paddy residue.
 - iv. Develop a robust supply chain mechanism covering both supply side and demand side interventions and for ensuring quality of agricultural straw, primarily the moisture content in it.
 - v. Promote requisite infrastructure at the industrial sites for proper utilization of straw.
 - vi. Promote diversified ex-situ use of baled crop residue for various purposes like power generation, production of Bio-ethanol and Bio-gas, for making briquettes, torrefied charcoal, pellets, etc. as raw material/fuel for coal fired power plants etc.

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- vii. Facilitate the marketing of the agricultural straw-based products and services, so as to support the sustenance of the various ex-situ options.
- b) To promote diversified ex-situ use of baled crop residue for various purposes like paper /board / panel/ packaging material making industries, composting, mushroom cultivation etc. through policy interventions;
 - c) To develop schemes to incentivize establishment of industries aiming at utilization of paddy straw as raw material by entitling them to all benefits as permissible under the fiscal incentives for industrial promotion schemes/programs in the respective States/UT;
 - d) To facilitate the transportation of paddy straw from surplus states to fodder deficit states through availing subsidy offered by Indian railways.

13. Prohibition of Stubble/Crop Residue Burning

- a) National green Tribunal vide order dated 10.12.2015 in OA No.118 of 2013 has prohibited the burning of paddy straw and passed detailed directions including imposing environmental compensation against defaulters.
- b) The Hon'ble Supreme Court vide Order date 04.11.2019 had directed the State Governments of NCR including the entire police machinery, Gram Pradhan and Sarpanch to ensure that no stubble burning instances take place.
- c) The state/UT Governments /Pollution Control Boards/Committee in exercise of the powers conferred under section 19 (5) of the Air (Prevention & Control of Pollution) Act are to notify prohibition orders (in respect of States/UT where such order has not been issued) banning the burning of agriculture residue.
- d) The state/UT Governments are to issue Orders for imposing Environmental Compensation against the defaulters in compliance of

NGT directions and authorize and empower officers for this purpose for timely realization of the environmental compensation charges.

- e) District Magistrates have been passing orders under section 144 Cr PC in the past to prohibit burning of paddy straw. The state /UT Governments may ensure notification of such prohibition orders, banning the burning of agriculture residue, in respect of States/UT where such order has not been issued and ensure its implementation.
- f) Pass orders making it mandatory for all the Combines to have Super SMS system fixed (in respect of States/UT where such order has not been issued) in order to encourage *in-situ* management of paddy straw, under section 31-A of Air (Prevention and Control of Pollution) Act, 1981.

14. Effective monitoring/enforcement: -

To ensure full compliance of laws and Orders/Judgments of the Hon'ble Supreme Court of India/ NGT/High Court /State Government /SPCBs on the banning of stubble burning and take strict action against violators/defaulters, State Governments/GNCTD through its various Departments / Agencies/Board are to:

- a) Follow a standard protocol (under finalization by ISRO) for reporting of incidents of farm fires during the paddy harvesting season, strictly monitor incidents of burning of paddy straw through Remote Sensing Centre and ensure that SMS alert is sent to field functionaries to take immediate action on incidents of stubble burning.
- b) Make the mobile and web-based application operational in paddy season, in which role-based Login (Village Nodal, Cluster, Sub division / Tehsil, district and State level) are provided to various officials for end-to-end reporting

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including action taken for each fire incidents.

- c) Set up a Control Room for the purpose of controlling stubble burning during harvesting season.
- d) PCBs shall ensure that all data with respect to burning of crop residue as obtained from Remote Sensing authorities and action taken on the incidents and various MIS reports are available through a web-based application with facility to have dashboard to drill down data.
- e) Appoint/deploy Officers on area specific basis to ensure that ban orders on stubble burning are complied with, end-to-end reporting of each fire incidents and also to ensure that in cases of crop residue burning, appropriate coercive and punitive action is taken including registering FIRs/launching of prosecution under Section 15 of the Environment (Protection) Act of 1986 and other relevant laws. Monitoring of the matter is to be done at various levels as under:
 - A. State Level
 - B. District Level Officer
 - C. Sub Division/Tehsil Officer
 - D. Cluster Officer
 - E. Village Nodal Officer
- f) Ensure that police authorities enforce and implement various directions and orders issued with respect to ban on burning of crop residue. The police shall particularly render special assistance to the District Administration for monitoring of hot spots where large scale incidents of burning of crop residue have been observed in previous years.

- g) Make liable the land owners and /or contract farmers (data bank of contract farmers shall also be prepared) for any violation of the orders of ban on stubble burning.
- h) Contact and sensitize farmers who have given their land on contract to ensure compliance of the orders/directions on the ban on stubble/crop residue burning.
- i) Ensure that the Commission Agents, *Nambardaar*, Panchayat Members, Lease holders of the Panchayat Land or Shamlat Land of the villages, employees of Government Departments, Boards, Corporations and Autonomous Bodies will not burn crop residue. Strict action including suitable disciplinary action shall be taken against the employees for violation of ban on burning of crop residue
- j) Ensure that patwaris enter the *girdawri* register, or similar such records as prevalent in various states, with a red ink entry against the fields/farm owners where from the incidents of burning of crop residue have been reported. A system of penal measures and / or disincentives needs to be built-in and enforced for every violators/such red ink entry cases. The disincentives may include withholding of concessions of electricity charges, water charges, fertilizers etc.
- k) Identify vacant common village land or any other land for storage of paddy straw throughout the state.
- l) The Deputy Commissioner and SSPs of the district shall jointly hold District Level Monitoring meeting with all the stakeholders to strictly enforce the orders banning paddy stubble burning.
- m) Appoint one nodal officer for each village and one Cluster Officer for every 20 villages (or as per the need) to coordinate the

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efforts from the pool of employees available with various departments.

- n) Ensure appointments of various officials like Village Nodal officer, Revenue officer (Patwari), Cluster officer, Tehsildar, Police and SDM to monitor the stubble burning incidents. It may also be ensured that the information about such key officials is available in an appropriate technology platform, to be coordinated by a suitable government agency, in advance of the harvesting season.
 - o) Ensure visit to hot spots (villages where more than 75% area of the village burnt since last three year as per the stubble burning data) by senior officers of the Districts and make special arrangements to contain the burning of crop residues in these villages.
 - p) Ensure that nodal officer visits every site of the incident immediately, but definitely within two days to assess the situation and take appropriate action.
 - q) Monitor the progress of various Stakeholder Departments and send the consolidated progress reports to the Department of Environment on Email. Consolidated reports shall be sent to the Chief Secretary and Commission.
 - r) Ensure Implementation and Monitoring Mechanism by mobilization and effective coordination of the efforts of various Departments/Boards/ agencies of the State and by setting up mechanism at State Level, District Level, Sub-division Level as well as by appointing Cluster Officers and Village Nodal Officers.
- A. State Level Coordination and Monitoring: -
- (i) At the State Level, a Committee under Chief Secretary and

comprising of the Administrative Secretaries of all the concerned and relevant Departments will coordinate, monitor and decide various issues to ensure effective implementation of the ban on burning paddy straw:

- (ii) The State Government will depute Administrative Secretaries to various districts to monitor the implementation of the ban. They will be assisted by adequate number of Senior Officers;
- B. District Level Coordination and Monitoring: - There shall be a District Level Monitoring Committee under the chairmanship of Deputy Commissioner and comprising Senior Superintendent of Police, Chief Agriculture Officer and heads of various departments concerned. District Level Coordination and Monitoring Committee shall meet frequently and review the IEC activities, enforcement activities and other facilitation activities and take necessary action.
- C. Sub-Division Level Coordination and Monitoring: - There shall be a Sub-Division Level Monitoring Committee with Sub-Divisional Magistrate as Chairman consisting of Deputy Superintendent of Police and other concerned officers as Members. The Committee shall meet daily/ alternate day and review the progress of various activities and take necessary action.
- D. Cluster Officer: - Cluster officer will fill the data regarding challan number and date, challan amount and challan photo in the mobile base app and shall coordinate with Village Nodal Officer for various activities to control burning of stubble by the farmers
- E. Village Nodal Officer: - Nodal officer deployed in each Village will assist in bookings of CRM on the electronic platform/ mobile application and ensuring delivery of machines to the farmers.

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The Village nodal officer will get the information for each fire incidents in his area from the SMS alert system already in operation. The village Nodal officer will visit the spot in the field, operate the mobile app and make entries along with picture of the fire incident sites in the mobile app. The Village Nodal officer will assist in various facilitation and enforcement activities at village level such as creation of awareness in village, identify those farmers who are likely to put fire to paddy residue to convince them not to burn, take action against farmers who have burnt the residue, report incidence of crop burning etc.

15. Plans / Schemes to reduce the generation of paddy straw: -

State Governments should take focused action to: -

- a) Promote Basmati variety also considering the fact that area under basmati variety has gone down significantly in some states.
- b) Discourage (and totally suspend) use of PUSA 44 variety of Paddy seeds and stop certification of its seeds so that non-Basmati acreage would be encouraged to shift to short duration rice varieties.
- c) Promote short duration and early maturing varieties since they can be managed quite efficiently and provide a much wider window for paddy straw management. Ministry of Agriculture and Farmers Welfare, Government of India has specifically recommended various short duration paddy varieties which are well suited to replace long duration varieties. The commission has also reiterated the need for the same and taken up with state Governments accordingly.

- d) Ensure adoption of short duration and early maturing varieties quickly in various paddy growing areas. Short duration varieties have been well adopted by the farmers in some districts in Punjab but in many other districts the adoption is slow and sizeable area is under the long duration varieties.
- e) Promote crop diversification. Crop diversification program is being implemented in Punjab, Haryana and Uttar Pradesh as a sub-scheme of RKVV since 2013-14 to divert the area of water guzzling paddy to alternate crops. Though, various interventions like alternate crop demonstrations, farm mechanization and value addition, site specific activities and awareness training etc. are carried out under the crop diversification program, there is a compelling need to give a major boost to crop diversification.
- f) Identify crops that could compete with paddy-wheat crop cycle and provide remunerative and assured price to the farmers to substantially minimize the stubble generation from paddy. The possible options for the region may *inter-alia* include orchard with drip irrigation, vegetables, corn/maize, cotton, pulses and oil seeds etc. which consume less water, less power and also less fertilizers.

State Governments should work out an exhaustive policy framework on crop diversification, based on the experiences gained in implementation of Crop diversification program and seek appropriate assistance and support from Ministry of Agriculture and Farmers Welfare, Government of India.

16. IEC activities for the plan of Action: -

- a) Undertake detailed IEC activities and awareness programs about various measures to prevent crop residue burning through

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- electronic media, social media and print media as well as publications, seminars and other available means etc. much before the beginning of harvesting season.
- b) Design and implement suitable location specific capacity building and targeted awareness modules and programs about ill effects of crop residue burning and its effective utilization and management.
 - c) Notify district wise IEC campaign schedule through restructured CRM activities with full engagement and synergy by all the related departments, State Agricultural University, Gramin Krishi Mela's, District KVKs, Public/Private Institutes, Village Agriculture volunteers, Sarpanches, Experts/Farmer Unions and all active NGOs.
 - d) Print and Multi- media advertisement may, *inter-alia*, include Jingles on Radio Channels, Production of Advertisement Films, Running of short films on TV Channels, Display Boards against straw burning including on State Roadways / SRTC Buses, Display Boards on Bus Stands, Market Committee Yards and Cooperative Societies in the State, Painting of walls in the villages with slogans against Paddy burning, Massive print media advertisement, Erection of hoardings and panels at prominent places, Plying publicity vans in the villages, Deputing of Nodal officer for each village, Distributing Pamphlets and leaflets to farmers etc.
 - e) Involve students to communicate effectively the adverse effects of stubble burning and availability of management options.
 - f) Support farmers by organizing bio-decomposer application requirements through guidance by IEC partners and extending help from block/village level agriculture machinery by designated

Nodal Officers.

- g) Build strong Advocacy Campaign Modules during 2021 and thereafter so as to popularize advantages of Microbial Consortia Technology.
 - h) Organize field level training programs at KVKs and other similar notified locations viz. Kisan Mela's/Field Agriculture Extension Centres/ Agriculture University campuses etc. for efficient and effective use of farm machinery to facilitate collection, volume reduction, and transportation.
 - i) Organize Gram Sabha's for demonstrating crop residue resource conservation and management machinery on a large scale by the State Department of Agriculture and other Government Institutions.
 - j) Impart regular training to Agriculture and Line Departments, Call Centers and other technical staff working for the purpose of crop residue management by State Agriculture and Horticulture Universities.
 - k) Support NGOs working for management of paddy residue by Department of Agriculture and other relevant Government Department/ agencies by extending possible support for positive interventions by these NGOs at field level.
17. A detailed/comprehensive plan of action, based on the contours of the frame-work as above, with clearly entrusted responsibilities to various Departments/Boards/ agencies of the State and other stakeholders needs to be immediately finalised by each of the state governments/GNCTD, duly identifying various qualitative and quantitative parameters and the respective targets against each of them, along with the time frame of implementation. The plan should

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endeavour to completely eliminate the practice of stubble burning and its consequential adverse effects on air quality. The plan of action shall be submitted by the respective states to the Commission by 30th June, 2021, progress on which shall be closely monitored by the Commission.


(Arvind Kumar Nautiyal)
Member Secretary

Tel No.: 011-20861974

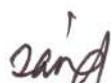
Email: arvind.nautiyal@gov.in

To:

The Chief Secretary, Government of Haryana

Copy to:

1. The Additional Chief Secretary, Environment, Government of Haryana
2. The Principal Secretary, Agriculture, Government of Haryana
3. The Chairman, Central Pollution Control Board
4. The Member Secretary, Haryana State Pollution Control Board


(Arvind Kumar Nautiyal)

**COMMISSION FOR AIR QUALITY MANAGEMENT
IN NATIONAL CAPITAL REGION AND ADJOINING AREAS**

**3rd Floor, Indian Oil Bhawan
1, Sri Aurobindo Marg, Yusuf Sarai,
New Delhi-110016**

F. No. A-110014/10/ 2020/CAQM-SB / 394-397

Dated: 10.06.2021

**SUBJECT: PROVIDING AN EFFECTIVE FRAMEWORK, ACTION PLAN AND STEPS TO
BE TAKEN TO TACKLE THE PROBLEM OF STUBBLE BURNING.**

1. Whereas, it is an established fact that the stubble burning especially in the months of October- November is an issue of grave concern in view of its direct contribution to Air Quality degradation in National Capital Region and Adjoining Areas by increasing the concentration level of pollutants like Particulate Matter, Carbon dioxide (CO₂), Carbon Monoxide (CO), Oxides of Sulphur (SO_x) and Oxides of Nitrogen (NO_x);
2. Whereas, Government of India, MoEF&CC, under the provisions of the Commission for Air Quality Management in National Capital Region and Adjoining Areas Ordinance 2021 (hereinafter referred to as Ordinance 2021) has constituted the Commission for Air Quality Management in NCR and Adjoining Areas (hereinafter referred to as Commission) vide Notification No. S.O. 1687 (E) dated 23rd April, 2021;
3. Whereas, Section 30 of the Ordinance 2021 provides that anything done or any action taken by the Commission under the Commission for Air Quality Management in National Capital Region and Adjoining Areas Ordinance 2020 (hereinafter referred to as Ordinance 2020) shall be deemed to have been done or taken under the corresponding

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provisions of the Ordinance 2021;

4. Whereas, Section 12 of the Ordinance 2021 mandates the Commission to provide an effective framework, action plan and take appropriate steps to tackle the problem of stubble burning in the NCR and Adjoining Areas;
5. Whereas, the Commission has deliberated stubble burning/ Crop Residue Management (CRM) with major associated stakeholders in a series of meetings including with the State Governments of Punjab, Haryana, UP, Rajasthan, GNCTD, State Pollution Control Boards of NCR States, Punjab and Delhi Pollution Control Committee (DPCC), knowledge institutions like Indian Council of Agricultural Research (ICAR), Indian Agricultural Research Institute (IARI), Indian Space Research Organization (ISRO), NGOs and civil society groups etc. working in the National Capital Region;
6. Whereas the Commission has asked each of the NCR states and Punjab to draw up action plan for control/elimination of crop residue burning, *inter-alia*, based upon the discussions held/decisions taken in the Commission meetings and views communicated through letters;
7. Whereas, the action plan and/or the other inputs received from the state governments have been studied by the Commission;
8. Whereas, the Commission based upon the feedback, inputs and implementable action points emerged during the various meetings with stakeholders, has drawn up the following framework to control/eliminate stubble burning in order to improve the air quality in the National Capital Region and Adjoining Areas;
9. And therefore, the Commission in exercise of the powers conferred under the Ordinance 2021, directs the State Governments/GNCTD to formulate and implement suitable state specific detailed action plan,

based upon the local conditions and requirements, to control and eliminate stubble burning, broadly based on the following framework:

10. Framework for control of Stubble burning in National Capital Region and Adjoining Areas :-

- a) Background:- As per the Information provided by the Ministry of Agriculture and Farmers Welfare, the approximate area under rice cultivation in Punjab, Haryana, Uttar Pradesh and Rajasthan is 31,41,000 hectares, 15,59,000 hectares, 58,10,000 hectares and 2,19,000 hectares respectively. Paddy straw burning is widely practiced in Punjab, Haryana and Uttar Pradesh to clear the fields for next crop sowing, especially during October – November. The total paddy straw burning events reported by ICAR in the three States (Punjab, Haryana and Uttar Pradesh for the period 1st October to 30th November) during 2016-17, 2018-19, 2019-20 and 2020-21 were 1,27,774; 88,948; 75,563; 61,332 and 89,430 respectively. State Governments and Government of India have taken a number of steps to dissuade farmers from burning crop residue. Stubble burning especially in the months of October- November is an issue of serious concern in view of its direct contribution to Air Quality degradation in National Capital Region and Adjoining Areas as well as adverse impact on soil;
- b) There is a compelling necessity to eliminate this unsustainable agricultural practice and implement a comprehensive framework and action plan. The important components of the Framework and action plan for elimination of stubble burning are broadly as under: -
- A. *In-situ* / Crop Residue Management (CRM).**
 - B. *Ex-situ* Crop Residue Management (CRM).**
 - C. Prohibition of Stubble/Crop Residue Burning.**

D. Effective monitoring/enforcement.

E. Plans / Schemes to reduce the generation of paddy straw.

F. IEC activities for the Plan of Action.

11. *In-situ* Crop Residue Management (CRM)

In the *in-situ* Crop Residue Management practices, the harvested crop stalks/ stubbles are chopped into small pieces and incorporated *in-situ* into the soil to recycle the crop residue. In order to control crop residue/ stubble burning, a central sector scheme "on promotion of agricultural mechanization *in-situ* management of crop residue in State of Punjab, Haryana, Uttar Pradesh and NCT of Delhi" was approved by the Central Government. Funds amounting to Rs. 1726.67 crore were released during the last three years (2018-19, 2019-20 and 2020-21) under the scheme to the State of Punjab (Rs. 793.18 Crore), Haryana (Rs. 499.90 Crore), Uttar Pradesh (Rs. 374.08 Crore) and NCT of Delhi (Rs. 4.52 Crore). During the past three years 1,56,843 machines for crop residue management have been supplied. (Punjab – 71,410, Haryana – 51,049, Uttar Pradesh – 34,341 and NCT of Delhi - 43). In Punjab alone 50,815 CRM machines have been provided during 2018-19 and 2019-20 and the total machine count in Punjab has reached to 74,637 by December 2020 including the machines under Sub Mission on Agricultural Mechanization (SMAM).

Targeted Activities under the action plan for *In-situ* crop residue management are as under: -

- a) The State Governments to take full benefit of the centrally sponsored schemes to provide subsidy on agriculture equipment's and machinery used for various purposes to sufficiently augment the crop residue management machinery under Sub Mission on Agricultural Mechanization (SMAM) funded by Ministry of Agriculture and Farmers Welfare, Government of India.

- b) States to identify various need based, location specific interventions suitable to particular agro-ecological zones for management of crop residues and implement the same under the Annual Work Plan (AWP) of various ongoing schemes/programs/missions of ICAR. Besides, State Governments / UT to also avail financial assistance from Rashtriya Krishi Vikas Yojana (RKVY), which provides flexibility to the states for taking up any components/interventions required for holistic and integrated Government's development of agriculture including management of crop residue.
- c) Making machines available at the farmer's doorstep by: -
- (i) Village/Block/District wise mapping of the demand of CRM machinery.
 - (ii) Gap analysis as per the availability of CRM machines with each district of the state, to ensure that demand-supply mismatch at the level of village and individual farmer is identified and fixed.
 - (iii) Staggering the harvesting schedule at village level for ensuring better machine availability at the farmer's field.
 - (iv) Proper allocation of CRM machines (Super SMS, Happy Seeder, etc.) as per farmer's specific need, based on the staggered harvesting schedule, availability of machines with cooperatives and other agencies.
 - (v) Analysis of demand and supply of CRM machinery must be ensured and it should *inter-alia* include correlation analysis between district-wise fire count mapping and the number of machines deployed in a respective year. This will help to form a basis for the exact requirement, distribution and allocation of CRM machinery in future.

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- (vi) Ensuring focus on ideal mix of machines for an efficient crop residue management and economic viability, through a study entrusted to a competent Institution/organization.
- (vii) Focusing on Custom Hiring Centers (CHCs) and cooperatives to increase machine utilization through a program with specific machine utilization targets duly monitored. For this purpose, CHCs and Cooperatives be mandated to fill machine utilization data on an electronic platform decided by the State Government.
- (viii) Leveraging technologies to reduce friction in last mile delivery. In this regard, an electronic platform/ mobile application, as decided by the State Government, may be used/prepared to make available crop residue management machines /to allow farmers to book and use machines and an officer may be nominated for each Village for monitoring bookings on the platform and facilitating delivery of machines to the farmers.
- (ix) The State Government/UT to ensure that Small and Marginal farmers are provided a door step access (if possible, on free /concessional terms) to CRM machinery and straw baling equipment depending upon the residue management option chosen by them, as per local circumstances.
- d) State Governments to get assessment of village level non-Basmati crop acreage involving village pradhans and nodal officers/cluster officers and making on-line arrangement for access of crop residue management machinery along with accessories to the farmers from Custom Hiring Centers/Agriculture Service Centers. The on-line arrangement shall have the enabling provisions of automated SMS(s) to individual farmers for coordinating supply and access of crop residue management

- machinery with accessories;
- e) For effective in-situ management of crop residue, it is utmost essential that "Super SMS" is mandated to be used in combination with Combine Harvester and all new procurement of combine harvesters must be with the Super SMS attachment. This would facilitate minimizing the standing straw and better utilization of the chopped straw as mulch. Super SMS attachment also needs to be mandated to be retrofitted on the existing combine harvesters procured earlier without such an attachment.
 - f) The State Governments to ensure use of super seeder/happy seeder/ turbo seeder / shredder and zero-seed-cum-fertilizer drill etc. to facilitate *in-situ* management of crop residue and retaining the straw as surface mulching at the farmer's field;
 - g) The State Governments/ UT to promote and encourage use of crop residue as mulch for sowing of wheat and its incorporation in soil for planting of potato and other vegetable crops;
 - h) The State Governments / UT to encourage farmers to go for land preparation by using Hydraulic Reversible MB Plough that helps in upturning the crop stubbles and breaking the hardpan of the soil;
 - i) State Governments/ UT to note the available *In-situ* management of crop residue involving Bio-Decomposer technology options for decomposing the paddy straw by using Microbial Consortia and build possibilities to use bio-decomposer technologies, also in a complementary mode with CRM machines. ICAR has concluded that bio-decomposer can easily be blended with *in-situ* crop residue management machines and for effective *in-situ* decomposition after the spraying bio-decomposer, super seeder and rotavator can be operated for proper mixing of the residue in

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the soil and then a light irrigation is applied to ensure moisture in the fields.

- j) The State Government/UT to encourage farmers to collect and bundle crop residue using self-propelled Crop Reaper, Reaper Binders to place in the vicinity viz. in their own land/village common land/cattle ponds/Gaushalas etc. through suitable planning involving Panchayat Pradhans, village Nodal Officers, village revenue officials etc. under the supervision of the cluster officer. Such stacked rice paddy straw bales may be supplied to industries for Ex-situ management or treated with bio-decomposer as per laid down protocol to accelerate bio-decomposition and preparation of bio enriched compost/ vermin compost to be utilized as manure in the fields.
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Ex-situ crop residue management options have the potential to effectively utilize the agricultural residue/straw and add economic value, thereby minimizing the agricultural residue burning in and around NCR. Ex-situ options have been attempted both by the Government and private agencies. One of the important steps taken in this regard is by Public Sector Oil as well as Power Companies. Public sector oil companies are establishing bio-ethanol and compressed bio-gas plants.

For promoting such ex-situ crop residue management options, State Governments are required to:

- a) Develop a mechanism / policy for assured availability/supply of paddy straw material for various ex-situ projects in a time bound manner. It should include short term, medium term, and long-term actions in line with broad contours as below:
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 - v. Promote requisite infrastructure at the industrial sites for proper utilization of straw.
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- vii. Facilitate the marketing of the agricultural straw-based products and services, so as to support the sustenance of the various ex-situ options.
- b) To promote diversified ex-situ use of baled crop residue for various purposes like paper /board / panel/ packaging material making industries, composting, mushroom cultivation etc. through policy interventions;
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- c) The state/UT Governments /Pollution Control Boards/Committee in exercise of the powers conferred under section 19 (5) of the Air (Prevention & Control of Pollution) Act are to notify prohibition orders (in respect of States/UT where such order has not been issued) banning the burning of agriculture residue.
- d) The state/UT Governments are to issue Orders for imposing Environmental Compensation against the defaulters in compliance of

NGT directions and authorize and empower officers for this purpose for timely realization of the environmental compensation charges.

- e) District Magistrates have been passing orders under section 144 Cr PC in the past to prohibit burning of paddy straw. The state /UT Governments may ensure notification of such prohibition orders, banning the burning of agriculture residue, in respect of States/UT where such order has not been issued and ensure its implementation.
- f) Pass orders making it mandatory for all the Combines to have Super SMS system fixed (in respect of States/UT where such order has not been issued) in order to encourage *in-situ* management of paddy straw, under section 31-A of Air (Prevention and Control of Pollution) Act, 1981.

14. Effective monitoring/enforcement: -

To ensure full compliance of laws and Orders/Judgments of the Hon'ble Supreme Court of India/ NGT/High Court /State Government /SPCBs on the banning of stubble burning and take strict action against violators/defaulters, State Governments/GNCTD through its various Departments / Agencies/Board are to:

- a) Follow a standard protocol (under finalization by ISRO) for reporting of incidents of farm fires during the paddy harvesting season, strictly monitor incidents of burning of paddy straw through Remote Sensing Centre and ensure that SMS alert is sent to field functionaries to take immediate action on incidents of stubble burning.
- b) Make the mobile and web-based application operational in paddy season, in which role-based Login (Village Nodal, Cluster, Sub division / Tehsil, district and State level) are provided to various officials for end-to-end reporting

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including action taken for each fire incidents.

- c) Set up a Control Room for the purpose of controlling stubble burning during harvesting season.
- d) PCBs shall ensure that all data with respect to burning of crop residue as obtained from Remote Sensing authorities and action taken on the incidents and various MIS reports are available through a web-based application with facility to have dashboard to drill down data.
- e) Appoint/deploy Officers on area specific basis to ensure that ban orders on stubble burning are complied with, end-to-end reporting of each fire incidents and also to ensure that in cases of crop residue burning, appropriate coercive and punitive action is taken including registering FIRs/launching of prosecution under Section 15 of the Environment (Protection) Act of 1986 and other relevant laws. Monitoring of the matter is to be done at various levels as under:
 - A. State Level
 - B. District Level Officer
 - C. Sub Division/Tehsil Officer
 - D. Cluster Officer
 - E. Village Nodal Officer
- f) Ensure that police authorities enforce and implement various directions and orders issued with respect to ban on burning of crop residue. The police shall particularly render special assistance to the District Administration for monitoring of hot spots where large scale incidents of burning of crop residue have been observed in previous years.
- g) Make liable the land owners and /or contract farmers (data

bank of contract farmers shall also be prepared) for any violation of the orders of ban on stubble burning.

- h) Contact and sensitize farmers who have given their land on contract to ensure compliance of the orders/directions on the ban on stubble/crop residue burning.
- i) Ensure that the Commission Agents, *Nambardaar*, Panchayat Members, Lease holders of the Panchayat Land or Shamlat Land of the villages, employees of Government Departments, Boards, Corporations and Autonomous Bodies will not burn crop residue. Strict action including suitable disciplinary action shall be taken against the employees for violation of ban on burning of crop residue
- j) Ensure that patwaris enter the *girdawri* register, or similar such records as prevalent in various states, with a red ink entry against the fields/farm owners where from the incidents of burning of crop residue have been reported. A system of penal measures and / or disincentives needs to be built-in and enforced for every violators/such red ink entry cases. The disincentives may include withholding of concessions of electricity charges, water charges, fertilizers etc.
- k) Identify vacant common village land or any other land for storage of paddy straw throughout the state.
- l) The Deputy Commissioner and SSPs of the district shall jointly hold District Level Monitoring meeting with all the stakeholders to strictly enforce the orders banning paddy stubble burning.
- m) Appoint one nodal officer for each village and one Cluster Officer for every 20 villages (or as per the need) to coordinate the efforts from the pool of employees available with various

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departments.

- n) Ensure appointments of various officials like Village Nodal officer, Revenue officer (Patwari), Cluster officer, Tehsildar, Police and SDM to monitor the stubble burning incidents. It may also be ensured that the information about such key officials is available in an appropriate technology platform, to be coordinated by a suitable government agency, in advance of the harvesting season.
 - o) Ensure visit to hot spots (villages where more than 75% area of the village burnt since last three year as per the stubble burning data) by senior officers of the Districts and make special arrangements to contain the burning of crop residues in these villages.
 - p) Ensure that nodal officer visits every site of the incident immediately, but definitely within two days to assess the situation and take appropriate action.
 - q) Monitor the progress of various Stakeholder Departments and send the consolidated progress reports to the Department of Environment on Email. Consolidated reports shall be sent to the Chief Secretary and Commission.
 - r) Ensure Implementation and Monitoring Mechanism by mobilization and effective coordination of the efforts of various Departments/Boards/ agencies of the State and by setting up mechanism at State Level, District Level, Sub-division Level as well as by appointing Cluster Officers and Village Nodal Officers.
- A. State Level Coordination and Monitoring: -
- (i) At the State Level, a Committee under Chief Secretary and comprising of the Administrative Secretaries of all the concerned

and relevant Departments will coordinate, monitor and decide various issues to ensure effective implementation of the ban on burning paddy straw:

- (ii) The State Government will depute Administrative Secretaries to various districts to monitor the implementation of the ban. They will be assisted by adequate number of Senior Officers;
- B. District Level Coordination and Monitoring: - There shall be a District Level Monitoring Committee under the chairmanship of Deputy Commissioner and comprising Senior Superintendent of Police, Chief Agriculture Officer and heads of various departments concerned. District Level Coordination and Monitoring Committee shall meet frequently and review the IEC activities, enforcement activities and other facilitation activities and take necessary action.
- C. Sub-Division Level Coordination and Monitoring: - There shall be a Sub-Division Level Monitoring Committee with Sub-Divisional Magistrate as Chairman consisting of Deputy Superintendent of Police and other concerned officers as Members. The Committee shall meet daily/ alternate day and review the progress of various activities and take necessary action.
- D. Cluster Officer: - Cluster officer will fill the data regarding challan number and date, challan amount and challan photo in the mobile base app and shall coordinate with Village Nodal Officer for various activities to control burning of stubble by the farmers
- E. Village Nodal Officer: - Nodal officer deployed in each Village will assist in bookings of CRM on the electronic platform/ mobile application and ensuring delivery of machines to the farmers. The Village nodal officer will get the information for each fire

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incidents in his area from the SMS alert system already in operation. The village Nodal officer will visit the spot in the field, operate the mobile app and make entries along with picture of the fire incident sites in the mobile app. The Village Nodal officer will assist in various facilitation and enforcement activities at village level such as creation of awareness in village, identify those farmers who are likely to put fire to paddy residue to convince them not to burn, take action against farmers who have burnt the residue, report incidence of crop burning etc.

15. Plans / Schemes to reduce the generation of paddy straw: -

State Governments should take focused action to: -

- a) Promote Basmati variety also considering the fact that area under basmati variety has gone down significantly in some states.
- b) Discourage (and totally suspend) use of PUSA 44 variety of Paddy seeds and stop certification of its seeds so that non-Basmati acreage would be encouraged to shift to short duration rice varieties.
- c) Promote short duration and early maturing varieties since they can be managed quite efficiently and provide a much wider window for paddy straw management. Ministry of Agriculture and Farmers Welfare, Government of India has specifically recommended various short duration paddy varieties which are well suited to replace long duration varieties. The commission has also reiterated the need for the same and taken up with state Governments accordingly.
- d) Ensure adoption of short duration and early maturing varieties quickly in various paddy growing areas. Short duration varieties

have been well adopted by the farmers in some districts in Punjab but in many other districts the adoption is slow and sizeable area is under the long duration varieties.

- e) Promote crop diversification. Crop diversification program is being implemented in Punjab, Haryana and Uttar Pradesh as a sub-scheme of RKVV since 2013-14 to divert the area of water guzzling paddy to alternate crops. Though, various interventions like alternate crop demonstrations, farm mechanization and value addition, site specific activities and awareness training etc. are carried out under the crop diversification program, there is a compelling need to give a major boost to crop diversification.
- f) Identify crops that could compete with paddy-wheat crop cycle and provide remunerative and assured price to the farmers to substantially minimize the stubble generation from paddy. The possible options for the region may *inter-alia* include orchard with drip irrigation, vegetables, corn/maize, cotton, pulses and oil seeds etc. which consume less water, less power and also less fertilizers.

State Governments should work out an exhaustive policy framework on crop diversification, based on the experiences gained in implementation of Crop diversification program and seek appropriate assistance and support from Ministry of Agriculture and Farmers Welfare, Government of India.

16. IEC activities for the plan of Action: -

- a) Undertake detailed IEC activities and awareness programs about various measures to prevent crop residue burning through electronic media, social media and print media as well as publications, seminars and other available means etc. much

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before the beginning of harvesting season.

- b) Design and implement suitable location specific capacity building and targeted awareness modules and programs about ill effects of crop residue burning and its effective utilization and management.
- c) Notify district wise IEC campaign schedule through restructured CRM activities with full engagement and synergy by all the related departments, State Agricultural University, Gramin Krishi Mela's, District KVKs, Public/Private Institutes, Village Agriculture volunteers, Sarpanches, Experts/Farmer Unions and all active NGOs.
- d) Print and Multi- media advertisement may, *inter-alia*, include Jingles on Radio Channels, Production of Advertisement Films, Running of short films on TV Channels, Display Boards against straw burning including on State Roadways / SRTC Buses, Display Boards on Bus Stands, Market Committee Yards and Cooperative Societies in the State, Painting of walls in the villages with slogans against Paddy burning, Massive print media advertisement, Erection of hoardings and panels at prominent places, Plying publicity vans in the villages, Deputing of Nodal officer for each village, Distributing Pamphlets and leaflets to farmers etc.
- e) Involve students to communicate effectively the adverse effects of stubble burning and availability of management options.
- f) Support farmers by organizing bio-decomposer application requirements through guidance by IEC partners and extending help from block/village level agriculture machinery by designated Nodal Officers.

- g) Build strong Advocacy Campaign Modules during 2021 and thereafter so as to popularize advantages of Microbial Consortia Technology.
 - h) Organize field level training programs at KVKs and other similar notified locations viz. Kisan Mela's/Field Agriculture Extension Centres/ Agriculture University campuses etc. for efficient and effective use of farm machinery to facilitate collection, volume reduction, and transportation.
 - i) Organize Gram Sabha's for demonstrating crop residue resource conservation and management machinery on a large scale by the State Department of Agriculture and other Government Institutions.
 - j) Impart regular training to Agriculture and Line Departments, Call Centers and other technical staff working for the purpose of crop residue management by State Agriculture and Horticulture Universities.
 - k) Support NGOs working for management of paddy residue by Department of Agriculture and other relevant Government Department/ agencies by extending possible support for positive interventions by these NGOs at field level.
17. A detailed/comprehensive plan of action, based on the contours of the frame-work as above, with clearly entrusted responsibilities to various Departments/Boards/ agencies of the State and other stakeholders needs to be immediately finalised by each of the state governments/GNCTD, duly identifying various qualitative and quantitative parameters and the respective targets against each of them, along with the time frame of implementation. The plan should

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endeavour to completely eliminate the practice of stubble burning and its consequential adverse effects on air quality. The plan of action shall be submitted by the respective states to the Commission by 30th June, 2021, progress on which shall be closely monitored by the Commission.

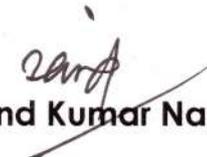

(Arvind Kumar Nautiyal)
Member Secretary
Tel No.: 011-20861974
Email: arvind.nautiyal@gov.in

To:

The Chief Secretary, Government of Rajasthan

Copy to:

1. The Principal Secretary, Environment Department, Government of Rajasthan
2. The Principal Secretary, Agriculture, Government of Rajasthan
3. The Chairman, Central Pollution Control Board
4. The Member Secretary, Rajasthan State Pollution Control Board


(Arvind Kumar Nautiyal)

**COMMISSION FOR AIR QUALITY MANAGEMENT
IN NATIONAL CAPITAL REGION AND ADJOINING AREAS**

**3rd Floor, Indian Oil Bhawan
1, Sri Aurobindo Marg, Yusuf Sarai,
New Delhi-110016**

F. No. A-110014/10/ 2020/CAQM-SB / 399-402

Dated: 10.06.2021

**SUBJECT: PROVIDING AN EFFECTIVE FRAMEWORK, ACTION PLAN AND STEPS TO
BE TAKEN TO TACKLE THE PROBLEM OF STUBBLE BURNING.**

1. Whereas, it is an established fact that the stubble burning especially in the months of October- November is an issue of grave concern in view of its direct contribution to Air Quality degradation in National Capital Region and Adjoining Areas by increasing the concentration level of pollutants like Particulate Matter, Carbon dioxide (CO₂), Carbon Monoxide (CO), Oxides of Sulphur (SO_x) and Oxides of Nitrogen (NO_x);
2. Whereas, Government of India, MoEF&CC, under the provisions of the Commission for Air Quality Management in National Capital Region and Adjoining Areas Ordinance 2021 (hereinafter referred to as Ordinance 2021) has constituted the Commission for Air Quality Management in NCR and Adjoining Areas (hereinafter referred to as Commission) vide Notification No. S.O. 1687 (E) dated 23rd April, 2021;
3. Whereas, Section 30 of the Ordinance 2021 provides that anything done or any action taken by the Commission under the Commission for Air Quality Management in National Capital Region and Adjoining Areas Ordinance 2020 (hereinafter referred to as Ordinance 2020) shall be deemed to have been done or taken under the corresponding

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- provisions of the Ordinance 2021;
4. Whereas, Section 12 of the Ordinance 2021 mandates the Commission to provide an effective framework, action plan and take appropriate steps to tackle the problem of stubble burning in the NCR and Adjoining Areas;
 5. Whereas, the Commission has deliberated stubble burning/ Crop Residue Management (CRM) with major associated stakeholders in a series of meetings including with the State Governments of Punjab, Haryana, UP, Rajasthan, GNCTD, State Pollution Control Boards of NCR States, Punjab and Delhi Pollution Control Committee (DPCC), knowledge institutions like Indian Council of Agricultural Research (ICAR), Indian Agricultural Research Institute (IARI), Indian Space Research Organization (ISRO), NGOs and civil society groups etc. working in the National Capital Region;
 6. Whereas the Commission has asked each of the NCR states and Punjab to draw up action plan for control/elimination of crop residue burning, *inter-alia*, based upon the discussions held/decisions taken in the Commission meetings and views communicated through letters;
 7. Whereas, the action plan and/or the other inputs received from the state governments have been studied by the Commission;
 8. Whereas, the Commission based upon the feedback, inputs and implementable action points emerged during the various meetings with stakeholders, has drawn up the following framework to control/eliminate stubble burning in order to improve the air quality in the National Capital Region and Adjoining Areas;
 9. And therefore, the Commission in exercise of the powers conferred under the Ordinance 2021, directs the State Governments/GNCTD to formulate and implement suitable state specific detailed action plan,

based upon the local conditions and requirements, to control and eliminate stubble burning, broadly based on the following framework:

10. Framework for control of Stubble burning in National Capital Region and Adjoining Areas :-

- a) Background:- As per the Information provided by the Ministry of Agriculture and Farmers Welfare, the approximate area under rice cultivation in Punjab, Haryana, Uttar Pradesh and Rajasthan is 31,41,000 hectares, 15,59,000 hectares, 58,10,000 hectares and 2,19,000 hectares respectively. Paddy straw burning is widely practiced in Punjab, Haryana and Uttar Pradesh to clear the fields for next crop sowing, especially during October – November. The total paddy straw burning events reported by ICAR in the three States (Punjab, Haryana and Uttar Pradesh for the period 1st October to 30th November) during 2016-17, 2018-19, 2019-20 and 2020-21 were 1,27,774; 88,948; 75,563; 61,332 and 89,430 respectively. State Governments and Government of India have taken a number of steps to dissuade farmers from burning crop residue. Stubble burning especially in the months of October- November is an issue of serious concern in view of its direct contribution to Air Quality degradation in National Capital Region and Adjoining Areas as well as adverse impact on soil;
- b) There is a compelling necessity to eliminate this unsustainable agricultural practice and implement a comprehensive framework and action plan. The important components of the Framework and action plan for elimination of stubble burning are broadly as under: -
- A. In-situ / Crop Residue Management (CRM).**
 - B. Ex-situ Crop Residue Management (CRM).**
 - C. Prohibition of Stubble/Crop Residue Burning.**

D. Effective monitoring/enforcement.

E. Plans / Schemes to reduce the generation of paddy straw.

F. IEC activities for the Plan of Action.

11. In-situ Crop Residue Management (CRM)

In the *in-situ* Crop Residue Management practices, the harvested crop stalks/ stubbles are chopped into small pieces and incorporated *in-situ* into the soil to recycle the crop residue. In order to control crop residue/ stubble burning, a central sector scheme "on promotion of agricultural mechanization *in-situ* management of crop residue in State of Punjab, Haryana, Uttar Pradesh and NCT of Delhi" was approved by the Central Government. Funds amounting to Rs. 1726.67 crore were released during the last three years (2018-19, 2019-20 and 2020-21) under the scheme to the State of Punjab (Rs. 793.18 Crore), Haryana (Rs. 499.90 Crore), Uttar Pradesh (Rs. 374.08 Crore) and NCT of Delhi (Rs. 4.52 Crore). During the past three years 1,56,843 machines for crop residue management have been supplied. (Punjab – 71,410, Haryana – 51,049, Uttar Pradesh – 34,341 and NCT of Delhi - 43). In Punjab alone 50,815 CRM machines have been provided during 2018-19 and 2019-20 and the total machine count in Punjab has reached to 74,637 by December 2020 including the machines under Sub Mission on Agricultural Mechanization (SMAM).

Targeted Activities under the action plan for *In-situ* crop residue management are as under: -

- a) The State Governments to take full benefit of the centrally sponsored schemes to provide subsidy on agriculture equipment's and machinery used for various purposes to sufficiently augment the crop residue management machinery under Sub Mission on Agricultural Mechanization (SMAM) funded by Ministry of Agriculture and Farmers Welfare, Government of India.

- b) States to identify various need based, location specific interventions suitable to particular agro-ecological zones for management of crop residues and implement the same under the Annual Work Plan (AWP) of various ongoing schemes/programs/missions of ICAR. Besides, State Governments / UT to also avail financial assistance from Rashtriya Krishi Vikas Yojana (RKVY), which provides flexibility to the states for taking up any components/interventions required for holistic and integrated Government's development of agriculture including management of crop residue.
- c) Making machines available at the farmer's doorstep by: -
- (i) Village/Block/District wise mapping of the demand of CRM machinery.
 - (ii) Gap analysis as per the availability of CRM machines with each district of the state, to ensure that demand-supply mismatch at the level of village and individual farmer is identified and fixed.
 - (iii) Staggering the harvesting schedule at village level for ensuring better machine availability at the farmer's field.
 - (iv) Proper allocation of CRM machines (Super SMS, Happy Seeder, etc.) as per farmer's specific need, based on the staggered harvesting schedule, availability of machines with cooperatives and other agencies.
 - (v) Analysis of demand and supply of CRM machinery must be ensured and it should *inter-alia* include correlation analysis between district-wise fire count mapping and the number of machines deployed in a respective year. This will help to form a basis for the exact requirement, distribution and allocation of CRM machinery in future.

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- (vi) Ensuring focus on ideal mix of machines for an efficient crop residue management and economic viability, through a study entrusted to a competent Institution/organization.
- (vii) Focusing on Custom Hiring Centers (CHCs) and cooperatives to increase machine utilization through a program with specific machine utilization targets duly monitored. For this purpose, CHCs and Cooperatives be mandated to fill machine utilization data on an electronic platform decided by the State Government.
- (viii) Leveraging technologies to reduce friction in last mile delivery. In this regard, an electronic platform/ mobile application, as decided by the State Government, may be used/prepared to make available crop residue management machines /to allow farmers to book and use machines and an officer may be nominated for each Village for monitoring bookings on the platform and facilitating delivery of machines to the farmers.
- (ix) The State Government/UT to ensure that Small and Marginal farmers are provided a door step access (if possible, on free /concessional terms) to CRM machinery and straw baling equipment depending upon the residue management option chosen by them, as per local circumstances.
- d) State Governments to get assessment of village level non-Basmati crop acreage involving village pradhans and nodal officers/cluster officers and making on-line arrangement for access of crop residue management machinery along with accessories to the farmers from Custom Hiring Centers/Agriculture Service Centers. The on-line arrangement shall have the enabling provisions of automated SMS(s) to individual farmers for coordinating supply and access of crop residue management

- machinery with accessories;
- e) For effective in-situ management of crop residue, it is utmost essential that "Super SMS" is mandated to be used in combination with Combine Harvester and all new procurement of combine harvesters must be with the Super SMS attachment. This would facilitate minimizing the standing straw and better utilization of the chopped straw as mulch. Super SMS attachment also needs to be mandated to be retrofitted on the existing combine harvesters procured earlier without such an attachment.
 - f) The State Governments to ensure use of super seeder/happy seeder/ turbo seeder / shredder and zero-seed-cum-fertilizer drill etc. to facilitate *in-situ* management of crop residue and retaining the straw as surface mulching at the farmer's field;
 - g) The State Governments/ UT to promote and encourage use of crop residue as mulch for sowing of wheat and its incorporation in soil for planting of potato and other vegetable crops;
 - h) The State Governments / UT to encourage farmers to go for land preparation by using Hydraulic Reversible MB Plough that helps in upturning the crop stubbles and breaking the hardpan of the soil;
 - i) State Governments/ UT to note the available *In-situ* management of crop residue involving Bio-Decomposer technology options for decomposing the paddy straw by using Microbial Consortia and build possibilities to use bio-decomposer technologies, also in a complementary mode with CRM machines. ICAR has concluded that bio-decomposer can easily be blended with *in-situ* crop residue management machines and for effective *in-situ* decomposition after the spraying bio-decomposer, super seeder and rotavator can be operated for proper mixing of the residue in

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the soil and then a light irrigation is applied to ensure moisture in the fields.

- j) The State Government/UT to encourage farmers to collect and bundle crop residue using self-propelled Crop Reaper, Reaper Binders to place in the vicinity viz. in their own land/village common land/cattle ponds/Gaushalas etc. through suitable planning involving Panchayat Pradhans, village Nodal Officers, village revenue officials etc. under the supervision of the cluster officer. Such stacked rice paddy straw bales may be supplied to industries for Ex-situ management or treated with bio-decomposer as per laid down protocol to accelerate bio-decomposition and preparation of bio enriched compost/ vermin compost to be utilized as manure in the fields.
- k) The State Governments need to promote direct sowing of rice (DSR) method using short duration varieties in order to provide a longer window period for management of paddy straw. A staggered sowing/ transplantation schedule of various varieties of paddy also needs to be adopted on a village/ cluster basis, as advised by ICAR so as to optimally allocate the available CRM machinery for in-situ straw management.

12. Ex-situ Crop Residue Management (CRM).

Ex-situ crop residue management options have the potential to effectively utilize the agricultural residue/straw and add economic value, thereby minimizing the agricultural residue burning in and around NCR. Ex-situ options have been attempted both by the Government and private agencies. One of the important steps taken in this regard is by Public Sector Oil as well as Power Companies. Public sector oil companies are establishing bio-ethanol and compressed bio-gas plants.

For promoting such ex-situ crop residue management options, State Governments are required to:

- a) Develop a mechanism / policy for assured availability/supply of paddy straw material for various ex-situ projects in a time bound manner. It should include short term, medium term, and long-term actions in line with broad contours as below:
 - i. Map the districts and villages for the agricultural straw availability and demand from various industries (Biofuel projects, Thermal power projects, etc.) for optimum quantity allocation and utilization.
 - ii. Establish institutions / aggregators at Village/Block/District level with adequate and effective infrastructure that includes availability and deployment of CRM machinery at farmer's doorstep, storage of straw on and off-site, transportation of straw from the fields to the respective storage centers and from such centers to the industries.
 - iii. Develop appropriate decentralized mechanism for the collection, storage and transportation for industrial use of crop residue through empaneled aggregator agencies or through any other mechanism for tapping the real economic and commercial value of paddy residue.
 - iv. Develop a robust supply chain mechanism covering both supply side and demand side interventions and for ensuring quality of agricultural straw, primarily the moisture content in it.
 - v. Promote requisite infrastructure at the industrial sites for proper utilization of straw.
 - vi. Promote diversified ex-situ use of baled crop residue for various purposes like power generation, production of Bio-ethanol and Bio-gas, for making briquettes, torrefied charcoal, pellets, etc. as raw material/fuel for coal fired power plants etc.

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- vii. Facilitate the marketing of the agricultural straw-based products and services, so as to support the sustenance of the various ex-situ options.
- b) To promote diversified ex-situ use of baled crop residue for various purposes like paper /board / panel/ packaging material making industries, composting, mushroom cultivation etc. through policy interventions;
 - c) To develop schemes to incentivize establishment of industries aiming at utilization of paddy straw as raw material by entitling them to all benefits as permissible under the fiscal incentives for industrial promotion schemes/programs in the respective States/UT;
 - d) To facilitate the transportation of paddy straw from surplus states to fodder deficit states through availing subsidy offered by Indian railways.

13. Prohibition of Stubble/Crop Residue Burning

- a) National green Tribunal vide order dated 10.12.2015 in OA No.118 of 2013 has prohibited the burning of paddy straw and passed detailed directions including imposing environmental compensation against defaulters.
- b) The Hon'ble Supreme Court vide Order date 04.11.2019 had directed the State Governments of NCR including the entire police machinery, Gram Pradhan and Sarpanch to ensure that no stubble burning instances take place.
- c) The state/UT Governments /Pollution Control Boards/Committee in exercise of the powers conferred under section 19 (5) of the Air (Prevention & Control of Pollution) Act are to notify prohibition orders (in respect of States/UT where such order has not been issued) banning the burning of agriculture residue.
- d) The state/UT Governments are to issue Orders for imposing Environmental Compensation against the defaulters in compliance of

NGT directions and authorize and empower officers for this purpose for timely realization of the environmental compensation charges.

- e) District Magistrates have been passing orders under section 144 Cr PC in the past to prohibit burning of paddy straw. The state /UT Governments may ensure notification of such prohibition orders, banning the burning of agriculture residue, in respect of States/UT where such order has not been issued and ensure its implementation.
- f) Pass orders making it mandatory for all the Combines to have Super SMS system fixed (in respect of States/UT where such order has not been issued) in order to encourage *in-situ* management of paddy straw, under section 31-A of Air (Prevention and Control of Pollution) Act, 1981.

14. Effective monitoring/enforcement: -

To ensure full compliance of laws and Orders/Judgments of the Hon'ble Supreme Court of India/ NGT/High Court /State Government /SPCBs on the banning of stubble burning and take strict action against violators/defaulters, State Governments/GNCTD through its various Departments / Agencies/Board are to:

- a) Follow a standard protocol (under finalization by ISRO) for reporting of incidents of farm fires during the paddy harvesting season, strictly monitor incidents of burning of paddy straw through Remote Sensing Centre and ensure that SMS alert is sent to field functionaries to take immediate action on incidents of stubble burning.
- b) Make the mobile and web-based application operational in paddy season, in which role-based Login (Village Nodal, Cluster, Sub division / Tehsil, district and State level) are provided to various officials for end-to-end reporting

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including action taken for each fire incidents.

- c) Set up a Control Room for the purpose of controlling stubble burning during harvesting season.
- d) PCBs shall ensure that all data with respect to burning of crop residue as obtained from Remote Sensing authorities and action taken on the incidents and various MIS reports are available through a web-based application with facility to have dashboard to drill down data.
- e) Appoint/deploy Officers on area specific basis to ensure that ban orders on stubble burning are complied with, end-to-end reporting of each fire incidents and also to ensure that in cases of crop residue burning, appropriate coercive and punitive action is taken including registering FIRs/launching of prosecution under Section 15 of the Environment (Protection) Act of 1986 and other relevant laws. Monitoring of the matter is to be done at various levels as under:
 - A. State Level
 - B. District Level Officer
 - C. Sub Division/Tehsil Officer
 - D. Cluster Officer
 - E. Village Nodal Officer
- f) Ensure that police authorities enforce and implement various directions and orders issued with respect to ban on burning of crop residue. The police shall particularly render special assistance to the District Administration for monitoring of hot spots where large scale incidents of burning of crop residue have been observed in previous years.

- g) Make liable the land owners and /or contract farmers (data bank of contract farmers shall also be prepared) for any violation of the orders of ban on stubble burning.
- h) Contact and sensitize farmers who have given their land on contract to ensure compliance of the orders/directions on the ban on stubble/crop residue burning.
- i) Ensure that the Commission Agents, *Nambardaar*, Panchayat Members, Lease holders of the Panchayat Land or Shamlat Land of the villages, employees of Government Departments, Boards, Corporations and Autonomous Bodies will not burn crop residue. Strict action including suitable disciplinary action shall be taken against the employees for violation of ban on burning of crop residue
- j) Ensure that patwaris enter the *girdawri* register, or similar such records as prevalent in various states, with a red ink entry against the fields/farm owners where from the incidents of burning of crop residue have been reported. A system of penal measures and / or disincentives needs to be built-in and enforced for every violators/such red ink entry cases. The disincentives may include withholding of concessions of electricity charges, water charges, fertilizers etc.
- k) Identify vacant common village land or any other land for storage of paddy straw throughout the state.
- l) The Deputy Commissioner and SSPs of the district shall jointly hold District Level Monitoring meeting with all the stakeholders to strictly enforce the orders banning paddy stubble burning.
- m) Appoint one nodal officer for each village and one Cluster Officer for every 20 villages (or as per the need) to coordinate the

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efforts from the pool of employees available with various departments.

- n) Ensure appointments of various officials like Village Nodal officer, Revenue officer (Patwari), Cluster officer, Tehsildar, Police and SDM to monitor the stubble burning incidents. It may also be ensured that the information about such key officials is available in an appropriate technology platform, to be coordinated by a suitable government agency, in advance of the harvesting season.
 - o) Ensure visit to hot spots (villages where more than 75% area of the village burnt since last three year as per the stubble burning data) by senior officers of the Districts and make special arrangements to contain the burning of crop residues in these villages.
 - p) Ensure that nodal officer visits every site of the incident immediately, but definitely within two days to assess the situation and take appropriate action.
 - q) Monitor the progress of various Stakeholder Departments and send the consolidated progress reports to the Department of Environment on Email. Consolidated reports shall be sent to the Chief Secretary and Commission.
 - r) Ensure Implementation and Monitoring Mechanism by mobilization and effective coordination of the efforts of various Departments/Boards/ agencies of the State and by setting up mechanism at State Level, District Level, Sub-division Level as well as by appointing Cluster Officers and Village Nodal Officers.
- A. State Level Coordination and Monitoring: -
- (i) At the State Level, a Committee under Chief Secretary and

comprising of the Administrative Secretaries of all the concerned and relevant Departments will coordinate, monitor and decide various issues to ensure effective implementation of the ban on burning paddy straw:

- (ii) The State Government will depute Administrative Secretaries to various districts to monitor the implementation of the ban. They will be assisted by adequate number of Senior Officers;
- B. District Level Coordination and Monitoring: - There shall be a District Level Monitoring Committee under the chairmanship of Deputy Commissioner and comprising Senior Superintendent of Police, Chief Agriculture Officer and heads of various departments concerned. District Level Coordination and Monitoring Committee shall meet frequently and review the IEC activities, enforcement activities and other facilitation activities and take necessary action.
- C. Sub-Division Level Coordination and Monitoring: - There shall be a Sub-Division Level Monitoring Committee with Sub-Divisional Magistrate as Chairman consisting of Deputy Superintendent of Police and other concerned officers as Members. The Committee shall meet daily/ alternate day and review the progress of various activities and take necessary action.
- D. Cluster Officer: - Cluster officer will fill the data regarding challan number and date, challan amount and challan photo in the mobile base app and shall coordinate with Village Nodal Officer for various activities to control burning of stubble by the farmers
- E. Village Nodal Officer: - Nodal officer deployed in each Village will assist in bookings of CRM on the electronic platform/ mobile application and ensuring delivery of machines to the farmers.

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The Village nodal officer will get the information for each fire incidents in his area from the SMS alert system already in operation. The village Nodal officer will visit the spot in the field, operate the mobile app and make entries along with picture of the fire incident sites in the mobile app. The Village Nodal officer will assist in various facilitation and enforcement activities at village level such as creation of awareness in village, identify those farmers who are likely to put fire to paddy residue to convince them not to burn, take action against farmers who have burnt the residue, report incidence of crop burning etc.

15. Plans / Schemes to reduce the generation of paddy straw: -

State Governments should take focused action to: -

- a) Promote Basmati variety also considering the fact that area under basmati variety has gone down significantly in some states.
- b) Discourage (and totally suspend) use of PUSA 44 variety of Paddy seeds and stop certification of its seeds so that non-Basmati acreage would be encouraged to shift to short duration rice varieties.
- c) Promote short duration and early maturing varieties since they can be managed quite efficiently and provide a much wider window for paddy straw management. Ministry of Agriculture and Farmers Welfare, Government of India has specifically recommended various short duration paddy varieties which are well suited to replace long duration varieties. The commission has also reiterated the need for the same and taken up with state Governments accordingly.

- d) Ensure adoption of short duration and early maturing varieties quickly in various paddy growing areas. Short duration varieties have been well adopted by the farmers in some districts in Punjab but in many other districts the adoption is slow and sizeable area is under the long duration varieties.
- e) Promote crop diversification. Crop diversification program is being implemented in Punjab, Haryana and Uttar Pradesh as a sub-scheme of RKVV since 2013-14 to divert the area of water guzzling paddy to alternate crops. Though, various interventions like alternate crop demonstrations, farm mechanization and value addition, site specific activities and awareness training etc. are carried out under the crop diversification program, there is a compelling need to give a major boost to crop diversification.
- f) Identify crops that could compete with paddy-wheat crop cycle and provide remunerative and assured price to the farmers to substantially minimize the stubble generation from paddy. The possible options for the region may *inter-alia* include orchard with drip irrigation, vegetables, corn/maize, cotton, pulses and oil seeds etc. which consume less water, less power and also less fertilizers.

State Governments should work out an exhaustive policy framework on crop diversification, based on the experiences gained in implementation of Crop diversification program and seek appropriate assistance and support from Ministry of Agriculture and Farmers Welfare, Government of India.

16. IEC activities for the plan of Action: -

- a) Undertake detailed IEC activities and awareness programs about various measures to prevent crop residue burning through

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electronic media, social media and print media as well as publications, seminars and other available means etc. much before the beginning of harvesting season.

- b) Design and implement suitable location specific capacity building and targeted awareness modules and programs about ill effects of crop residue burning and its effective utilization and management.
- c) Notify district wise IEC campaign schedule through restructured CRM activities with full engagement and synergy by all the related departments, State Agricultural University, Gramin Krishi Mela's, District KVKs, Public/Private Institutes, Village Agriculture volunteers, Sarpanches, Experts/Farmer Unions and all active NGOs.
- d) Print and Multi- media advertisement may, *inter-alia*, include Jingles on Radio Channels, Production of Advertisement Films, Running of short films on TV Channels, Display Boards against straw burning including on State Roadways / SRTC Buses, Display Boards on Bus Stands, Market Committee Yards and Cooperative Societies in the State, Painting of walls in the villages with slogans against Paddy burning, Massive print media advertisement, Erection of hoardings and panels at prominent places, Plying publicity vans in the villages, Deputing of Nodal officer for each village, Distributing Pamphlets and leaflets to farmers etc.
- e) Involve students to communicate effectively the adverse effects of stubble burning and availability of management options.
- f) Support farmers by organizing bio-decomposer application requirements through guidance by IEC partners and extending help from block/village level agriculture machinery by designated

Nodal Officers.

- g) Build strong Advocacy Campaign Modules during 2021 and thereafter so as to popularize advantages of Microbial Consortia Technology.
 - h) Organize field level training programs at KVKs and other similar notified locations viz. Kisan Mela's/Filed Agriculture Extension Centres/ Agriculture University campuses etc. for efficient and effective use of farm machinery to facilitate collection, volume reduction, and transportation.
 - i) Organize Gram Sabha's for demonstrating crop residue resource conservation and management machinery on a large scale by the State Department of Agriculture and other Government Institutions.
 - j) Impart regular training to Agriculture and Line Departments, Call Centers and other technical staff working for the purpose of crop residue management by State Agriculture and Horticulture Universities.
 - k) Support NGOs working for management of paddy residue by Department of Agriculture and other relevant Government Department/ agencies by extending possible support for positive interventions by these NGOs at field level.
17. A detailed/comprehensive plan of action, based on the contours of the frame-work as above, with clearly entrusted responsibilities to various Departments/Boards/ agencies of the State and other stakeholders needs to be immediately finalised by each of the state governments/GNCTD, duly identifying various qualitative and quantitative parameters and the respective targets against each of them, along with the time frame of implementation. The plan should

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endeavour to completely eliminate the practice of stubble burning and its consequential adverse effects on air quality. The plan of action shall be submitted by the respective states to the Commission by 30th June, 2021, progress on which shall be closely monitored by the Commission.


(Arvind Kumar Nautiyal)

Member Secretary

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To:

The Chief Secretary, Government of Uttar Pradesh

Copy to:

1. The Principal Secretary, Department of Environment and Climate Change, Government of Uttar Pradesh
2. The Principal Secretary, Agriculture, Government of Uttar Pradesh
3. The Chairman, Central Pollution Control Board
4. The Member Secretary, Uttar Pradesh Pollution Control Board


(Arvind Kumar Nautiyal)

**COMMISSION FOR AIR QUALITY MANAGEMENT
IN NATIONAL CAPITAL REGION AND ADJOINING AREAS**

**3rd Floor, Indian Oil Bhawan
1, Sri Aurobindo Marg, Yusuf Sarai,
New Delhi-110016**

F. No. A-110014/10/ 2020/CAQM-SB /404-407

Dated: 10.06.2021

**SUBJECT: PROVIDING AN EFFECTIVE FRAMEWORK, ACTION PLAN AND STEPS TO
BE TAKEN TO TACKLE THE PROBLEM OF STUBBLE BURNING.**

1. Whereas, it is an established fact that the stubble burning especially in the months of October- November is an issue of grave concern in view of its direct contribution to Air Quality degradation in National Capital Region and Adjoining Areas by increasing the concentration level of pollutants like Particulate Matter, Carbon dioxide (CO₂), Carbon Monoxide (CO), Oxides of Sulphur (SO_x) and Oxides of Nitrogen (NO_x);
2. Whereas, Government of India, MoEF&CC, under the provisions of the Commission for Air Quality Management in National Capital Region and Adjoining Areas Ordinance 2021 (hereinafter referred to as Ordinance 2021) has constituted the Commission for Air Quality Management in NCR and Adjoining Areas (hereinafter referred to as Commission) vide Notification No. S.O. 1687 (E) dated 23rd April, 2021;
3. Whereas, Section 30 of the Ordinance 2021 provides that anything done or any action taken by the Commission under the Commission for Air Quality Management in National Capital Region and Adjoining Areas Ordinance 2020 (hereinafter referred to as Ordinance 2020) shall be deemed to have been done or taken under the corresponding

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provisions of the Ordinance 2021;

4. Whereas, Section 12 of the Ordinance 2021 mandates the Commission to provide an effective framework, action plan and take appropriate steps to tackle the problem of stubble burning in the NCR and Adjoining Areas;
5. Whereas, the Commission has deliberated stubble burning/ Crop Residue Management (CRM) with major associated stakeholders in a series of meetings including with the State Governments of Punjab, Haryana, UP, Rajasthan, GNCTD, State Pollution Control Boards of NCR States, Punjab and Delhi Pollution Control Committee (DPCC), knowledge institutions like Indian Council of Agricultural Research (ICAR), Indian Agricultural Research Institute (IARI), Indian Space Research Organization (ISRO), NGOs and civil society groups etc. working in the National Capital Region;
6. Whereas the Commission has asked each of the NCR states and Punjab to draw up action plan for control/elimination of crop residue burning, *inter-alia*, based upon the discussions held/decisions taken in the Commission meetings and views communicated through letters;
7. Whereas, the action plan and/or the other inputs received from the state governments have been studied by the Commission;
8. Whereas, the Commission based upon the feedback, inputs and implementable action points emerged during the various meetings with stakeholders, has drawn up the following framework to control/eliminate stubble burning in order to improve the air quality in the National Capital Region and Adjoining Areas;
9. And therefore, the Commission in exercise of the powers conferred under the Ordinance 2021, directs the State Governments/GNCTD to formulate and implement suitable state specific detailed action plan,

based upon the local conditions and requirements, to control and eliminate stubble burning, broadly based on the following framework:

10. Framework for control of Stubble burning in National Capital Region and Adjoining Areas :-

- a) Background:- As per the Information provided by the Ministry of Agriculture and Farmers Welfare, the approximate area under rice cultivation in Punjab, Haryana, Uttar Pradesh and Rajasthan is 31,41,000 hectares, 15,59,000 hectares, 58,10,000 hectares and 2,19,000 hectares respectively. Paddy straw burning is widely practiced in Punjab, Haryana and Uttar Pradesh to clear the fields for next crop sowing, especially during October – November. The total paddy straw burning events reported by ICAR in the three States (Punjab, Haryana and Uttar Pradesh for the period 1st October to 30th November) during 2016-17, 2018-19, 2019-20 and 2020-21 were 1,27,774; 88,948; 75,563; 61,332 and 89,430 respectively. State Governments and Government of India have taken a number of steps to dissuade farmers from burning crop residue. Stubble burning especially in the months of October- November is an issue of serious concern in view of its direct contribution to Air Quality degradation in National Capital Region and Adjoining Areas as well as adverse impact on soil;
- b) There is a compelling necessity to eliminate this unsustainable agricultural practice and implement a comprehensive framework and action plan. The important components of the Framework and action plan for elimination of stubble burning are broadly as under: -
- A. In-situ / Crop Residue Management (CRM).**
 - B. Ex-situ Crop Residue Management (CRM).**
 - C. Prohibition of Stubble/Crop Residue Burning.**

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D. Effective monitoring/enforcement.

E. Plans / Schemes to reduce the generation of paddy straw.

F. IEC activities for the Plan of Action.

11. *In-situ* Crop Residue Management (CRM)

In the *in-situ* Crop Residue Management practices, the harvested crop stalks/ stubbles are chopped into small pieces and incorporated *in-situ* into the soil to recycle the crop residue. In order to control crop residue/ stubble burning, a central sector scheme "on promotion of agricultural mechanization *in-situ* management of crop residue in State of Punjab, Haryana, Uttar Pradesh and NCT of Delhi" was approved by the Central Government. Funds amounting to Rs. 1726.67 crore were released during the last three years (2018-19, 2019-20 and 2020-21) under the scheme to the State of Punjab (Rs. 793.18 Crore), Haryana (Rs. 499.90 Crore), Uttar Pradesh (Rs. 374.08 Crore) and NCT of Delhi (Rs. 4.52 Crore). During the past three years 1,56,843 machines for crop residue management have been supplied. (Punjab – 71,410, Haryana – 51,049, Uttar Pradesh – 34,341 and NCT of Delhi - 43). In Punjab alone 50,815 CRM machines have been provided during 2018-19 and 2019-20 and the total machine count in Punjab has reached to 74,637 by December 2020 including the machines under Sub Mission on Agricultural Mechanization (SMAM).

Targeted Activities under the action plan for *In-situ* crop residue management are as under: -

- a) The State Governments to take full benefit of the centrally sponsored schemes to provide subsidy on agriculture equipment's and machinery used for various purposes to sufficiently augment the crop residue management machinery under Sub Mission on Agricultural Mechanization (SMAM) funded by Ministry of Agriculture and Farmers Welfare, Government of India.

- b) States to identify various need based, location specific interventions suitable to particular agro-ecological zones for management of crop residues and implement the same under the Annual Work Plan (AWP) of various ongoing schemes/programs/missions of ICAR. Besides, State Governments / UT to also avail financial assistance from Rashtriya Krishi Vikas Yojana (RKVY), which provides flexibility to the states for taking up any components/interventions required for holistic and integrated Government's development of agriculture including management of crop residue.
- c) Making machines available at the farmer's doorstep by: -
- (i) Village/Block/District wise mapping of the demand of CRM machinery.
 - (ii) Gap analysis as per the availability of CRM machines with each district of the state, to ensure that demand-supply mismatch at the level of village and individual farmer is identified and fixed.
 - (iii) Staggering the harvesting schedule at village level for ensuring better machine availability at the farmer's field.
 - (iv) Proper allocation of CRM machines (Super SMS, Happy Seeder, etc.) as per farmer's specific need, based on the staggered harvesting schedule, availability of machines with cooperatives and other agencies.
 - (v) Analysis of demand and supply of CRM machinery must be ensured and it should *inter-alia* include correlation analysis between district-wise fire count mapping and the number of machines deployed in a respective year. This will help to form a basis for the exact requirement, distribution and allocation of CRM machinery in future.

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- (vi) Ensuring focus on ideal mix of machines for an efficient crop residue management and economic viability, through a study entrusted to a competent Institution/organization.
 - (vii) Focusing on Custom Hiring Centers (CHCs) and cooperatives to increase machine utilization through a program with specific machine utilization targets duly monitored. For this purpose, CHCs and Cooperatives be mandated to fill machine utilization data on an electronic platform decided by the State Government.
 - (viii) Leveraging technologies to reduce friction in last mile delivery. In this regard, an electronic platform/ mobile application, as decided by the State Government, may be used/prepared to make available crop residue management machines /to allow farmers to book and use machines and an officer may be nominated for each Village for monitoring bookings on the platform and facilitating delivery of machines to the farmers.
 - (ix) The State Government/UT to ensure that Small and Marginal farmers are provided a door step access (if possible, on free /concessional terms) to CRM machinery and straw baling equipment depending upon the residue management option chosen by them, as per local circumstances.
- d) State Governments to get assessment of village level non-Basmati crop acreage involving village pradhans and nodal officers/cluster officers and making on-line arrangement for access of crop residue management machinery along with accessories to the farmers from Custom Hiring Centers/Agriculture Service Centers. The on-line arrangement shall have the enabling provisions of automated SMS(s) to individual farmers for coordinating supply and access of crop residue management

- machinery with accessories;
- e) For effective in-situ management of crop residue, it is utmost essential that "Super SMS" is mandated to be used in combination with Combine Harvester and all new procurement of combine harvesters must be with the Super SMS attachment. This would facilitate minimizing the standing straw and better utilization of the chopped straw as mulch. Super SMS attachment also needs to be mandated to be retrofitted on the existing combine harvesters procured earlier without such an attachment.
 - f) The State Governments to ensure use of super seeder/happy seeder/ turbo seeder / shredder and zero-seed-cum-fertilizer drill etc. to facilitate *in-situ* management of crop residue and retaining the straw as surface mulching at the farmer's field;
 - g) The State Governments/ UT to promote and encourage use of crop residue as mulch for sowing of wheat and its incorporation in soil for planting of potato and other vegetable crops;
 - h) The State Governments / UT to encourage farmers to go for land preparation by using Hydraulic Reversible MB Plough that helps in upturning the crop stubbles and breaking the hardpan of the soil;
 - i) State Governments/ UT to note the available *In-situ* management of crop residue involving Bio-Decomposer technology options for decomposing the paddy straw by using Microbial Consortia and build possibilities to use bio-decomposer technologies, also in a complementary mode with CRM machines. ICAR has concluded that bio-decomposer can easily be blended with *in-situ* crop residue management machines and for effective *in-situ* decomposition after the spraying bio-decomposer, super seeder and rotavator can be operated for proper mixing of the residue in

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the soil and then a light irrigation is applied to ensure moisture in the fields.

- j) The State Government/UT to encourage farmers to collect and bundle crop residue using self-propelled Crop Reaper, Reaper Binders to place in the vicinity viz. in their own land/village common land/cattle ponds/Gaushalas etc. through suitable planning involving Panchayat Pradhans, village Nodal Officers, village revenue officials etc. under the supervision of the cluster officer. Such stacked rice paddy straw bales may be supplied to industries for Ex-situ management or treated with bio-decomposer as per laid down protocol to accelerate bio-decomposition and preparation of bio enriched compost/ vermin compost to be utilized as manure in the fields.
- k) The State Governments need to promote direct sowing of rice (DSR) method using short duration varieties in order to provide a longer window period for management of paddy straw. A staggered sowing/ transplantation schedule of various varieties of paddy also needs to be adopted on a village/ cluster basis, as advised by ICAR so as to optimally allocate the available CRM machinery for in-situ straw management.

12. Ex-situ Crop Residue Management (CRM).

Ex-situ crop residue management options have the potential to effectively utilize the agricultural residue/straw and add economic value, thereby minimizing the agricultural residue burning in and around NCR. Ex-situ options have been attempted both by the Government and private agencies. One of the important steps taken in this regard is by Public Sector Oil as well as Power Companies. Public sector oil companies are establishing bio-ethanol and compressed bio-gas plants.

For promoting such ex-situ crop residue management options, State Governments are required to:

- a) Develop a mechanism / policy for assured availability/supply of paddy straw material for various ex-situ projects in a time bound manner. It should include short term, medium term, and long-term actions in line with broad contours as below:
 - i. Map the districts and villages for the agricultural straw availability and demand from various industries (Biofuel projects, Thermal power projects, etc.) for optimum quantity allocation and utilization.
 - ii. Establish institutions / aggregators at Village/Block/District level with adequate and effective infrastructure that includes availability and deployment of CRM machinery at farmer's doorstep, storage of straw on and off-site, transportation of straw from the fields to the respective storage centers and from such centers to the industries.
 - iii. Develop appropriate decentralized mechanism for the collection, storage and transportation for industrial use of crop residue through empaneled aggregator agencies or through any other mechanism for tapping the real economic and commercial value of paddy residue.
 - iv. Develop a robust supply chain mechanism covering both supply side and demand side interventions and for ensuring quality of agricultural straw, primarily the moisture content in it.
 - v. Promote requisite infrastructure at the industrial sites for proper utilization of straw.
 - vi. Promote diversified ex-situ use of baled crop residue for various purposes like power generation, production of Bio-ethanol and Bio-gas, for making briquettes, torrefied charcoal, pellets, etc. as raw material/fuel for coal fired power plants etc.

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- vii. Facilitate the marketing of the agricultural straw-based products and services, so as to support the sustenance of the various ex-situ options.
 - b) To promote diversified ex-situ use of baled crop residue for various purposes like paper /board / panel/ packaging material making industries, composting, mushroom cultivation etc. through policy interventions;
 - c) To develop schemes to incentivize establishment of industries aiming at utilization of paddy straw as raw material by entitling them to all benefits as permissible under the fiscal incentives for industrial promotion schemes/programs in the respective States/UT;
 - d) To facilitate the transportation of paddy straw from surplus states to fodder deficit states through availing subsidy offered by Indian railways.

13. Prohibition of Stubble/Crop Residue Burning

- a) National green Tribunal vide order dated 10.12.2015 in OA No.118 of 2013 has prohibited the burning of paddy straw and passed detailed directions including imposing environmental compensation against defaulters.
- b) The Hon'ble Supreme Court vide Order date 04.11.2019 had directed the State Governments of NCR including the entire police machinery, Gram Pradhan and Sarpanch to ensure that no stubble burning instances take place.
- c) The state/UT Governments /Pollution Control Boards/Committee in exercise of the powers conferred under section 19 (5) of the Air (Prevention & Control of Pollution) Act are to notify prohibition orders (in respect of States/UT where such order has not been issued) banning the burning of agriculture residue.
- d) The state/UT Governments are to issue Orders for imposing Environmental Compensation against the defaulters in compliance of

NGT directions and authorize and empower officers for this purpose for timely realization of the environmental compensation charges.

- e) District Magistrates have been passing orders under section 144 Cr PC in the past to prohibit burning of paddy straw. The state /UT Governments may ensure notification of such prohibition orders, banning the burning of agriculture residue, in respect of States/UT where such order has not been issued and ensure its implementation.
- f) Pass orders making it mandatory for all the Combines to have Super SMS system fixed (in respect of States/UT where such order has not been issued) in order to encourage *in-situ* management of paddy straw, under section 31-A of Air (Prevention and Control of Pollution) Act, 1981.

14. Effective monitoring/enforcement: -

To ensure full compliance of laws and Orders/Judgments of the Hon'ble Supreme Court of India/ NGT/High Court /State Government /SPCBs on the banning of stubble burning and take strict action against violators/defaulters, State Governments/GNCTD through its various Departments / Agencies/Board are to:

- a) Follow a standard protocol (under finalization by ISRO) for reporting of incidents of farm fires during the paddy harvesting season, strictly monitor incidents of burning of paddy straw through Remote Sensing Centre and ensure that SMS alert is sent to field functionaries to take immediate action on incidents of stubble burning.
- b) Make the mobile and web-based application operational in paddy season, in which role-based Login (Village Nodal, Cluster, Sub division / Tehsil, district and State level) are provided to various officials for end-to-end reporting

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including action taken for each fire incidents.

- c) Set up a Control Room for the purpose of controlling stubble burning during harvesting season.
- d) PCBs shall ensure that all data with respect to burning of crop residue as obtained from Remote Sensing authorities and action taken on the incidents and various MIS reports are available through a web-based application with facility to have dashboard to drill down data.
- e) Appoint/deploy Officers on area specific basis to ensure that ban orders on stubble burning are complied with, end-to-end reporting of each fire incidents and also to ensure that in cases of crop residue burning, appropriate coercive and punitive action is taken including registering FIRs/launching of prosecution under Section 15 of the Environment (Protection) Act of 1986 and other relevant laws. Monitoring of the matter is to be done at various levels as under:
 - A. State Level
 - B. District Level Officer
 - C. Sub Division/Tehsil Officer
 - D. Cluster Officer
 - E. Village Nodal Officer
- f) Ensure that police authorities enforce and implement various directions and orders issued with respect to ban on burning of crop residue. The police shall particularly render special assistance to the District Administration for monitoring of hot spots where large scale incidents of burning of crop residue have been observed in previous years.
- g) Make liable the land owners and /or contract farmers (data

bank of contract farmers shall also be prepared) for any violation of the orders of ban on stubble burning.

- h) Contact and sensitize farmers who have given their land on contract to ensure compliance of the orders/directions on the ban on stubble/crop residue burning.
- i) Ensure that the Commission Agents, *Nambardaar*, Panchayat Members, Lease holders of the Panchayat Land or Shamlat Land of the villages, employees of Government Departments, Boards, Corporations and Autonomous Bodies will not burn crop residue. Strict action including suitable disciplinary action shall be taken against the employees for violation of ban on burning of crop residue
- j) Ensure that patwaris enter the *girdawri* register, or similar such records as prevalent in various states, with a red ink entry against the fields/farm owners where from the incidents of burning of crop residue have been reported. A system of penal measures and / or disincentives needs to be built-in and enforced for every violators/such red ink entry cases. The disincentives may include withholding of concessions of electricity charges, water charges, fertilizers etc.
- k) Identify vacant common village land or any other land for storage of paddy straw throughout the state.
- l) The Deputy Commissioner and SSPs of the district shall jointly hold District Level Monitoring meeting with all the stakeholders to strictly enforce the orders banning paddy stubble burning.
- m) Appoint one nodal officer for each village and one Cluster Officer for every 20 villages (or as per the need) to coordinate the efforts from the pool of employees available with various

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- departments.
- n) Ensure appointments of various officials like Village Nodal officer, Revenue officer (Patwari), Cluster officer, Tehsildar, Police and SDM to monitor the stubble burning incidents. It may also be ensured that the information about such key officials is available in an appropriate technology platform, to be coordinated by a suitable government agency, in advance of the harvesting season.
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 - r) Ensure Implementation and Monitoring Mechanism by mobilization and effective coordination of the efforts of various Departments/Boards/ agencies of the State and by setting up mechanism at State Level, District Level, Sub-division Level as well as by appointing Cluster Officers and Village Nodal Officers.
- A. State Level Coordination and Monitoring: -
- (i) At the State Level, a Committee under Chief Secretary and comprising of the Administrative Secretaries of all the concerned

and relevant Departments will coordinate, monitor and decide various issues to ensure effective implementation of the ban on burning paddy straw:

- (ii) The State Government will depute Administrative Secretaries to various districts to monitor the implementation of the ban. They will be assisted by adequate number of Senior Officers;
- B. District Level Coordination and Monitoring: - There shall be a District Level Monitoring Committee under the chairmanship of Deputy Commissioner and comprising Senior Superintendent of Police, Chief Agriculture Officer and heads of various departments concerned. District Level Coordination and Monitoring Committee shall meet frequently and review the IEC activities, enforcement activities and other facilitation activities and take necessary action.
- C. Sub-Division Level Coordination and Monitoring: - There shall be a Sub-Division Level Monitoring Committee with Sub-Divisional Magistrate as Chairman consisting of Deputy Superintendent of Police and other concerned officers as Members. The Committee shall meet daily/ alternate day and review the progress of various activities and take necessary action.
- D. Cluster Officer: - Cluster officer will fill the data regarding challan number and date, challan amount and challan photo in the mobile base app and shall coordinate with Village Nodal Officer for various activities to control burning of stubble by the farmers
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15. Plans / Schemes to reduce the generation of paddy straw: -

State Governments should take focused action to: -

- a) Promote Basmati variety also considering the fact that area under basmati variety has gone down significantly in some states.
- b) Discourage (and totally suspend) use of PUSA 44 variety of Paddy seeds and stop certification of its seeds so that non-Basmati acreage would be encouraged to shift to short duration rice varieties.
- c) Promote short duration and early maturing varieties since they can be managed quite efficiently and provide a much wider window for paddy straw management. Ministry of Agriculture and Farmers Welfare, Government of India has specifically recommended various short duration paddy varieties which are well suited to replace long duration varieties. The commission has also reiterated the need for the same and taken up with state Governments accordingly.
- d) Ensure adoption of short duration and early maturing varieties quickly in various paddy growing areas. Short duration varieties

have been well adopted by the farmers in some districts in Punjab but in many other districts the adoption is slow and sizeable area is under the long duration varieties.

- e) Promote crop diversification. Crop diversification program is being implemented in Punjab, Haryana and Uttar Pradesh as a sub-scheme of RKVV since 2013-14 to divert the area of water guzzling paddy to alternate crops. Though, various interventions like alternate crop demonstrations, farm mechanization and value addition, site specific activities and awareness training etc. are carried out under the crop diversification program, there is a compelling need to give a major boost to crop diversification.
- f) Identify crops that could compete with paddy-wheat crop cycle and provide remunerative and assured price to the farmers to substantially minimize the stubble generation from paddy. The possible options for the region may *inter-alia* include orchard with drip irrigation, vegetables, corn/maize, cotton, pulses and oil seeds etc. which consume less water, less power and also less fertilizers.

State Governments should work out an exhaustive policy framework on crop diversification, based on the experiences gained in implementation of Crop diversification program and seek appropriate assistance and support from Ministry of Agriculture and Farmers Welfare, Government of India.

16. IEC activities for the plan of Action: -

- a) Undertake detailed IEC activities and awareness programs about various measures to prevent crop residue burning through electronic media, social media and print media as well as publications, seminars and other available means etc. much

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before the beginning of harvesting season.

- b) Design and implement suitable location specific capacity building and targeted awareness modules and programs about ill effects of crop residue burning and its effective utilization and management.
- c) Notify district wise IEC campaign schedule through restructured CRM activities with full engagement and synergy by all the related departments, State Agricultural University, Gramin Krishi Mela's, District KVKs, Public/Private Institutes, Village Agriculture volunteers, Sarpanches, Experts/Farmer Unions and all active NGOs.
- d) Print and Multi- media advertisement may, *inter-alia*, include Jingles on Radio Channels, Production of Advertisement Films, Running of short films on TV Channels, Display Boards against straw burning including on State Roadways / SRTC Buses, Display Boards on Bus Stands, Market Committee Yards and Cooperative Societies in the State, Painting of walls in the villages with slogans against Paddy burning, Massive print media advertisement, Erection of hoardings and panels at prominent places, Plying publicity vans in the villages, Deputing of Nodal officer for each village, Distributing Pamphlets and leaflets to farmers etc.
- e) Involve students to communicate effectively the adverse effects of stubble burning and availability of management options.
- f) Support farmers by organizing bio-decomposer application requirements through guidance by IEC partners and extending help from block/village level agriculture machinery by designated Nodal Officers.

- g) Build strong Advocacy Campaign Modules during 2021 and thereafter so as to popularize advantages of Microbial Consortia Technology.
 - h) Organize field level training programs at KVKs and other similar notified locations viz. Kisan Mela's/Field Agriculture Extension Centres/ Agriculture University campuses etc. for efficient and effective use of farm machinery to facilitate collection, volume reduction, and transportation.
 - i) Organize Gram Sabha's for demonstrating crop residue resource conservation and management machinery on a large scale by the State Department of Agriculture and other Government Institutions.
 - j) Impart regular training to Agriculture and Line Departments, Call Centers and other technical staff working for the purpose of crop residue management by State Agriculture and Horticulture Universities.
 - k) Support NGOs working for management of paddy residue by Department of Agriculture and other relevant Government Department/ agencies by extending possible support for positive interventions by these NGOs at field level.
17. A detailed/comprehensive plan of action, based on the contours of the frame-work as above, with clearly entrusted responsibilities to various Departments/Boards/ agencies of the State and other stakeholders needs to be immediately finalised by each of the state governments/GNCTD, duly identifying various qualitative and quantitative parameters and the respective targets against each of them, along with the time frame of implementation. The plan should

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endeavour to completely eliminate the practice of stubble burning and its consequential adverse effects on air quality. The plan of action shall be submitted by the respective states to the Commission by 30th June, 2021, progress on which shall be closely monitored by the Commission.

sd
(Arvind Kumar Nautiyal)
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To:

The Chief Secretary, Government of NCT of Delhi

Copy to:

1. The Principal Secretary, Environment & Forest, Government of NCT of Delhi
2. The Secretary Cum Commissioner (Development), Government of NCT of Delhi
3. The Chairman, Central Pollution Control Board
4. The Member Secretary, Delhi Pollution Control Committee

Arvind
(Arvind Kumar Nautiyal)



**COMMISSION FOR AIR QUALITY MANAGEMENT
IN NATIONAL CAPITAL REGION AND ADJOINING AREAS**

GRADED RESPONSE ACTION PLAN (GRAP) FOR NCR

(Revision : Oct' 2023)

1. The GRAP for the NCR has been classified under 4 different stages of adverse air quality in Delhi viz. Stage – I 'Poor' (AQI 201 – 300), Stage – II 'Very Poor (AQI 301-400), Stage – III 'Severe' (AQI 401-450) and Stage – IV 'Severe +' (AQI >450) respectively.

2. Based on the dynamic model and weather/ meteorological forecast by IMD / IITM on a day-to-day basis, actions under Stages II, III and IV of the GRAP shall be invoked at least three days in advance of the AQI reaching to the projected levels of that stage.

3. Restrictive actions undertaken as per previous stages shall be continued, in addition to the air pollution stage under which the restrictive actions are envisaged to be taken. For example, restrictive actions under the Stage III category, whenever invoked, shall be in addition to those under Stage I and II respectively and so on and so forth.

4. The Sub-Committee on GRAP constituted by the Commission shall meet frequently to plan for advance action and issue necessary orders for invoking various provisions of the GRAP, based on the prevalent air quality and the AQI forecast to be provided by IMD from time to time. The Sub-Committee shall also review the actions taken by various agencies responsible towards effective implementation of the GRAP.

5. The Chief Secretaries of NCR States and GNCTD shall frequently review the actions and implementation of the GRAP especially when the air quality falls or is likely to fall in the 'Severe' or 'Severe +' category (Stage III and beyond).

6. The Commission may decide upon additional measures and exceptions to the schedule of the GRAP, under different air pollution categories i.e., Stages I to IV, as per the prevalent AQI and weather forecast.

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Schedule under the GRAP for NCR

Stage I – 'Poor' Air Quality (DELHI AQI ranging between 201-300)	
Actions	Agencies responsible / Implementing Agencies
<p>1. Ensure proper implementation of Directions/ guidelines on dust mitigation measures in Construction and Demolition (C&D) activities and sound environmental management of C&D waste.</p> <p>2. Ensure strict compliance of Direction Nos. 11-18 dated 11.06.2021 not to permit C&D activities in respect of such projects with plot size equal to or more than 500 sqm which are not registered on the 'web portal' of the respective state / GNCTD, for remote monitoring of dust mitigation measures.</p>	<ul style="list-style-type: none"> - Chairpersons – CPCB, DPCC, SPCBs (NCR). - Commissioners / Chief Engineers of Urban Local Bodies in Delhi-NCR towns - Construction agencies and plot owners (both public & private).
<p>3. Ensure regular lifting of Municipal Solid Waste (MSW), Construction & Demolition (C&D) waste, and Hazardous wastes from dedicated dump sites and ensure that no waste is dumped illegally in open land areas.</p>	<ul style="list-style-type: none"> - Commissioners / Chief Engineers of Urban Local Bodies in Delhi-NCR towns - All land-owning agencies - Construction agencies (both public & private).
<p>4. Carry out periodic mechanized sweeping and water sprinkling on roads and ensure scientific disposal of the dust collected in designated sites/landfills.</p>	<ul style="list-style-type: none"> - Commissioners / Chief Engineers of Urban Local Bodies in Delhi-NCR towns - Chief Executives of all road owning and maintaining agencies.

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<p>5. Ensure that C&D materials & waste are properly stored/ contained, duly covered in the premises. Ensure transportation of C&D waste in covered vehicles and its recycling at an appropriate processing facility.</p> <p>6. Strictly enforce directions and yardsticks for use of anti-smog guns at C&D sites.</p> <p>7. Intensify use of anti-smog guns, water sprinkling and dust suppression measures in road construction / maintenance / repair projects.</p>	<ul style="list-style-type: none"> - Commissioners / Chief Engineers of Urban Local Bodies in Delhi-NCR towns - All construction agencies and plot owners (both public & private). - Commissioners / Chief Engineers of Urban Local Bodies in Delhi-NCR towns - All construction agencies and plot owners (both public & private). - All road owning / maintenance agencies in NCR.
<p>8. Stringently enforce prohibition on open burning of biomass and municipal solid waste. Impose maximum EC upon violations in accordance with Hon'ble NGT's orders dated 04.12.2014 and 28.04.2015 in OA 21/2014.</p> <p>9. Strict vigil to ensure that there are no burning incidents in the landfill sites / dumpsites.</p>	<ul style="list-style-type: none"> - Chairpersons – CPCB, DPCC, SPCBs (NCR). - Commissioners / Chief Engineers of Urban Local Bodies in Delhi-NCR towns - All land-owning agencies.
<p>10. Deploy traffic police for smooth traffic flow at all identified corridors with heavy traffic and congestion prone intersections.</p>	<ul style="list-style-type: none"> - Commissioner or Head of Traffic Police in Delhi and NCR towns.
<p>11. Strict vigilance and enforcement of PUC norms for vehicles.</p> <p>12. No tolerance for visible emissions – Stop visibly polluting vehicles by impounding and / or levying maximum penalty.</p>	<ul style="list-style-type: none"> - Commissioner or Head of Transport Department of Delhi and NCR States - Commissioner or Head of Traffic Police of Delhi and NCR towns.
<p>13. Strictly enforce the Hon'ble Supreme Court order on diversion of non- destined truck traffic for Delhi, through Eastern and Western Peripheral Expressways.</p>	<ul style="list-style-type: none"> - Head of Traffic Police of NCT of Delhi and NCR towns. - District Magistrates / Deputy Commissioners of NCT of Delhi / NCR towns - Municipal Commissioner of Corporations of

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	NCT of Delhi and NCR towns.
14. Strictly enforce NGT / Hon'ble SC's order on overaged diesel / petrol vehicles and as per extant statutes.	<ul style="list-style-type: none"> - Commissioner or Head of Transport Department of Delhi and NCR States - Commissioner or Head of Traffic Police of Delhi and NCR towns.
<p>15. Ensure strict penal/ legal action against non-compliant and illegal industrial units.</p> <p>16. Stringently enforce all pollution control regulations in Industries, brick kilns and hot mix plants etc. - strict compliance of the prescribed standards of emissions.</p> <p>17. Ensure that only approved fuels are used by the industries in NCR including in brick kilns and hot mix plants and enforce closure in case of violations, if any.</p>	<ul style="list-style-type: none"> - Chairpersons – CPCB, DPCC, SPCBs (NCR). - District Magistrates / Deputy Commissioners of NCT of Delhi / NCR Towns - Commissioners of Urban Local Bodies in Delhi and NCR towns.
18. Stringently enforce emission norms in thermal power plants and strict actions be taken against non-compliance.	<ul style="list-style-type: none"> - Plant in- charge of Power Plants located within 300 km radius of Delhi. - Chairpersons – CPCB, DPCC, SPCBs (NCR).
19. Strictly enforce Hon'ble Courts / Tribunal orders regarding ban on firecrackers.	<ul style="list-style-type: none"> - Commissioner of Police of Delhi & IG / DIG / SP of NCR towns or Officer In charge of Licensing. - DMs/ DCs of respective districts in NCR. - Chief controller of Explosives, Petroleum and Explosive Safety Organizations (PESO).
20. Ensure regular lifting and proper disposal of industrial waste from industrial and non-development areas.	<ul style="list-style-type: none"> - Chairpersons – CPCB, DPCC, SPCBs (NCR). - Commissioners/ Chief Engineers of Urban Local Bodies in Delhi-NCR towns - All land-owning agencies. - District Magistrate / Deputy Commissioners in NCR.
21. DISCOMs to minimise power supply interruptions in NCR.	<ul style="list-style-type: none"> - Head of Power distribution companies in NCR.

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22. Ensure that diesel generator sets are not used as regular source of power supply.	<ul style="list-style-type: none"> - Chairpersons – CPCB, DPCC, SPCBs (NCR). - DMs/ DCs of respective districts of NCR.
<p>23. Enforce complete ban on coal / firewood in Tandoors in Hotels, Restaurants and open eateries.</p> <p>24. Ensure hotels, restaurants and open eateries use only electricity / clean fuel gas-based appliances.</p>	<ul style="list-style-type: none"> - Commissioners / Chief Engineers of Urban Local Bodies in Delhi-NCR towns. - Chairpersons – CPCB, DPCC, SPCBs (NCR).
25. Information dissemination including through social media and bulk SMS etc. Mobile Apps to be used to inform people about the pollution levels, contact details of control room, enable them to report polluting activities / sources to the concerned authorities and inform them about actions that would be taken by Government.	<ul style="list-style-type: none"> - ACS/ Pr. Secretary/ Secretary, Dept. of Environment, GNCTD and NCR States. - Chairpersons – CPCB, DPCC, SPCBs (NCR).
26. Ensure quick actions for redressal of complaints on 311 APP, Green Delhi App, SAMEER App and other such social media platforms to curb polluting activities.	<ul style="list-style-type: none"> - Head of Urban Local Bodies in NCR towns. - Chairpersons – CPCB, DPCC, SPCBs (NCR). - Construction agencies, land owning agencies, Development agencies and all other concerned implementing agencies.
27. Encourage offices to start unified commute for employees to reduce traffic on road.	<ul style="list-style-type: none"> - State Governments in NCR and GNCTD.
CITIZEN CHARTER	<ul style="list-style-type: none"> • Keep engines of your vehicles properly tuned. • Maintain proper tyre pressure in vehicles. • Keep PUC certificates of your vehicles up to date. • Do not idle your vehicle, also turn off the engine at red lights. • Prefer hybrid vehicles or EVs to control vehicular pollution. • Do not litter / dispose wastes, garbage in open spaces. • Report air polluting activities through 311 App, Green Delhi App, SAMEER App etc. • Plant more trees. • Celebrate festivals in an eco-friendly manner – avoid firecrackers. • Do not drive/ply end of life/ 10/15 years old Diesel/Petrol vehicles.



Stage II – 'Very Poor' Air Quality (DELHI AQI ranging between 301-400)	
Actions under the Stage II of the GRAP shall be invoked at least three days in advance of the AQI reaching to the projected levels of 301-400, based on the dynamic air quality forecast system to be provided to the Commission by IMD / IITM on a day-to-day basis.	
Actions	Agencies responsible / Implementing Agencies
<p>1. Carry out mechanical/ vacuum sweeping and water sprinkling of the identified roads on a daily basis.</p> <p>2. Ensure water sprinkling along with use of dust suppressants (at least every alternate day, during non-peak hours) on roads to arrest road dust especially at hotspots, heavy traffic corridors, vulnerable areas and proper disposal of dust collected in designated sites/landfills.</p>	<ul style="list-style-type: none"> - Commissioners / Chief Engineers of Urban Local Bodies in Delhi-NCR towns - Chief Executives of all road owning and maintaining agencies. - Commissioner of Traffic Police of Delhi & NCR towns to identify roads with heavy traffic and provide information to respective Municipal Commissioners.
<p>3. Intensify inspections for strict enforcement of dust control measures at C&D sites.</p>	<ul style="list-style-type: none"> - Chairpersons – CPCB, DPCC, SPCBs (NCR). - Commissioners / Chief Engineers of Urban Local Bodies in Delhi and NCR towns.
<p>4. Ensure focussed and targeted action for abatement of air pollution in all identified hotspots in NCR. Intensify remedial measures for the predominant sector(s) contributing to adverse air quality in each of such hotspots.</p>	<ul style="list-style-type: none"> - State Govts. in NCR and GNCTD. - Chairpersons – CPCB, DPCC, SPCBs (NCR). - Commissioners / Chief Engineers of Urban Local Bodies in Delhi and NCR towns.
<p>5. Ensure uninterrupted power supply to discourage use of alternate power Generating sets/ equipment (DG sets etc.).</p>	<ul style="list-style-type: none"> - Additional Chief Secretary / Principal Secretary (Power), NCR State Governments / GNCTD - Head of Power Distribution Companies of Delhi and NCR Districts.

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6. Strictly implement the following Schedule for regulated operations of DG sets across all sectors in the NCR including Industrial, Commercial, Residential and offices etc in accordance with Direction No. 76 dated 29.09.2023.

Capacity Range of DG sets	System to be adopted for control of emissions	Regulations for use
Power generating sets of all capacities running on LPG/ Natural Gas/ Bio-gas/Propane/Butane	None	No restrictions
Power generating sets of all capacities up to 800 kW to standards as per MoEFCC notification No. GSR 804(E) dated 03.11.2022	None	No restrictions.
800 kW and above	Any emission control mechanism, strictly subject to compliance of the prescribed emission standards	No restrictions
125 kW to less than 800 kW	Dual fuel mode OR Retro-fitted ECDs through certified vendors / agencies	No restrictions
19 kW to less than 125 kW	Dual fuel mode	No restrictions DG Sets not working in a dual fuel mode, only owing to non-availability of gas infrastructure and supply, shall be permitted only for prescribed emergency services.
Portable DG sets (below 19 kW)	Presently no specific means of emission control are available in this category /	Not to be generally permitted. These shall, however, be permitted only

- Chairpersons – CPCB, DPCC, SPCBs (NCR).
- Commissioners / Chief Engineers of Urban Local Bodies in Delhi and NCR towns.
- District Magistrates / Deputy Commissioners of NCR States and GNCTD.

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	capacity range of DG sets.	for prescribed emergency services.
<p>Note: In the interest of not disrupting emergency services and permitting sufficient time for adopting the stipulated emission control mechanism in existing DG Sets, as a one-time exception, DG Sets for all capacity ranges (which have still not been equipped with emission control devices / systems as per the above noted schedule), shall be permitted to be run only for emergency services in the NCR as listed below, only up to 31.12.2023 and strictly subject to adherence to the above noted measures for emission control, thereafter:</p>		
<ul style="list-style-type: none"> (i) Elevators / Escalators / Travelators etc. in various installations; Commercial entities / residential societies shall, however, ensure that operation of DG sets and supply therefrom is purely limited to operation of elevators / escalators / travelators etc. and not for any other activities of commercial entities / residential societies. (ii) Medical Services (Hospital/Nursing Home/Health care facilities) including units involved in manufacturing of life saving medical equipment/devices, drugs and medicines. (iii) Railway Services / Railway Stations. (iv) Metro Rail Corporation & MRTS Services, including trains and stations. 		

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<p>(v) Airports and Inter-State Bus Terminals (ISBTs).</p> <p>(vi) Sewage Treatment Plants.</p> <p>(vii) Water pumping Stations.</p> <p>(viii) Projects related to national security, defence & of national importance.</p> <p>(ix) Telecommunications and IT/ data services.</p>	
<p>7. Synchronize traffic movements and deploy adequate personnel at intersections / traffic congestion points for smooth flow of traffic.</p>	<p>- Commissioner or Officer in charge - Traffic Police of Delhi and NCR towns.</p>
<p>8. Alert in newspapers / TV / radio to advise people about air pollution levels and Do's and Don'ts for minimizing polluting activities.</p>	<p>- Chairpersons – CPCB, DPCC, SPCBs (NCR).</p>
<p>9. Enhance Parking fees to discourage private transport.</p>	<p>- Chief Secretary and Principal Secretary, Urban Local Bodies of NCR States and GNCTD.</p> <p>- Commissioners of Urban Local Bodies in Delhi and NCR towns.</p>
<p>10. Augment CNG/ electric bus and metro services by inducting additional fleet and increasing the frequency of service.</p>	<p>- NCR State Governments.</p> <p>- Principal Secretary, Department of Transport. of NCT of Delhi and NCR State Govts.</p> <p>- Delhi Transport Corporation (DTC).</p> <p>- State Transport Corporation in NCR towns.</p> <p>- Delhi Integrated Multi – Model Transit System Ltd. (DIMTS).</p> <p>- Delhi Metro Rail Corporation (DMRC).</p>
<p>11. Resident Welfare Associations to necessarily provide electric heaters to security staff to avoid open Bio-Mass and MSW burning during winters.</p>	<p>- Resident Welfare Associations.</p>
<p>CITIZEN CHARTER</p>	<ul style="list-style-type: none"> • People to use public transport and minimize use of personal vehicles. • Use technology, take less congested route even if slightly longer. • Regularly replace air filters at recommended intervals in your automobiles. • Avoid dust generating construction activities during months of October to January. • Avoid open burning of solid waste and bio-mass.

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**Stage III – 'Severe' Air Quality
(DELHI AQI ranging between 401-450)**

Actions under the Stage III of the GRAP shall be invoked at least three days in advance of the AQI reaching to the projected levels of > 400, based on the dynamic air quality forecast system to be provided to the Commission by IMD / IITM on a day-to-day basis.

Actions	Agencies responsible / Implementing Agencies
<p>1. Further intensify the frequency of mechanised/ vacuum-based sweeping of roads.</p> <p>2. Ensure daily water sprinkling along with dust suppressants, before peak traffic hours, on roads and right of ways including hotspots, heavy traffic corridors and ensure proper disposal of the collected dust in designated sites/ landfills.</p>	<ul style="list-style-type: none"> - Commissioners / Chief Engineers of Urban Local Bodies in Delhi-NCR towns - Chief Executives of all road owning and maintaining agencies. - Commissioner of Police / Head of Traffic Police in Delhi & NCR towns to identify roads with heavy traffic and provide information to respective Municipal Commissioners / Head of Municipal Bodies.
<p>3. Further intensify public transport services. Introduce differential rates to encourage off-peak travel.</p>	<ul style="list-style-type: none"> - Secretary cum Commissioner of Transport Department, NCT of Delhi - Transport Commissioners of NCR States. - Managing Director, Delhi Metro Rail Corporation (DMRC). - Chairpersons, State Transport Corporations.
<p>4. Construction & Demolition activities:</p> <p>(i) Enforce strict ban on construction and demolition activities in the entire NCR, except for the following categories of projects:</p> <p>(a) Projects for Railway services / Railway stations</p> <p>(b) Projects for Metro Rail Services and stations</p> <p>(c) Airports and Inter State Bus Terminals</p> <p>(d) National security/ defence related activities/ projects of national importance;</p> <p>(e) Hospitals/ health care facilities</p> <p>(f) Linear public projects such as highways, roads, flyovers, over bridges, power transmission/ distribution, pipelines etc.</p> <p>(g) Sanitation projects like sewage treatment plants and water supply projects etc.;</p> <p>(h) Ancillary activities, specific to and supplementing the above noted categories of projects.</p>	<ul style="list-style-type: none"> - NCR State Governments and GNCTD - Chairpersons – CPCB, DPCC, SPCBs (NCR). - Commissioners / Chief Engineers of Urban Local Bodies in Delhi and NCR towns.

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Note: The above exemptions shall be further subject to strict compliance of the C&D Waste Management Rules, dust prevention/ control norms including compliance with the directions of the Commission issued from time to time in this regard.

(ii) Other than the projects exempted under (i) above, dust generating/ air pollution causing C&D activities to be strictly banned during this period shall include:

- Earthwork for excavation and filling including boring & drilling works.
- All structural construction works including fabrication and welding operations.
- Demolition works.
- Loading & unloading of construction materials anywhere within or outside the project sites.
- Transfer of raw materials either manually or through conveyor belts, including fly ash.
- Movement of vehicles on unpaved roads.
- Operation of batching plant.
- Laying of sewer line, waterline, drainage work and electric cabling by open trench system.
- Cutting and fixing of tiles, stones and other flooring materials.
- Grinding activities.
- Piling work.
- Water Proofing work.
- Painting, Polishing and varnishing works etc.
- Road construction/ repair works including paving of sidewalks / pathways and central verges etc.

(iii) For all construction projects in NCR, non-polluting / non-dust generating activities such as plumbing works, electrical works,

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<p>carpentry related works and interior furnishing / finishing / decoration works (excluding painting, polishing and varnishing works etc) shall be permitted to be continued.</p>	
<p>5. Close down operations of stone crushers</p>	<ul style="list-style-type: none"> - Chairpersons – CPCB, DPCC, SPCBs (NCR) - Commissioner of Police - Delhi and DG of Police of NCR States - District Magistrates / Deputy Commissioners of respective districts in Delhi and NCR States.
<p>6. Close down all mining and associated activities in the NCR.</p>	<ul style="list-style-type: none"> - Chairpersons – CPCB, DPCC, SPCBs (NCR). - District Magistrates / Deputy Commissioners of respective districts in NCR. - Commissioner of Police - Delhi and IG / DIG / SP of NCR towns.
<p>7. NCR State Govts. / GNCTD to impose strict restrictions on plying of BS III petrol and BS IV diesel LMVs (4 wheelers) in Delhi and in the districts of Gurugram, Faridabad, Ghaziabad and Gautam Budh Nagar.</p>	<ul style="list-style-type: none"> - State Governments in NCR and GNCTD. - Commissioner or Head of Transport Department - Commissioner of Police / Head of Traffic Police of Delhi and NCR towns.
<p>8. State Govts. in NCR and GNCTD may take a decision on discontinuing physical classes in schools for children up to Class V and conducting classes in an online mode.</p>	<ul style="list-style-type: none"> - State Governments of NCR & GNCTD.
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">CITIZEN CHARTER</p>	<ul style="list-style-type: none"> • Walk or use cycles for small distances. • Choose a cleaner commute. Share a ride to work or use public transport. • People, whose positions allow working from home, may work from home. • Do not use coal and wood for heating purpose. • Individual house owners may provide electric heaters (during winters) to security staff to avoid open burning. • Combine errands and reduce trips.

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**Stage IV – ‘Severe +’ Air Quality
(DELHI AQI > 450)**

Actions under the Stage IV of the GRAP shall be invoked at least three days in advance of the AQI reaching to the projected levels of > 450, based on the dynamic air quality forecast system to be provided to the Commission by IMD / IITM on a day-to-day basis.

Actions	Agencies responsible / Implementing Agencies
1. Stop entry of truck traffic into Delhi (except for trucks carrying essential commodities/ providing essential services and all LNG/ CNG / electric trucks). 2. Do not permit LCVs registered outside Delhi, other than EVs / CNG / BS-VI diesel, to enter Delhi, except those carrying essential commodities / providing essential services.	<ul style="list-style-type: none"> - State Governments - Transport Commissioners, GNCTD/ NCR States - Commissioners / Head of Urban Local Bodies in Delhi-NCR towns. - Commissioner of Police / Head of Traffic Police of Delhi and NCR towns.
3. Ban on plying of Delhi - registered diesel operated Medium Goods Vehicles (MGVs) and Heavy Goods Vehicles (HGVs) in Delhi, except those carrying essential commodities / providing essential services.	<ul style="list-style-type: none"> - State Governments of NCR & GNCTD - Transport Commissioners, GNCTD/ NCR States. - Commissioner of Police / Head of Traffic Police of Delhi and NCR towns.
4. Ban C&D activities also in linear public projects such as highways, roads, flyovers, overbridges, power transmission, pipelines etc.	<ul style="list-style-type: none"> - Chairpersons – CPCB, DPCC, SPCBs - Commissioners / Chief Engineers of Urban Local Bodies in Delhi - NCR towns. - Nodal officers of road owning agencies (dust control and management cells).
5. NCR State Govts. and GNCTD may take a decision on discontinuing physical classes even for classes VI – IX, class XI and conduct lessons in an online mode.	<ul style="list-style-type: none"> - State Governments of NCR & GNCTD.
6. NCR State Governments / GNCTD to take a decision on allowing public, municipal and private offices to work on 50% strength and the rest to work from home.	<ul style="list-style-type: none"> - State Governments of NCR & GNCTD.

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<p>7. Central Government may take appropriate decision on permitting work from home for employees in central government offices.</p>	<p>- Central Government (DoPT).</p>
<p>8. State Governments may consider additional emergency measures like closure of colleges/ educational institutions and closure of non-emergency commercial activities, permitting running of vehicles on odd-even basis of registration numbers etc.</p>	<p>- State Governments of NCR & GNCTD.</p>
<p>CITIZEN CHARTER</p>	<ul style="list-style-type: none"> • Children, elderly and those with respiratory, cardiovascular, cerebrovascular or other chronic diseases to avoid outdoor activities and stay indoors, as much as possible.

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