BEFORE THE NATIONAL GREEN TRIBUNAL,

PRINCIPAL BENCH, NEW DELHI

IN

ORIGINAL APPLICATION NO.702 OF 2022

IN THE MATTER OF

Deepak Kumar &Anr ..... Applicant

Versus

State of Uttarakhand & Ors. .....Respondent

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7.	A copy of 36th ESZ Expert Committee meeting held on 18.07.2019 **(Annexure-R2/6)**	939-957
8.	A copy of Doon Valley amendment Notification S.O. 94(E) dated 06.01.2020 **(Annexure-R2/7)**	958-961
9.	A copy of Ministry's letter No. 11-14/2018-ESZ dated 30.01.2020 written to all the State Governments enclosing the guidelines for Assessing Carrying Capacity of Hill Stations including cities and Eco-Sensitive Zones **(Annexure-R2/8).**	962-965
10.	A copy of affidavit enclosing the guidelines for Assessing Carrying Capacity of Hill Stations including cities and Eco-Sensitive Zones filed before the Hon'ble Supreme Court of India in the Civil Appeal No. 868 of 2019 on 27.09.2021 **(Annexure-R2/9)**	966-1084

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State of Uttarakhand &Ors. .....Respondent(s)

COUNTER AFFIDAVIT ON BEHALF OF RESPONDENT NO. 2 i.e. MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE (MoEFCC)

I, Ms. Kanchan Puri, daughter of Shri Harish Puri, aged about 35 years presently working as Scientist "B" in the Ministry of Environment, Forest & Climate Change, at New Delhi, do hereby, in my official capacity, solemnly affirm and state on oath as follows: -

1. That I am acquainted with the facts and circumstances of the instant case and duly competent to swear the present affidavit on behalf of the MoEFCC on the basis of the official records maintained therein.

2. It is humbly submitted that the contents stated in the instant application are denied unless specifically admitted in this counter affidavit. I crave leave to file further additional affidavit, if and when required.

3. That the major contention in Original application are as follows:

The decision of the State of Uttarakhand to permit establishment of 23 stone crushers so far in Doon valley to be assailed.

Exercise on assessment of carrying capacity with respect to Doon valley has not been undertaken.

NOTARY A.N. SINGH Supreme Court of India Regn. No. 16959 Exp. Date : 31.01.2025 GOVT. OF INDIA

iii. Challenged the Notification dated 06.01.2020 issued by the MoEFCC modifying the Doon Valley notification dated 01.02.1989.

iv. Environmental Clearances and Consent to Establish which have been obtained by the private operators for stone crushers to be quashed.

4. It is humbly submitted that as part of "**PRAYER**", the applicant has inter-alia sought following which are reproduced below:

> "*a. Quash the impugned Notification dated 06.01.2020 issued by MoEFCC for being arbitrary and contrary to the avowed objectives of the Doon Valley Notification dated 01.02.1989, having been issued without undertaking any scientific or expert assessment of the environmental impacts on the Doon Valley area;*
>
> *b. x*
>
> *c. x*
>
> *d. x*
>
> *e. Quash/Cancel all licenses, Environmental Clearances and/or permissions granted relying upon distances provided under the Uttarakhand Stone Crusher, Screening Plant, Mobile Stone Crusher Pulverised Plant, Hot Mix Plant, Ready Mix Plant Anugya Niti, 2021;*
>
> *f. Declare the Environmental Clearance("EC") and Consent to Establish("CTE") issued to various project proponents illegally as null and void and direct the Respondents to immediately stop highly polluting activities like Stone crushers, Screening Plants and mining activity inside the Doon Valley area;*
>
> *g. x*
>
> *h. Direct the Respondent Departments and Governments to carry out a fair and independent inquiry into the illegalities and irregularities in the process of grant of Environment Clearance ("EC") to the private Respondents;*
>
> *i. x.*

5. It is humbly submitted that the above mentioned matter came up for hearing before the Hon'ble Tribunal on 01.03.2023 and the Hon'ble Tribunal observed as follows :

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"Mining and stone crushing activities are not permitted as they fall in red category and are not in the annexure listing permissible activities. Vide Notification dated 13.12.2007, under Section 5 of the EP Act, it was directed that even permitted activities will have to follow impact assessment procedure laid down in EIA Notification dated 14.09.2006, even if they do not fall in the EIA Notification as such. CPCB vide order dated 07.03.2016 under Section 18(1)(b) of the Water (Prevention and Control of Pollution) Act, 1974 modified earlier categorisation and placed stone crushing activity in orange category. Thereafter, vide notification of MoEF dated 06.01.2020, earlier Notification dated 01.02.1989 was amended replacing Annexure to notification dated 1.2.1989 listing permissible activities in terms of CPCB order dated 07.03.2016 under Section 18(1)(b) of the Water (Prevention and Control of Pollution) Act, 1974 and the Air Water (Prevention and Control of Pollution) Act, 1981 for harmonization of classification of industries under 'red', 'orange', 'green' and 'white' categories. It may be noted that though CPCB categorisation is general, the same has been made applicable to eco sensitive zone for which, according to the petitioners, no particular study has been conducted. Thus, stone crushing is taken as orange category and in view of general categorization by CPCB taken as permissible in eco sensitive zone also as per notification dated 6.1.2020".

6. It is humbly submitted that MoEF&CC had issued Doon Valley Notification on 1st February, 1989 under Section3 (2) (V) of the Environment (Protection) Act, 1986 & Rules 5(3) (d) of the Environment (Protection) Rules, 1986, restricting location of industries, mining operations & other development activities in the Doon Valley. Notification mainly came into existence to stop limestone mining at Mussoorie Ridge and to restore natural ecosystem of Doon Valley. The Notification was issued taking into account the Hon'ble Supreme Court directions dated 30.8.1988 in *Rural Litigation & Entitlement Kendra v. State of U.P & Ors.*, (1989).

7. That this Doon Valley Notification, 1989 was first attempt towards such categorization of industries which was much before the Environment Impact Assessment (EIA) Notification, 1994; EIA Notification, 2006 (**Annexure-R2/1**) and CPCB 2016

Guidelines on Categorization of industries. With advent of EIA Notification, 1994 followed by EIA Notification, 2006; the Doon Valley Notification underwent suitable amendment vide notification number S.O.943 (E) dated 04.07.2005 (**Annexure-R2/2**) and notification S.O. 2125 (E) dated the 13.12.2007 (**Annexure-R2/3**), respectively w.r.t Environmental Clearance (EC) mechanism for various categories of industries. Accordingly, as prescribed in Doon Valley amendment notification dated 04.07.2005, development proposal in Doon Valley falling in Orange Category shall follow the same procedure as is being followed for EC of Industry Sector Projects under EIA Notification, 1994. Subsequently, with coming in force of EIA Notification, 2006; the Doon Valley amendment notification dated 13.12.2007 prescribed that all those projects which are covered in the Schedule under the EIA Notification issued vide SO 1533 (E) dated 14th September, 2006 will follow the procedure laid down in that notification. All those projects which are not covered under the EIA Notification but which fall under the Orange Category shall be considered at the State level Environment Impact Assessment Authority (SEIAA). Red Category industries remained prohibited in the region and Green Category remained out of the preview of environmental regulation till there is necessity. Accordingly, the Orange Category of industries remain under the regulation.

8. That with CPCB's categorization of industries in 2016 *vide* their letter No. B-29012/ESS(CPA)/2015-2016 dated 07.03.2016 (**Annexure-R2/4**), the Doon Notification was again amended to refer to CPCB Categorization for implementation purpose and bring uniformity in implementation of guidelines across the country. In order to harmonize the 'Criteria of categorization', Directions were issued by CPCB under Section 18(1)(b) of the Water (Prevention & Control of Pollution), Act, 1974 to all SPCBs/PCCs to maintain uniformity in categorization of industries as red, green and orange as per list finalized by CPCB, which identified 85 types of industrial sectors as 'Red', 73 industrial sectors as 'Orange' and 86 sectors as 'Green'.

9. That consequent to the CPCB Guideline 2016, the Govt. of Uttarakhand wrote a letter No. 122/D-3-19-13(04)/2018 dated 10.04.2019 requesting MoEFCC for re-examination and accordingly amending the Doon Valley Eco-sensitive Area

Notification, 1989 aligning with CPCB guideline. A copy of the letter dated 10.04.2019 is annexed herein as (**ANNEXURE-R2/5**). As requested by the Government of Uttarakhand the proposal for amendment in the Doon Valley Notification was placed before the 36th ESZ Expert Committee meeting held on 18.07.2019 and after the detailed deliberation in the meeting the Expert Committee was of the view that new guidelines issued by CPCB on categorization of industries is based on scientific indexing of pollution i.e. scoring system, therefore, the new guideline be suitably incorporated in the notification, replacing the existing one. A copy of the minutes of the meeting is annexed herein as (**ANNEXURE-R2/6).** Committee based on the presentation made and discussions held, recommended for amendment in the notification by adopting the categorization as notified by the CPCB from time to time. Accordingly, the present categorization viz. red, orange and green, was substituted with new guidelines for categorization of Industries providing for red, orange, green and white categories. The amendment was published vide S.O. 94(E) dated 06.01.2020 (**Annexure-R2/7).**

10. **It is submitted that as per the CPCB 2016 guidelines, the stone crusher, hot mix plant and brick fields (excluding fly ash brick manufacturing using lime process) fall under the list of Orange Category of Industrial Sectors and hence continue to be regulated.** The Doon valley notification as amended in 2007 states that proposals relating to the development in Doon valley will be examined as covered in Schedule under the EIA Notification 2006 and also all projects which are not covered under EIA Notification but which fall under the orange category shall be considered by the State level Environment Impact Assessment Authority. It is submitted that stone crusher/hot mix/brick kilns/screening plants do not fall in the Schedule of EIA Notification, 2006 . These project need to ensure CTE/CTO from concerned SPCBs/UTPCCs for establishment/operation.

11. It is submitted that "Guidelines for assessing carrying capacity of hill stations including cities and Eco-sensitive zones" which *inter-alia* cover Doon Valley have been prepared by GB Pant National Institute of Himalayan Environment and accepted by MoEFCC. The same has been circulated to the State Governments for its implementation vide letter No. 11-14/2018-ESZ dated 30.01.2020 (**Annexure-R2/8**). Subsequently, these guidelines were also filed as part of affidavit before the Hon'ble Supreme Court of India in the Civil Appeal No. 868 of 2019 on 27.09.2021 (**Annexure-R2/9**).

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12. It is humbly submitted that the answering respondent without prejudice reserves his right to file an additional affidavit at a later stage, if so necessary.

13. It is humbly submitted that the present counter affidavit may kindly be taken on record and into consideration and the Hon'ble Tribunal may pass appropriate order(s), direction(s) as deem fit and proper under the facts and circumstances of the present case which the answering respondent shall duly comply with.

DEPONENT

(कंचन पुरी)
KANCHAN PURI
वैज्ञानिक 'बी' /Scientist 'B'
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Min.of Environment,Forest and Climate Change
भारत सरकार, नई दिल्ली
Govt. of India, New Delhi

VERIFICATION

I Identify the deponent who has Signed/Put Thumb Impression in my presence

I, the above-named deponent, do hereby verify that the contents of the above affidavit are true and correct to my knowledge as per the records of the answering respondents. No part of it is false and nothing material has been concealed there from.

Verified at New Delhi on this Tuesday day of 09 MAY 2023

NOTARY
A. N. SINGH
Supreme Court of India
Regn. No. 16959
Exp. Date: 31.01.2025
GOVT. OF INDIA

ATTESTED
A.N. Singh, Adv.
Notary Public
Govt. of India, Delhi
Mob.: 9718139591, 7982539115

DEPONENT

(कंचन पुरी)
KANCHAN PURI
वैज्ञानिक 'बी' /Scientist 'B'
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
Min.of Environment,Forest and Climate Change
भारत सरकार, नई दिल्ली
Govt. of India, New Delhi

Certified that the above Named Deponent
Identify by Shri/Smt. Manish Chaturvedi Advt.
Solemenly affarmed before me at Delhi
S. No. 491
The contents of the affidavit which have been read & explained to me are true and correct

Notary

09 MAY 2023

ANNEXURE-R2/1

(Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii)
MINISTRY OF ENVIRONMENT AND FORESTS
New Delhi 14th September, 2006
Notification

S.O. 1533(E). - Whereas, a draft notification **under sub-rule (3) of Rule 5 of the Environment (Protection) Rules, 1986 for imposing** certain restrictions and prohibitions on new projects or activities, or on the expansion or modernization of existing projects or activities based on their potential environmental impacts as indicated in the Schedule to the notification, being undertaken in any part of India, unless prior environmental clearance has been accorded in accordance with the objectives of National Environment Policy **as approved by the Union Cabinet on 18th May, 2006** and the procedure specified in the notification, by the Central Government or the State or Union territory Level Environment Impact Assessment Authority (SEIAA), to be constituted by the Central Government in consultation with the State Government or the Union territory Administration concerned under sub-section (3) of section 3 of the Environment (Protection) Act, 1986 for the purpose of this notification, was published in the Gazette of India ,Extraordinary, Part II, section 3, sub-section (ii) vide number S.O. 1324 (E) dated the 15th September ,2005 inviting objections and suggestions from all persons likely to be affected thereby within a period of sixty days from the date on which copies of Gazette containing the said notification were made available to the public;

And whereas, copies of the said notification were made available to the public on 15th September, 2005;

And whereas, all objections and suggestions received in response to the above mentioned draft notification have been duly considered by the Central Government;

Now, therefore, in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986, read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986 and in supersession of the notification number S.O. 60 (E) dated the 27th January, 1994, except in respect of things done or omitted to be done before such supersession, the Central Government hereby directs that on and from the date of its publication the required construction of new projects or activities or the expansion or modernization of existing projects or activities listed in the Schedule to this notification entailing capacity addition with change in process and or technology shall be

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I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

undertaken in any part of India only after the prior environmental clearance from the Central Government or as the case may be, by the State Level Environment
Impact Assessment Authority, duly constituted by the Central Government under sub-section (3) of section 3 of the said Act, in accordance with the procedure specified hereinafter in this notification.

[1]Includes the territorial waters

2. **Requirements of prior Environmental Clearance (EC):-** The following projects or activities shall require prior environmental clearance from the concerned regulatory authority, which shall hereinafter referred to be as the Central Government in the Ministry of Environment and Forests for matters falling under Category 'A' in the Schedule and at State level the State Environment Impact Assessment Authority (SEIAA) for matters falling under Category 'B' in the said Schedule, before any construction work, or preparation of land by the project management except for securing the land, is started on the project or activity:

(i) All new projects or activities listed in the Schedule to this notification;

(ii) Expansion and modernization of existing projects or activities listed in the Schedule to this notification with addition of capacity beyond the limits specified for the concerned sector, that is, projects or activities which cross the threshold limits given in the Schedule, after expansion or modernization;

(iii) Any change in product - mix in an existing manufacturing unit included in Schedule beyond the specified range.

3. **State Level Environment Impact Assessment Authority:-** (1) A State Level Environment Impact Assessment Authority hereinafter referred to as the SEIAA shall be constituted by the Central Government under sub-section (3) of section 3 of the Environment (Protection) Act, 1986 comprising of three Members including a Chairman and a Member – Secretary to be nominated by the State Government or the Union territory Administration concerned.

(2) The Member-Secretary shall be a serving officer of the concerned State Government or Union territory administration familiar with environmental laws.

(3) The other two Members shall be either a professional or expert fulfilling the eligibility criteria given in Appendix VI to this notification.

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b), (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests. (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday. November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

(4) One of the specified Members in sub-paragraph (3) above who is an expert in the Environmental Impact Assessment process shall be the Chairman of the SEIAA.

(5) The State Government or Union territory Administration shall forward the names of the Members and the Chairman referred in sub- paragraph 3 to 4 above to the Central Government and the Central Government shall constitute the SEIAA as an authority for the purposes of this notification within thirty days of the date of receipt of the names.

(6) The non-official Member and the Chairman shall have a fixed term of three years (from the date of the publication of the notification by the Central Government constituting the authority).

[I] "(7) All decisions of the SEIAA shall be taken in a meeting and shall ordinarily be unanimous:

Provided that, in case a decision is taken by majority, the details of views, for and against it, shall be clearly recorded in the minutes and copy thereof sent to MoEF."

4. Categorization of projects and activities:-

(i) All projects and activities are broadly categorized in to two categories - Category A and Category B, based on the spatial extent of potential impacts and potential impacts on human health and natural and man made resources.

(ii) All projects or activities included as Category 'A' in the Schedule, including expansion and modernization of existing projects or activities and change in product mix, shall require prior environmental clearance from the Central Government in the Ministry of Environment and Forests (MoEF) on the recommendations of an Expert Appraisal Committee (EAC) to be constituted by the Central Government for the purposes of this notification;

(iii) All projects or activities included as Category 'B' in the Schedule, including expansion and modernization of existing projects or activities as specified in sub paragraph (ii) of paragraph 2, or change in product mix as specified in sub paragraph (iii) of paragraph 2, but excluding those which fulfill the General Conditions (GC) stipulated in the Schedule, *will* require prior environmental clearance from the State/Union territory Environment Impact Assessment Authority (SEIAA). The SEIAA shall base its decision on the recommendations of a State or Union territory level Expert Appraisal Committee (SEAC) as to be constituted for in this notification. [II] "In the absence of a duly constituted SEIAA

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

or SEAC, a Category 'B' project shall be considered at Central Level as a Category 'B' project;"

5. **Screening, Scoping and Appraisal Committees:-**

The same Expert Appraisal Committees (EACs) at the Central Government and SEACs (hereinafter referred to as the (EAC) and (SEAC) at the State or the Union territory level shall screen, scope and appraise projects or activities in Category 'A' and Category 'B' respectively. EAC and SEAC's shall meet at least once every month.

(a) The composition of the EAC shall be as given in Appendix VI. The SEAC at the State or the Union territory level shall be constituted by the Central Government in consultation with the concerned State Government or the Union territory Administration with identical composition;

(b) The Central Government may, with the prior concurrence of the concerned State Governments or the Union territory Administrations, constitutes one SEAC for more than one State or Union territory for reasons of administrative convenience and cost;

(c) The EAC and SEAC shall be reconstituted after every three years;

(d) The authorised members of the EAC and SEAC, concerned, may inspect any site(s) connected with the project or activity in respect of which the prior environmental clearance is sought, for the purposes of screening or scoping or appraisal, with prior notice of at least seven days to the applicant, who shall provide necessary facilities for the inspection;

(e) The EAC and SEACs shall function on the principle of collective responsibility. The Chairperson shall endeavour to reach a consensus in each case, and if consensus cannot be reached, the view of the majority shall prevail.

6. **Application for Prior Environmental Clearance (EC):-**

An application seeking prior environmental clearance in all cases shall be made in the prescribed Form 1 annexed herewith and Supplementary Form 1A, if applicable, as given in Appendix II, after the identification of prospective site(s) for the project and/or activities to which the application relates, before commencing any construction activity, or preparation of land, at the site by the applicant. The applicant shall furnish, along with the application, a copy

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I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests. (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

of the pre-feasibility project report except that, in case of construction projects or activities (item 8 of the Schedule) in addition to Form 1 and the Supplementary Form 1A, a copy of the conceptual plan shall be provided, instead of the pre-feasibility report.

7. Stages in the Prior Environmental Clearance (EC) Process for New Projects:-

7(i) The environmental clearance process for new projects will comprise of a maximum of four stages, all of which may not apply to particular cases as set forth below in this notification. These four stages in sequential order are:-

- Stage (1) Screening (Only for Category 'B' projects and activities)
- Stage (2) Scoping
- Stage (3) Public Consultation
- Stage (4) Appraisal

I. **Stage (1) - Screening**:

In case of Category 'B' projects or activities, this stage will entail the scrutiny of an application seeking prior environmental clearance made in Form 1 by the concerned State level Expert Appraisal Committee (SEAC) for determining whether or not the project or activity requires further environmental studies for preparation of an Environmental Impact Assessment (EIA) for its appraisal prior to the grant of environmental clearance depending up on the nature and location specificity of the project . The projects requiring an Environmental Impact Assessment report shall be termed Category 'B1' and remaining projects shall be termed Category 'B2' and will not require an Environment Impact Assessment report. For categorization of projects into B1 or B2 except item 8 (b), the Ministry of Environment and Forests shall issue appropriate guidelines from time to time.

II. **Stage (2) - Scoping**:

(i) "Scoping": refers to the process by which the Expert Appraisal Committee in the case of Category 'A' projects or activities, and State level Expert Appraisal Committee in the case of Category 'B1' projects or activities, including applications for expansion and/or modernization and/or change in product mix of existing projects or activities, determine detailed and comprehensive Terms Of Reference (TOR) addressing all relevant environmental concerns for the preparation of an Environment Impact Assessment (EIA) Report in respect of the project or activity for which prior environmental clearance is sought. The Expert Appraisal Committee or State level Expert Appraisal Committee

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I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

concerned shall determine the Terms of Reference on the basis of the information furnished in the prescribed application Form1/Form 1A including Terns of Reference proposed by the applicant, a site visit by a sub- group of Expert Appraisal Committee or State level Expert Appraisal Committee concerned only if considered necessary by the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned, Terms of Reference suggested by the applicant if furnished and other information that may be available with the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned. All projects and activities listed as Category 'B' in Item 8 of the Schedule (Construction/Township/Commercial Complexes /Housing) shall not require Scoping and will be appraised on the basis of Form 1/ Form 1A and the conceptual plan.

(ii) The Terms of Reference (TOR) shall be conveyed to the applicant by the Expert Appraisal Committee or State Level Expert Appraisal Committee as concerned within sixty days of the receipt of Form 1. In the case of Category A Hydroelectric projects Item 1(c) (i) of the Schedule the Terms of Reference shall be conveyed along with the clearance for pre-construction activities .If the Terms of Reference are not finalized and conveyed to the applicant within sixty days of the receipt of Form 1, the Terms of Reference suggested by the applicant shall be deemed as the final Terms of Reference approved for the EIA studies. The approved Terms of Reference shall be displayed on the website of the Ministry of Environment and Forests and the concerned State Level Environment Impact Assessment Authority.

(iii) Applications for prior environmental clearance may be rejected by the regulatory authority concerned on the recommendation of the EAC or SEAC concerned at this stage itself. In case of such rejection, the decision together with reasons for the same shall be communicated to the applicant in writing within sixty days of the receipt of the application.

III. **Stage (3) - Public Consultation.**

(i) "Public Consultation" refers to the process by which the concerns of local affected persons and others who have plausible stake in the environmental impacts of the project or activity are ascertained with a view to taking into account all the material concerns in the project or activity design as appropriate. All Category 'A' and Category B1 projects or activities shall undertake Public Consultation, except the following:-

(a) modernization of irrigation projects (Item 1(c) (ii) of the Schedule).

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

(b) all projects or activities located within industrial estates or parks (item 7(c) of the Schedule) approved by the concerned authorities, and which are not disallowed in such approvals.

(c) expansion of Roads and Highways (item 7 (f) of the Schedule) which do not involve any further acquisition of land.

[III] "(cc) maintenance dredging provided the dredged material shall be disposed within port limits.";

[III] "(d) All Building or Construction projects or Area Development projects (which do not contain any category 'A' projects and activities) and Townships (item 8(a) and 8(b) in the Schedule to the notification)."

e) all Category 'B2' projects and activities.

f) all projects or activities concerning national defence and security or involving other strategic considerations as determined by the Central Government.

(ii) The Public Consultation shall ordinarily have two components comprising of:-

(a) a public hearing at the site or in its close proximity- district wise, to be carried out in the manner prescribed in Appendix IV, for ascertaining concerns of local affected persons;

(b) obtain responses in writing from other concerned persons having a plausible stake in the environmental aspects of the project or activity.

(iii) the public hearing at, or in close proximity to, the site(s) in all cases shall be conducted by the State Pollution Control Board (SPCB) or the Union territory Pollution Control Committee (UTPCC) concerned in the specified manner and forward the proceedings to the regulatory authority concerned within 45(forty five) of a request to the effect from the applicant.

(iv) in case the State Pollution Control Board or the Union territory Pollution Control Committee concerned does not undertake and complete the public hearing within the specified period, and/or does not convey the proceedings of the public hearing within the prescribed period directly to the regulatory authority concerned as above, the regulatory

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I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v). (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

authority shall engage another public agency or authority which is not subordinate to the regulatory authority, to complete the process within a further period of forty five days,.

(v) If the public agency or authority nominated under the sub paragraph (iii) above reports to the regulatory authority concerned that owing to the local situation, it is not possible to conduct the public hearing in a manner which will enable the views of the concerned local persons to be freely expressed, it shall report the facts in detail to the concerned regulatory authority, which may, after due consideration of the report and other reliable information that it may have, decide that the public consultation in the case need not include the public hearing.

(vi) For obtaining responses in writing from other concerned persons having a plausible stake in the environmental aspects of the project or activity, the concerned regulatory authority and the State Pollution Control Board (SPCB) or the Union territory Pollution Control Committee (UTPCC) shall invite responses from such concerned persons by placing on their website the Summary EIA report prepared in the format given in Appendix IIIA by the applicant along with a copy of the application in the prescribed form, within seven days of the receipt of a written request for arranging the public hearing. Confidential information including non-disclosable or legally privileged information involving Intellectual Property Right, source specified in the application shall not be placed on the web site. The regulatory authority concerned may also use other appropriate media for ensuring wide publicity about the project or activity. The regulatory authority shall, however, make available on a written request from any concerned person the Draft EIA report for inspection at a notified place during normal office hours till the date of the public hearing. All the responses received as part of this public consultation process shall be forwarded to the applicant through the quickest available means.

(vii) After completion of the public consultation, the applicant shall address all the material environmental concerns expressed during this process, and make appropriate changes in the draft EIA and EMP. The final EIA report, so prepared, shall be submitted by the applicant to the concerned regulatory authority for appraisal. The applicant may alternatively submit a supplementary report to draft EIA and EMP addressing all the concerns expressed during the public consultation.

iV. Stage (4) - Appraisal:

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

(i) Appraisal means the detailed scrutiny by the Expert Appraisal Committee or State Level Expert Appraisal Committee of the application and other documents like the Final EIA report, outcome of the public consultations including public hearing proceedings, submitted by the applicant to the regulatory authority concerned for grant of environmental clearance. This appraisal shall be made by Expert Appraisal Committee or State Level Expert Appraisal Committee concerned in a transparent manner in a proceeding to which the applicant shall be invited for furnishing necessary clarifications in person or through an authorized representative. On conclusion of this proceeding, the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned shall make categorical recommendations to the regulatory authority concerned either for grant of prior environmental clearance on stipulated terms and conditions, or rejection of the application for prior environmental clearance, together with reasons for the same.

(ii) The appraisal of all projects or activities which are not required to undergo public consultation, or submit an Environment Impact Assessment report, shall be carried out on the basis of the prescribed application Form 1 and Form 1A as applicable, any other relevant validated information available and the site visit wherever the same is considered as necessary by the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned.

(iii) The appraisal of an application be shall be completed by the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned within sixty days of the receipt of the final Environment Impact Assessment report and other documents or the receipt of Form 1 and Form 1 A, where public consultation is not necessary and the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee shall be placed before the competent authority for a final decision within the next fifteen days .The prescribed procedure for appraisal is given in Appendix V ;

7(ii). Prior Environmental Clearance (EC) process for Expansion or Modernization or Change of product mix in existing projects:

All applications seeking prior environmental clearance for expansion with increase in the production capacity beyond the capacity for which prior environmental clearance has been granted under this notification or with increase in either lease area or production capacity in the case of mining projects or for the modernization of an existing unit with increase in

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I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

the total production capacity beyond the threshold limit prescribed in the Schedule to this notification through change in process and or technology or involving a change in the product -mix shall be made in Form I and they shall be considered by the concerned Expert Appraisal Committee or State Level Expert Appraisal Committee within sixty days, who will decide on the due diligence necessary including preparation of EIA and public consultations and the application shall be appraised accordingly for grant of environmental clearance.

8. **Grant or Rejection of Prior Environmental Clearance (EC):**

(i) The regulatory authority shall consider the recommendations of the EAC or SEAC concerned and convey its decision to the applicant within forty five days of the receipt of the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned or in other words within one hundred and five days of the receipt of the final Environment Impact Assessment Report, and where Environment Impact Assessment is not required, within one hundred and five days of the receipt of the complete application with requisite documents, except as provided below.

(ii) The regulatory authority shall normally accept the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned. In cases where it disagrees with the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned, the regulatory authority shall request reconsideration by the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned within forty five days of the receipt of the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned while stating the reasons for the disagreement. An intimation of this decision shall be simultaneously conveyed to the applicant. The Expert Appraisal Committee or State Level Expert Appraisal Committee concerned, in turn, shall consider the observations of the regulatory authority and furnish its views on the same within a further period of sixty days. The decision of the regulatory authority after considering the views of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned shall be final and conveyed to the applicant by the regulatory authority concerned within the next thirty days.

(iii) In the event that the decision of the regulatory authority is not communicated to the applicant within the period specified in sub-paragraphs (i) or (ii) above, as applicable, the

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I; II: III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests. (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

applicant may proceed as if the environment clearance sought for has been granted or denied by the regulatory authority in terms of the final recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned.

(iv) On expiry of the period specified for decision by the regulatory authority under paragraph (i) and (ii) above, as applicable, the decision of the regulatory authority, and the final recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned shall be public documents.

(v) Clearances from other regulatory bodies or authorities shall not be required prior to receipt of applications for prior environmental clearance of projects or activities, or screening, or scoping, or appraisal, or decision by the regulatory authority concerned, unless any of these is sequentially dependent on such clearance either due to a requirement of law, or for necessary technical reasons.

(vi) Deliberate concealment and/or submission of false or misleading information or data which is material to screening or scoping or appraisal or decision on the application shall make the application liable for rejection, and cancellation of prior environmental clearance granted on that basis. Rejection of an application or cancellation of a prior environmental clearance already granted, on such ground, shall be decided by the regulatory authority, after giving a personal hearing to the applicant, and following the principles of natural justice.

9. Validity of Environmental Clearance (EC):

The "Validity of Environmental Clearance" is meant the period from which a prior environmental clearance is granted by the regulatory authority, or may be presumed by the applicant to have been granted under sub paragraph (iv) of paragraph 7 above, to the start of production operations by the project or activity, or completion of all construction operations in case of construction projects (item 8 of the Schedule), to which the application for prior environmental clearance refers. The prior environmental clearance granted for a project or activity shall be valid for a period of ten years in the case of River Valley projects (item 1(c) of the Schedule), project life as estimated by Expert Appraisal Committee or State Level Expert Appraisal Committee subject to a maximum of thirty years for mining projects and five years in the case of all other projects and activities. However, in the case of Area Development projects and Townships [item 8(b)], the validity

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I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

period shall be limited only to such activities as may be the responsibility of the applicant as a developer. This period of validity may be extended by the regulatory authority concerned by a maximum period of five years provided an application is made to the regulatory authority by the applicant within the validity period, together with an updated Form 1, and Supplementary Form 1A, for Construction projects or activities (item 8 of the Schedule). In this regard the regulatory authority may also consult the Expert Appraisal Committee or State Level Expert Appraisal Committee as the case may be.

10. **Post Environmental Clearance Monitoring:**

[IV] "(i)(a) In respect of Category 'A' project, it shall be mandatory for the project proponent to make public the environment clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the district or State where the project is located and in addition, this shall also be displayed in the project proponent's website permanently.

(b) In respect of Category 'B' projects, irrespective of its clearance by MoEF / SEIAA, the project proponent shall prominently advertise in the newspapers indicating that the project has been accorded environment clearance and the details of the MoEF website where it is displayed.

(c) The Ministry of Environment and Forests and the State/Union Territory Level Environmental Impact Assessment Authorities (SEIAAs), as the case may be, shall also place the environmental clearance in the public domain on Governmental portal.

(d) The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.";

[IV] (ii) It shall be mandatory for the project management to submit half-yearly compliance reports in respect of the stipulated prior environmental clearance terms and conditions in hard and soft copies to the regulatory authority concerned, on 1st June and 1st December of each calendar year.

[IV] (iii) All such compliance reports submitted by the project management shall be public documents. Copies of the same shall be given to any person on application to the

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I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

concerned regulatory authority. The latest such compliance report shall also be displayed on the web site of the concerned regulatory authority.

11. Transferability of Environmental Clearance (EC):

A prior environmental clearance granted for a specific project or activity to an applicant may be transferred during its validity to another legal person entitled to undertake the project or activity on application by the transferor, or by the transferee with a written "no objection" by the transferor, to, and by the regulatory authority concerned, on the same terms and conditions under which the prior environmental clearance was initially granted, and for the same validity period. No reference to the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned is necessary in such cases.

12. Operation of EIA Notification, 1994, till disposal of pending cases:

From the date of final publication of this notification the Environment Impact Assessment (EIA) notification number S.O.60 (E) dated 27th January, 1994 is hereby superseded, except in suppression of the things done or omitted to be done before such suppression to the extent that in case of all or some types of applications made for prior environmental clearance and pending on the date of final publication of this notification, the Central Government may relax any one or all provisions of this notification except the list of the projects or activities requiring prior environmental clearance in Schedule I , or continue operation of some or all provisions of the said notification, for a period not exceeding one year from the date of issue of this notification.

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

SCHEDULE

(See paragraph 2 and 7)

LIST OF PROJECTS OR ACTIVITIES REQUIRING PRIOR ENVIRONMENTAL CLEARANCE

Project or Activity		Category with threshold limit		Conditions if any
		A	B	
1		Mining, extraction of natural resources and power generation (for a specified production capacity)		
(1)	(2)	(3)	(4)	(5)
[v] "1(a)	(i) Mining of minerals.	≥ 50 ha. of mining lease area in respect of non-coal mine lease. > 150 ha of mining lease area in respect of coal mine lease. Asbestos mining irrespective of mining area	<50 ha ≥ 5 ha .of mining lease area in respect of non-coal mine lease. ≤ 150 ha ≥ 5 ha of mining lease area in respect of coal mine lease.	General Condition shall apply Note: Mineral prospecting is exempted.”;
	(ii) Slurry pipelines (coal lignite and other ores) passing through national parks / sanctuaries / coral reefs, ecologically sensitive areas.	All projects.		
1(b)	Offshore and onshore oil and gas exploration, development & production	All projects		Note Exploration Surveys (not involving drilling) are exempted provided the concession areas have got previous clearance for physical survey
1(c)	River Valley pojects	(i) ≥ 50 MW hydroelectric power generation; (ii) ≥ 10,000 ha. of culturable command area	(i) < 50 MW ≥ 25 MW hydroelectric power generation; (ii) < 10,000 ha. of culturable command area	[v] “General Condition shall apply. Note: Irrigation projects not involving submergence or inter-state domain shall be appraised by the SEIAA as Category ‘B’ Projects.”;

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (c) (ii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

(1)	(2)	(3)	(4)	(5)
1(d)	Thermal Power Plants	[V] "≥ 500 MW (coal / lignite / naphtha & gas based); ≥ 50 MW (Pet coke diesel and all other fuels including refinery residual oil waste except biomass); ≥ 20 MW (based on biomass or non hazardous municipal waste as fuel).”;	< 500 MW (coal / lignite / naphtha & gas based); <50 MW ≥ 5MW (Pet coke, diesel and all other fuels including refinery residual oil waste except biomass); ≥ 20 MW > 15 MW (based on biomass or non hazardous municipal waste as fuel).”;	[V] “General Condition shall apply. Note: (i) Power plant up to 15 MW, based on biomass and using auxiliary fuel such as coal / lignite / petroleum products up to 15% are exempt. (ii) Power plant up to 15 MW, based on non-hazardous municipal waste and using auxiliary fuel such as coal / lignite / petroleum products up to 15% are exempt. (iii) Power plants using waste heat boiler without any auxiliary fuel are exempt.”;
1(e)	Nuclear power projects and processing of nuclear fuel	All projects		
2		Primary Processing		
2(a)	Coal washeries	≥ 1 million ton/annum throughput of coal	<1million ton/annum throughput of coal	General Condition shall apply (If located within mining area the proposal shall be appraised together with the mining proposal)
2 (b)	Mineral beneficiation	≥ 0.1million ton/annum mineral throughput	< 0.1million ton/annum mineral throughput	General Condition shall apply (Mining proposal with Mineral beneficiation shall be appraised together for grant of clearance)

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

3		Materials Production		
(1)	(2)	(3)	(4)	(5)
3(a)	Metallurgical industries (ferrous & non ferrous)	a)Primary metallurgical industry All projects b) Sponge iron manufacturing ≥ 200TPD c) Secondary metallurgical processing industry All toxic and heavy metal producing units ≥ 20,000 tonnes /annum	Sponge iron manufacturing <200TPD Secondary metallurgical processing industry i.)All toxic and heavy metal producing units <20,000 tonnes /annum ii.)All other non –toxic secondary metallurgical processing industries >5000 tonnes/annum	[v] "General condition shall apply. Note: (i) The recycling industrial units registered under the HSM Rules, are exempted. (ii) In case of secondary metallurgical processing industrial units, those projects involving operation of furnaces only such as induction and electrical arc furnace, submerged arc furnace, and cupola with capacity more than 30,000 tonnes per annum (TPA) would require environmental clearance. (iii) Plant / units other than power plants (given against entry no. 1(d) of the schedule), based on municipal solid waste (non-hazardous) are exempted."
3(b)	Cement plants	≥ 1.0 million tonnes/annum production capacity	<1.0 million tonnes/annum production capacity. All Stand alone grinding units	General Condition shall apply
4		Materials Processing		
(1)	(2)	(3)	(4)	(5)
4(a)	Petroleum refining industry	All projects	-	-
4(b)	Coke oven plants	≥2,50,000 tonnes/annum	<2,50,000 & ≥25,000 tonnes/annum	[v] "General Condition shall apply."
4(c)	Asbestos milling and asbestos based products	All projects	-	-

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I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

(1)	(2)	(3)	(4)	(5)
4(d)	Chlor-alkali industry	≥300 TPD production Capacity or a unit located outside the notified industrial area/ estate	[V] "(i) All projects irrespective of the size, if located in a Notified Industrial Area/ Estate. (ii) <300 tonnes per day (TPD) and located outside a Notified Industrial Area/ Estate."	[V] "General as well as specific condition shall apply. No new Mercury Cell based plants will be permitted and existing units converting to membrane cell technology are exempted from this notification."
4(e)	Soda ash Industry	All projects	-	-
4(f)	Leather/skin/hide processing industry	New projects outside the industrial area or expansion of existing units out side the industrial area	All new or expansion of projects located within a notified industrial area/ estate	[V] "General as well as specific condition shall apply."
5		Manufacturing / Fabrication		
5(a)	Chemical fertilizers	[V] "All projects except Single Super Phosphate."	[V] "Single Super Phosphate."	
5(b)	Pesticides industry and pesticide specific intermediates (excluding formulations)	All units producing technical grade pesticides	-	
5(c)	Petro-chemical complexes (industries based on processing of petroleum fractions & natural gas and/or reforming to aromatics)	All projects -	-	
5(d)	Manmade fibers manufacturing	Rayon	Others	General Condition shall apply
5(e)	Petrochemical based processing (processes other than cracking & reformation and not covered under the complexes)	Located out side the notified industrial area/ estate -	Located in a notified industrial area/ estate	[V] "General as well as specific condition shall apply."

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

(1)	(2)	(3)	(4)	(5)
5(f)	Synthetic organic chemicals industry (dyes & dye intermediates; bulk drugs and intermediates excluding drug formulations; synthetic rubbers; basic organic chemicals, other synthetic organic chemicals and chemical intermediates)	Located out side the notified industrial area/ estate	Located in a notified industrial area/ estate	[v] "General as well as specific condition shall apply."
5(g)	Distilleries	(i)All Molasses based distilleries (ii) All Cane juice/ non-molasses based distilleries ≥30 KLD	All Cane juice / non-molasses based distilleries -- <30 KLD	General Condition shall apply
5(h)	Integrated paint industry	-	All projects	General Condition shall apply
5(i)	Pulp & paper industry excluding manufacturing of paper from waste paper and manufacture of paper from ready pulp with out bleaching	Pulp manufacturing and Pulp& Paper manufacturing industry	Paper manufacturing industry without pulp manufacturing	General Condition shall apply
5(j)	Sugar Industry	-	≥ 5000 tcd cane crushing capacity	General Condition shall apply
5(k)	[v] Omitted			
6		Service Sectors		
6(a)	Oil & gas transportation pipe line (crude and refinery/ petrochemical products), passing through national parks / sanctuaries /coral reefs / ecologically sensitive areas including LNG Terminal	All projects		-

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I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

(1)	(2)	(3)	(4)	(5)
6(b)	Isolated storage & handling of hazardous chemicals (As per threshold planning quantity indicated in column 3 of schedule 2 & 3 of MSIHC Rules 1989 amended 2000)		All projects	General Condition shall apply
7		Physical Infrastructure including Environmental Services		
7(a)	Air ports	[V] "All projects including airstrips, which are for commercial use."	-	[V] "Note: Air strips, which do not involve bunkering/ refueling facility and or Air Traffic Control, are exempted."
7(b)	All ship breaking yards including ship breaking units	All projects	-	-
7©	Industrial estates/ parks/ complexes/ areas, export processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes.	If at least one industry in the proposed industrial estate falls under the Category A, entire industrial area shall be treated as Category A, irrespective of the area. Industrial estates with area greater than 500 ha. and housing at least one Category B industry.	Industrial estates housing at least one Category B industry and area <500 ha. Industrial estates of area> 500 ha. and not housing any industry belonging to Category A or B.	[V] "Genral as well as special conditions shall apply. Note: 1. Industrial Estate of area below 500 ha. and not housing any industry of Category 'A' or 'B' does not require clearance. 2. If the area is less than 500 ha. but contains building and construction projects > 20,000 Sq. mts. And or development area more than 50 ha it will be treated as activity listed at serial no. 8(a) or 8(b) in the Schedule, as the case may be."
7(d)	Common hazardous waste treatment, storage and disposal facilities (TSDFs)	All integrated facilities having incineration &landfill or incineration alone	All facilities having land fill only	General Condition shall apply

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I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

(1)	(2)	(3)	(4)	(5)
7(e)	[V] "Ports, harbours, break waters, dredging."	≥ 5 million TPA of cargo handling capacity (excluding fishing harbours)	< 5 million TPA of cargo handling capacity and/or ports/ harbours ≥10,000 TPA of fish handling capacity.	[V] "General Condition shall apply. Note: 1. Capital dredging inside and outside the ports or harbors and channels are included; 2. Maintenance dredging is exempt provided it formed part of the original proposal for which Environment Management Plan (EMP) was prepared and environmental clearance obtained."
7(f)	Highways	i) New National High ways; and ii) Expansion of National High ways greater than 30 KM, involving additional right of way greater than 20m involving land acquisition and passing through more than one State.	[V] " i) All State Highway Project; and ii) State Highway expansion projects in hilly terrain (above 1,000 m AMSL) and or ecologically sensitive areas."	General Condition shall apply. Note: Highways include expressways."
7(g)	Aerial ropeways	[V(xvi)(a)] "(i) All projects located at altitude of 1,000 mtr. And above. (ii) All projects located in notified ecologically sensitive areas."	[V(xvi)(b)] "All projects except those covered in column (3)."	General Condition shall apply
7(h)	Common Effluent Treatment Plants (CETPs)		All projects	General Condition shall apply
7(i)	Common Municipal Solid Waste Management Facility (CMSWMF)		All projects	General Condition shall apply
8		Building /Construction projects/Area Development projects and Townships		
8(a)	Building and Construction projects		≥20000 sq.mtrs and <1,50,000 sq.mtrs. of built-up area#	#(built up area for covered construction; in the case of facilities open to the sky, it will be the activity area)
8(b)	Townships and Area Development projects.		Covering an area ≥ 50 ha and or built up area ≥1,50,000 sq .mtrs ++	++All projects under Item 8(b) shall be appraised as Category B1

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

Note:-

V(xvii) **"General Condition (GC):**
Any project or activity specified in Category 'B' will be treated as Category A, if located in whole or in part within 10 km from the boundary of: (i) Protected Areas notified under the Wild Life (Protection) Act, 1972, (ii) Critically Polluted areas as identified by the Central Pollution Control Board from time to time, (iii) Eco-sensitive areas as notified under section 3 of the Environment (Protection) Act, 1986, such as, Mahabaleshwar Panchgani, Matheran, Pachmarhi, Dahanu, Doon Valley, and (iv) Inter-State boundaries and international boundaries:

Provided that the requirement regarding distance of 10 km of the inter-State boundaries can be reduced or completely done away with by an agreement between the respective States or U.Ts sharing the common boundary in case the activity does not fall within 10 kilometres of the areas mentioned at item (i), (ii) and (iii) above."

Specific Condition (SC):
If any Industrial Estate/Complex / Export processing Zones /Special Economic Zones/Biotech Parks / Leather Complex with homogeneous type of industries such as Items 4(d), 4(f), 5(e), 5(f), or those Industrial estates with pre –defined set of activities (not necessarily homogeneous, obtains prior environmental clearance, individual industries including proposed industrial housing within such estates /complexes will not be required to take prior environmental clearance, so long as the Terms and Conditions for the industrial estate/complex are complied with (Such estates/complexes must have a clearly identified management with the legal responsibility of ensuring adherence to the Terms and Conditions of prior environmental clearance, who may be held responsible for violation of the same throughout the life of the complex/estate).

[No. J-11013/56/2004-IA-II (I)]
(R.CHANDRAMOHAN)
JOINT SECRETARY TO THE GOVERNMENT OF INDIA

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

APPENDIX I 851

(See paragraph – 6)

FORM 1

Vi(a) **"(I) Basic Information**

Serial Number	Item	Details
1.	Name of the project/s	
2.	S. No. in schedule	
3.	Proposed capacity/area/length/tonnage to be handled/command area/lease area/number of wells to be drilled	
4.	New/Expansion/Modernization	
5.	Existing Capacity/Area etc.	
6.	Category of Project i.e. 'A' or 'B'	
7.	Does it attract the general condition? If Yes, please specify.	
8.	Does it attract the specific condition? If Yes, please specify.	
9.	Location	
	Plot/Survey/Khasra No.	
	Village	
	Tehsil	
	District	
	State	
10.	Nearest railway station/airport along with distance in kms.	
11.	Nearest Town, city, District Headquarters along with distance in kms.	
12.	Village Panchayats, Zilla Parishad, Municipal Corporation, Local body (complete postal addresses with telephone nos. to be given)	
13.	Name of the applicant	
14.	Registered Address	
15.	Address for correspondence:	
	Name	
	Designation (Owner/Partner/CEO)	
	Address	
	Pin Code	
	E-mail	
	Telephone No.	
	Fax No.	
16	Details of Alternative Sites examined, if any. Location of these sites should be shown on a topo sheet.	Village-District-State 1. 2. 3.
17.	Interlinked Projects	
18	Whether separate application of interlinked project has been submitted?	

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i; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

19.	If yes, date of submission	
20.	If no, reason	
21.	Whether the proposal involves approval/ clearance under: If yes, details of the same and their status to be given: (a) The Forest (Conservation) Act, 1980 ? (b) The Wildlife (Protection) Act, 1972 ? (c) The C.R.Z. Notification, 1991 ?	
22.	Whether there is any Government Order/Policy relevant/ relating to the site ?	
23.	Forest land involved (hectares)	
24.	Whether there is any litigation pending against the project and/or land in which the project is propose to be set up ? (a) Name of the Court. (b) Case No. (c) Orders/directions of the Court, if any and its relevance with the proposed project.	

(II) Activity

1. Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)		
1.2	Clearance of existing land, vegetation and buildings?		
1.3	Creation of new land uses?		
1.4	Pre-construction investigations e.g. bore houses, soil testing?		
1.5	Construction works?		
1.6	Demolition works?		
1.7	Temporary sites used for construction works or housing of construction workers?		
1.8	Above ground buildings, structures or earthworks including linear structures, cut And fill or excavations		

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

1.9	Underground works including mining or tunneling?		
1.10	Reclamation works?		
1.11	Dredging?		
1.12	Offshore structures?		
1.13	Production and manufacturing processes?		
1.14	Facilities for storage of goods or materials?		
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?		
1.16	Facilities for long term housing of operational workers?		
1.17	New road, rail or sea traffic during construction or operation?		
1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?		
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?		
1.20	New or diverted transmission lines or pipelines?		
1.21	Impoundment, damming, culverting, realignment or other changes to the ydrology of watercourses or aquifers?		
1.22	Stream crossings?		
1.23	Abstraction or transfers of water form ground or surface waters?		
1.24	Changes in water bodies or the land surface affecting drainage or run-off?		
1.25	Transport of personnel or materials for construction, operation or decommissioning?		
1.26	Long-term dismantling or decommissioning or restoration works?		
1.27	Ongoing activity during decommissioning which could have an impact on the environment?		
1.28	Influx of people to an area in either temporarily or permanently?		
1.29	Introduction of alien species?		

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a) (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

1.30	Loss of native species or genetic diversity?		
1.31	Any other actions?		

2. Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
2.1	Land especially undeveloped or agricultural land (ha)		
2.2	Water (expected source & competing users) unit: KLD		
2.3	Minerals (MT)		
2.4	Construction material – stone, aggregates, sand / soil (expected source – MT)		
2.5	Forests and timber (source – MT)		
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)		
2.7	Any other natural resources (use appropriate standard units)		

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health.

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)		
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)		
3.3	Affect the welfare of people e.g. by changing living conditions?		
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,		
3.5	Any other causes		

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

4. Production of solid wastes during construction or operation or decommissioning (MT/month)

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
4.1	Spoil, overburden or mine wastes		
4.2	Municipal waste (domestic and or commercial wastes)		
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)		
4.4	Other industrial process wastes		
4.5	Surplus product		
4.6	Sewage sludge or other sludge from effluent treatment.		
4.7	Construction or demolition wastes		
4.8	Redundant machinery or equipment		
4.9	Contaminated soils or other materials		
4.10	Agricultural wastes		
4.11	Other solid wastes		

5. Release of pollutants or any hazardous, toxic or noxious substances to air (Kg/hr)

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources.		
5.2	Emissions from production processes		
5.3	Emissions from materials handling including storage or transport		
5.4	Emissions from construction activities including plant and equipment		
5.5	Dust or odours from handling of materials including construction materials, sewage and waste		

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

5.6	Emissions from incineration of waste		
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)		
5.8	Emissions from any other sources		

6. Generation of Noise and Vibration, and Emissions of Light and Heat:

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers		
6.2	From industrial or similar processes		
6.3	From construction or demolition		
6.4	From blasting or piling		
6.5	From construction or operational traffic		
6.6	From lighting or cooling systems		
6.7	From any other sources		

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
7.1	From handling, storage, use or spillage of hazardous materials		
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)		
7.3	By deposition of pollutants emitted to air into the land or into water		
7.4	From any other sources		
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?		

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

8. Risk of accidents during construction or operation of the Project, which could affect human health or the environment

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous substances		
8.2	From any other causes		
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?		

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
9.1	Lead to development of supporting. lities, ancillary development or development stimulated by the project which could have impact on the environment e.g.: • Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.) • housing development • extractive industries • supply industries • other		
9.2	Lead to after-use of the site, which could have an impact on the environment		
9.3	Set a precedent for later developments		
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects		

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

(III) Environmental Sensitivity

S.No.	Areas	Name/ Identity	Aerial distance (within 15 km.) Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value		
2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests		
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, esting, foraging, resting, over wintering, migration		
4	Inland, coastal, marine or underground waters		
5	State, National boundaries		
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas		
7	Defence installations		
8	Densely populated or built-up area		
9	Areas occupied by sensitive man-made land uses *(hospitals, schools, places of worship, community facilities)*		
10	Areas containing important, high quality or scarce Resources *(ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)*		
11	Areas already subjected to pollution or environmental damage. *(those where existing legal environmental standards are exceeded)*		
12	Areas susceptible to natural hazard which could cause the project to present environmental Problems (*earthquakes, subsidence, landslides, erosion, Flooding or extreme or adverse climatic conditions*)		

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii). (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

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VI(b) "I hereby given undertaking that the data and information given in the application and enclosures are true to the best of my knowledge and belief and I am aware that if any part of the data and information submitted is found to be false or misleading at any stage, the project will be rejected and clearance give, if any to the project will be revoked at our risk and cost."

Date: _____

Place: _____

Signature of the applicant
With Name and Full Address
(Project Proponent/Authorised Signatory)

NOTE:

1. The projects involving clearance under Coastal Regulation Zone Notification, 1991 shall submit with the application a C.R.Z. map duly demarcated by one of the authorized agencies, showing the project activities, w.r.t. C.R.Z. (at the stage of TOR) and the recommendations of the State Coastal Zone Management Authority (at the stage of EC). Sinmultaneous action shall also be taken to obtain the requisite clearance under the provisions of the C.R.Z. Notification, 1991 for the activities to be located in the CRZ.
2. The projects to be located within 10 km of the National Prks, Sancturies, Biosphere Reserves, Migratory Corridors of Wile Animals, the project proponenet shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden thereon (at the stage of EC)."
3. All correspondence with the Ministry of Environment & Forests including aubmission of application for TOR/Environmental Clearance, subsequent clarifications, as may be required from time to time, participation in the EAC Meeting on behalf of the project proponent shall be made by the authorized signatory only. The authorized signatory should also submit a document in support of his claim of being and authorized signatory for the specific project."

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) . (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

APPENDIX II
(See paragraph 6)

FORM-1 A (only for construction projects listed under item 8 of the Schedule)

CHECK LIST OF ENVIRONMENTAL IMPACTS

(Project proponents are required to provide full information and wherever necessary attach explanatory notes with the Form and submit along with proposed environmental management plan & monitoring programme)

1. LAND ENVIRONMENT

(Attach panoramic view of the project site and the vicinity)

1.1. Will the existing landuse get significantly altered from the project that is not consistent with the surroundings? (Proposed landuse must conform to the approved Master Plan / Development Plan of the area. Change of landuse if any and the statutory approval from the competent authority be submitted). Attach Maps of (i) site location, (ii) surrounding features of the proposed site (within 500 meters) and (iii) the site (indicating levels & contours) to appropriate scales. If not available attach only conceptual plans.

1.2. List out all the major project requirements in terms of the land area, built up area, water consumption, power requirement, connectivity, community facilities, parking needs etc.

1.3. What are the likely impacts of the proposed activity on the existing facilities adjacent to the proposed site? (Such as open spaces, community facilities, details of the existing landuse, disturbance to the local ecology).

1.4. Will there be any significant land disturbance resulting in erosion, subsidence & instability? (Details of soil type, slope analysis, vulnerability to subsidence, seismicity etc may be given).

1.5. Will the proposal involve alteration of natural drainage systems? (Give details on a contour map showing the natural drainage near the proposed project site)

1.6. What are the quantities of earthwork involved in the construction activity-cutting, filling, reclamation etc. (Give details of the quantities of earthwork involved, transport of fill materials from outside the site etc.)

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

1.7. Give details regarding water supply, waste handling etc during the construction period.

1.8. Will the low lying areas & wetlands get altered? (Provide details of how low lying and wetlands are getting modified from the proposed activity)

1.9. Whether construction debris & waste during construction cause health hazard? (Give quantities of various types of wastes generated during construction including the construction labour and the means of disposal)

2. WATER ENVIRONMENT

2.1. Give the total quantity of water requirement for the proposed project with the breakup of requirements for various uses. How will the water requirement met? State the sources & quantities and furnish a water balance statement.

2.2. What is the capacity (dependable flow or yield) of the proposed source of water?

2.3. What is the quality of water required, in case, the supply is not from a municipal source? (Provide physical, chemical, biological characteristics with class of water quality)

2.4. How much of the water requirement can be met from the recycling of treated wastewater? (Give the details of quantities, sources and usage)

2.5. Will there be diversion of water from other users? (Please assess the impacts of the project on other existing uses and quantities of consumption)

2.6. What is the incremental pollution load from wastewater generated from the proposed activity? (Give details of the quantities and composition of wastewater generated from the proposed activity)

2.7. Give details of the water requirements met from water harvesting? Furnish details of the facilities created.

2.8. What would be the impact of the land use changes occurring due to the proposed project on the runoff characteristics (quantitative as well as qualitative) of the area in the post construction phase on a long term basis? Would it aggravate the problems of flooding or water logging in any way?

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) fa), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

2.9. What are the impacts of the proposal on the ground water? (Will there be tapping of ground water; give the details of ground water table, recharging capacity, and approvals obtained from competent authority, if any)

2.10. What precautions/measures are taken to prevent the run-off from construction activities polluting land & aquifers? (Give details of quantities and the measures taken to avoid the adverse impacts)

2.11 How is the storm water from within the site managed?(State the provisions made to avoid flooding of the area, details of the drainage facilities provided along with a site layout indication contour levels)

2.12. Will the deployment of construction labourers particularly in the peak period lead to unsanitary conditions around the project site (Justify with proper explanation)

2.13. What on-site facilities are provided for the collection, treatment & safe disposal of sewage? (Give details of the quantities of wastewater generation, treatment capacities with technology & facilities for recycling and disposal)

2.14. Give details of dual plumbing system if treated waste used is used for flushing of toilets or any other use.

3. VEGETATION

3.1. Is there any threat of the project to the biodiversity? (Give a description of the local ecosystem with it's unique features, if any)

3.2. Will the construction involve extensive clearing or modification of vegetation? (Provide a detailed account of the trees & vegetation affected by the project)

3.3. What are the measures proposed to be taken to minimize the likely impacts on important site features (Give details of proposal for tree plantation, landscaping, creation of water bodies etc along with a layout plan to an appropriate scale)

4. FAUNA

4.1. Is there likely to be any displacement of fauna- both terrestrial and aquatic or creation of barriers for their movement? Provide the details.

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

4.2. Any direct or indirect impacts on the avifauna of the area? Provide details.

4.3. Prescribe measures such as corridors, fish ladders etc to mitigate adverse impacts on fauna

5. AIR ENVIRONMENT

5.1. Will the project increase atmospheric concentration of gases & result in heat islands? (Give details of background air quality levels with predicted values based on dispersion models taking into account the increased traffic generation as a result of the proposed constructions)

5.2. What are the impacts on generation of dust, smoke, odorous fumes or other hazardous gases? Give details in relation to all the metecrological parameters.

5.3. Will the proposal create shortage of parking space for vehicles? Furnish details of the present level of transport infrastructure and measures proposed for improvement including the traffic management at the entry & exit to the project site.

5.4. Provide details of the movement patterns with internal roads, bicycle tracks, pedestrian pathways, footpaths etc., with areas under each category.

5.5. Will there be significant increase in traffic noise & vibrations? Give details of the sources and the measures proposed for mitigation of the above.

5.6. What will be the impact of DG sets & other equipment on noise levels & vibration in & ambient air quality around the project site? Provide details.

6. AESTHETICS

6.1. Will the proposed constructions in any way result in the obstruction of a view, scenic amenity or landscapes? Are these considerations taken into account by the proponents?

6.2. Will there be any adverse impacts from new constructions on the existing structures? What are the considerations taken into account?

6.3. Whether there are any local considerations of urban form & urban design influencing the design criteria? They may be explicitly spelt out.

6.4. Are there any anthropological or archaeological sites or artefacts nearby? State if any other significant features in the vicinity of the proposed site have been considered.

7. SOCIO-ECONOMIC ASPECTS

7.1. Will the proposal result in any changes to the demographic structure of local population? Provide the details.

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b) (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b), VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

7.2. Give details of the existing social infrastructure around the proposed project.

7.3. Will the project cause adverse effects on local communities, disturbance to sacred sites or other cultural values? What are the safeguards proposed?

8. BUILDING MATERIALS

8.1. May involve the use of building materials with high-embodied energy. Are the construction materials produced with energy efficient processes? (Give details of energy conservation measures in the selection of building materials and their energy efficiency)

8.2. Transport and handling of materials during construction may result in pollution, noise & public nuisance. What measures are taken to minimize the impacts?

8.3. Are recycled materials used in roads and structures? State the extent of savings achieved?

8.4. Give details of the methods of collection, segregation & disposal of the garbage generated during the operation phases of the project.

9. ENERGY CONSERVATION

9.1. Give details of the power requirements, source of supply, backup source etc. What is the energy consumption assumed per square foot of built-up area? How have you tried to minimize energy consumption?

9.2. What type of, and capacity of, power back-up to you plan to provide?

9.3. What are the characteristics of the glass you plan to use? Provide specifications of its characteristics related to both short wave and long wave radiation?

9.4. What passive solar architectural features are being used in the building? Illustrate the applications made in the proposed project.

9.5. Does the layout of streets & buildings maximise the potential for solar energy devices? Have you considered the use of street lighting, emergency lighting and solar hot water systems for use in the building complex? Substantiate with details.

9.6. Is shading effectively used to reduce cooling/heating loads? What principles have been used to maximize the shading of Walls on the East and the West and the Roof? How much energy saving has been effected?

9.7. Do the structures use energy-efficient space conditioning, lighting and mechanical systems? Provide technical details. Provide details of the transformers and motor efficiencies, lighting intensity and air-conditioning load assumptions? Are you using CFC and HCFC free chillers? Provide specifications.

9.8. What are the likely effects of the building activity in altering the micro-climates? Provide a self assessment on the likely impacts of the proposed construction on

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I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

creation of heat island & inversion effects?

9.9. What are the thermal characteristics of the building envelope? (a) roof; (b) external walls; and (c) fenestration? Give details of the material used and the U-values or the R values of the individual components.

9.10. What precautions & safety measures are proposed against fire hazards? Furnish details of emergency plans.

9.11. If you are using glass as wall material provides details and specifications including emissivity and thermal characteristics.

9.12. What is the rate of air infiltration into the building? Provide details of how you are mitigating the effects of infiltration.

9.13. To what extent the non-conventional energy technologies are utilised in the overall energy consumption? Provide details of the renewable energy technologies used.

10. Environment Management Plan

The Environment Management Plan would consist of all mitigation measures for each item wise activity to be undertaken during the construction, operation and the entire life cycle to minimize adverse environmental impacts as a result of the activities of the project. It would also delineate the environmental monitoring plan for compliance of various environmental regulations. It will state the steps to be taken in case of emergency such as accidents at the site including fire.

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i; II: III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

APPENDIX III

(See paragraph 7

GENERIC STRUCTURE OF ENVIRONMENTAL IMPACT ASSESSENT DOCUMENT

S.NO	EIA STRUCTURE	CONTENTS
1.	Introduction	• Purpose of the report • Identification of project & project proponent • Brief description of nature, size, location of the project and its importance to the country, region • Scope of the study – details of regulatory scoping carried out (As per Terms of Reference)
2.	Project Description	• Condensed description of those aspects of the project (based on project feasibility study), likely to cause environmental effects. Details should be provided to give clear picture of the following: • Type of project • Need for the project • Location (maps showing general location, specific location, project boundary & project site layout) • Size or magnitude of operation (incl. Associated activities required by or for the project • Proposed schedule for approval and implementation • Technology and process description • Project description. Including drawings showing project layout, components of project etc. Schematic representations of the feasibility drawings which give information important for EIA purpose • Description of mitigation measures incorporated into the project to meet environmental standards, environmental operating conditions, or other EIA requirements (as required by the scope) • Assessment of New & untested technology for the risk of technological failure

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i; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

3.	Description of the Environment	• Study area, period, components & methodology • Establishment of baseline for valued environmental components, as identified in the scope • Base maps of all environmental components
4.	Anticipated Environmental Impacts & Mitigation Measures	• Details of Investigated Environmental impacts due to project location, possible accidents, project design, project construction, regular operations, final decommissioning or rehabilitation of a completed project • Measures for minimizing and / or offsetting adverse impacts identified • Irreversible and Irretrievable commitments of environmental components • Assessment of significance of impacts (Criteria for determining significance, Assigning significance) • Mitigation measures
5.	Analysis of Alternatives (Technology & Site)	• In case, the scoping exercise results in need for alternatives: • Description of each alternative • Summary of adverse impacts of each alternative • Mitigation measures proposed for each alternative and • Selection of alternative
6.	Environmental Monitoring Program	• Technical aspects of monitoring the effectiveness of mitigation measures (incl. Measurement methodologies, frequency, location, data analysis, reporting schedules, emergency procedures, detailed budget & procurement schedules)
7.	Additional Studies	• Public Consultation • Risk assessment • Social Impact Assessment. R&R Action Plans
8.	Project Benefits	• Improvements in the physical infrastructure • Improvements in the social infrastructure

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I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

		• Employment potential –skilled; semi-skilled and unskilled • Other tangible benefits
9.	Environmental Cost Benefit Analysis	If recommended at the Scoping stage
10.	EMP	• Description of the administrative aspects of ensuring that mitigative measures are implemented and their effectiveness monitored, after approval of the EIA
11	Summary & Conclusion (This will constitute the summary of the EIA Report)	• Overall justification for implementation of the project • Explanation of how, adverse effects have been mitigated
12.	Disclosure of Consultants engaged	• The names of the Consultants engaged with their brief resume and nature of Consultancy rendered

APPENDIX III A

(See paragraph 7)

CONTENTS OF SUMMARY ENVIRONMENTAL IMPACT ASSESSMENT

The Summary EIA shall be a summary of the full EIA Report condensed to ten A-4 size pages at the maximum. It should necessarily cover in brief the following Chapters of the full EIA Report: -

1. Project Description
2. Description of the Environment
3. Anticipated Environmental impacts and mitigation measures
4. Environmental Monitoring Programme
5. Additional Studies
6. Project Benefits
7. Environment Management Plan

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O. 1533(E) dated 14.09.2006

APPENDIX IV

(See paragraph 7)

PROCEDURE FOR CONDUCT OF PUBLIC HEARING

1.0 The Public Hearing shall be arranged in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site(s) or in its close proximity District -wise, by the concerned State Pollution Control Board (SPCB) or the Union Territory Pollution Control Committee (UTPCC).

2. 0 **The Process:**

2.1 The Applicant shall make a request through a simple letter to the Member Secretary of the SPCB or Union Territory Pollution Control Committee, in whose jurisdiction the project is located, to arrange the public hearing within the prescribed statutory period. In case the project site is covering more than one District or State or Union Territory, the public hearing is mandated in each District, State or Union Territory in which the project is located and the applicant shall make separate requests to each concerned SPCB or UTPCC for holding the public hearing as per this procedure.

2.2 The Applicant shall enclose with the letter of request, at least 10 hard copies and an equivalent number of soft (electronic) copies of the draft EIA Report with the generic structure given in Appendix III including the Summary Environment Impact Assessment report in English and in the official languageof the state/local language, prepared strictly in accordance with the Terms of
Reference communicated after Scoping (Stage-2). Simultaneously the applicant shall arrange to forward copies, one hard and one soft, of the above draft EIA Report along with the Summary EIA report to the following authorities or offices, within whose jurisdiction the project will be located:

(a) District Magistrate/District collector/Deputy commissioner/s
(b) Zila Parishad or Municipal Corporation or Panchayats Union
(c) District Industries Office
(d) Urban Local Bodies (ULBs) / PRIs Concerned / Development authorities.
(d) Concerned Regional Office of the Ministry of Environment and Forests

2.3 On receiving the draft Environmental Impact Assessment report, the abovementioned authorities except the Regional Office of MoEF, shall arrange to widely publicize it within their respective jurisdictions requesting the interested persons to send their comments to the concerned regulatory authorities. They shall also make available the draft EIA Report for inspection electronically or otherwise to the public during normal office hours till the Public Hearing is over.

2.4 The SPCB or UTPCC concerned shall also make similar arrangements for giving publicity about the project within the State/Union Territory and make available the Summary of the draft Environmental Impact Assessment report (Appendix III A) for

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I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

inspection in select offices or public libraries or any other suitable location etc. They shall also additionally make available a copy of the draft Environmental Impact Assessment report to the above five authorities/offices as given in para 2.

3.0 Notice of Public Hearing:

3.1 The Member-Secretary of the concerned SPCB or UTPCC shall finalize the date, time and exact venue for the conduct of public hearing within 7(seven) days of the date of receipt of the draft Environmental Impact Assessment report from the project proponent, and advertise the same in one major National Daily and one Regional vernacular Daily / Official State Language. A minimum notice period of 30(thirty) days shall be provided to the public for furnishing their responses;

3.2 The advertisement shall also inform the public about the places or offices where the public could access the draft Environmental Impact Assessment report and the Summary Environmental Impact Assessment report before the public hearing. In places where the newspapers do not reach, the Competent Authority should arrange to inform the local public about the public hearing by other means such as by way of beating of drums as well as advertisement / announcement on radio / television.

3.3 No postponement of the date, time, venue of the public hearing shall be undertaken, unless some untoward emergency situation occurs and then only on the recommendation of the concerned District Magistrate/District collector/Deputy Commissioner, the postponement shall be notified to the public through the same National and Regional vernacular dailies and also prominently displayed at all the identified offices by the concerned SPCB or Union Territory Pollution Control Committee;

3.4 In the above exceptional circumstances, fresh date, time and venue for the public consultation shall be decided by the Member – Secretary of the concerned SPCB or UTPCC only in consultation with the District Magistrate/District collector/Deputy Commissioner and notified afresh as per procedure under 3.1 above.

4.0 Supervision and Presiding over the Hearing:

4.1 The District Magistrate/District collector/Deputy Commissioner or his or her representative not below the rank of an Additional District Magistrate assisted by a representative of SPCB or UTPCC, shall Supervise and preside over the entire public hearing process.

5.0 Videography

5.1 The SPCB or UTPCC shall arrange to video film the entire proceedings. A copy of the videotape or a CD shall be enclosed with the public hearing proceedings while Forwarding it to the Regulatory Authority concerned.

6.0 Proceedings

6.1 The attendance of all those who are present at the venue shall be noted and annexed with the final proceedings.

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

6.2 There shall be no quorum required for attendance for starting the proceedings.

6.3 A representative of the applicant shall initiate the proceedings with a presentation on the project and the Summary EIA report.

6.4 Persons present at the venue shall be granted the opportunity to seek information or clarifications on the project from the Applicant. The summary of the public hearing proceedings accurately reflecting all the views and concerns expressed shall be recorded by the representative of the SPCB or UTPCC and read over to the audience at the end of the proceedings explaining the contents in the local/vernacular language and the agreed minutes shall be signed by the District Magistrate/District collector/Deputy Commissioner or his or her representative on the same day and forwarded to the SPCB/UTPCC concerned.

6.5 A Statement of the issues raised by the public and the comments of the Applicant shall also be prepared in the local language or the Official State language, as the case may be, and in English and annexed to the proceedings:

6.6 The proceedings of the public hearing shall be conspicuously displayed at the office of the Panchyats within whose jurisdiction the project is located, office of the concerned Zila Parishad, District Magistrate/District collector/Deputy Commissioner, and the SPCB or UTPCC . The SPCB or UTPCC shall also display the proceedings on its website for general information. Comments, if any, on the proceedings which may be sent directly to the concerned regulatory authorities and the applicant concerned.

7.0 **Time period for completion of public hearing**

7.1 The public hearing shall be completed within a period of 45 (forty five) days from date of receipt of the request letter from the Applicant. Thereafter the SPCB or UTPCC concerned shall sent the public hearing proceedings to the concerned regulatory authority within 8(eight) days of the completion of the public hearing.Simultaneously, a copy will also be provided to the project proponent.The applicant may also directly forward a copy of the approved public hearing proceedings to the regulatory authority concerned along with the final Environmental Impact Assessment report or supplementary report to the draft EIA report prepared after the public hearing and public consultations incorporating the concerns expressed in the public hearing along with action plan and financial allocation, item-wise, to address those concerns.".

7.2 If the SPCB or UTPCC fails to hold the public hearing within the stipulated 45(forty five) days, the Central Government in Ministry of Environment and Forests for Category 'A' project or activity and the State Government or Union Territory Administration for Category 'B' project or activity at the request of the SEIAA, shall engage any other agency or authority to complete the process, as per procedure laid down in this notification.

APPENDIX –V

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi. Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

(See paragraph 7)

PROCEDURE PRESCRIBED FOR APPRAISAL

1. The applicant shall apply to the concerned regulatory authority through a simple communication enclosing the following documents where public consultations are mandatory:

- Final Environment Impact Assessment Report [20(twenty) hard copies and 1 (one) soft copy)]
- A copy of the video tape or CD of the public hearing proceedings
- A copy of final layout plan (20 copies)
- A copy of the project feasibility report (1 copy)

2. The Final EIA Report and the other relevant documents submitted by the applicant shall be scrutinized in office within 30 days from the date of its receipt by the concerned Regulatory Authority strictly with reference to the TOR and the inadequacies noted shall be communicated electronically or otherwise in a single set to the Members of the EAC /SEAC enclosing a copy each of the Final EIA Report including the public hearing proceedings and other public responses received along with a copy of Form -1or Form 1A and scheduled date of the EAC /SEAC meeting for considering the proposal.

3. Where a public consultation is not mandatory, the appraisal shall be made on the basis of the prescribed application Form 1 and EIA report, in the case of all projects and activities other than Item 8 of the Schedule. In the case of Item 8 of the Schedule, considering its unique project cycle, the EAC or SEAC concerned shall appraise all Category B projects or activities on the basis of Form 1, Form 1A and the conceptual plan and make recommendations on the project regarding grant of environmental clearance or otherwise and also stipulate the conditions for environmental clearance."

4. Every application shall be placed before the EAC/SEAC and its appraisal completed within 60 days of its receipt with requisite documents / details in the prescribed manner.

5. The applicant shall be informed at least 15 (fifteen) days prior to the scheduled date of the EAC /SEAC meeting for considering the project proposal.

6. The minutes of the EAC /SEAC meeting shall be finalised within 5 working days of the meeting and displayed on the website of the concerned regulatory authority. In case the project or activity is recommended for grant of EC, then the minutes shall clearly list out the specific environmental safeguards and conditions. In case the recommendations are for rejection, the reasons for the same shall also be explicitly stated.

Note: The principal rules were published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) vide notification number S.O. 1533 (E), dated 14th September, 2006 and amended vide S.O. 1737 (E), dated the 11th October, 2007.

APPENDIX VI

(See paragraph 5)

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

COMPOSITION OF THE SECTOR/ PROJECT SPECIFIC EXPERT APPRAISAL COMMITTEE (EAC) FOR CATEGORY A PROJECTS AND THE STATE/UT LEVEL EXPERT APPRAISAL COMMITTEES (SEACs) FOR CATEGORY B PROJECTS TO BE CONSTITUTED BY THE CENTRAL GOVERNMENT

1. The Expert Appraisal Committees (EAC(s) and the State/UT Level Expert Appraisal Committees (SEACs) shall consist of only professionals and experts fulfilling the following eligibility criteria:

Professional: The person should have at least (i) 5 years of formal University training in the concerned discipline leading to a MA/MSc Degree, or (ii) in case of Engineering /Technology/Architecture disciplines, 4 years formal training in a professional training course together with prescribed practical training in the field leading to a B.Tech/B.E./B.Arch. Degree, or (iii) Other professional degree (e.g. Law) involving a total of 5 years of formal University training and prescribed practical training, or (iv) Prescribed apprenticeship/article ship and pass examinations conducted by the concerned professional association (e.g. Chartered Accountancy),or (v) a University degree , followed by 2 years of formal training in a University or Service Academy (e.g. MBA/IAS/IFS). In selecting the individual professionals, expérience gained by them in their respective fields will be taken note of.

Expert: A professional fulfilling the above eligibility criteria with at least 15 years of relevant experience in the field, or with an advanced degree (e.g. Ph.D.) in a concerned field and at least 10 years of relevant experience.

Age: Below 70 years. However, in the event of the non-availability of /paucity of experts in a given field, the maximum age of a member of the Expert Appraisal Committee may be allowed up to 75 years

2. The Members of the EAC shall be Experts with the requisite expertise and experience in the following fields /disciplines. In the event that persons fulfilling the criteria of "Experts" are not available, Professionals in the same field with sufficient experience may be considered:

- **Environment Quality Experts**: Experts in measurement/monitoring, analysis and interpretation of data in relation to environmental quality

- **Sectoral Experts in Project Management**: Experts in Project Management or Management of Process/Operations/Facilities in the relevant sectors.

- **Environmental Impact Assessment Process Experts**: Experts in conducting and carrying out Environmental Impact Assessments (EIAs) and preparation of Environmental Management Plans (EMPs) and other Management plans and who have wide expertise and knowledge of predictive techniques and tools used in the EIA process

- **Risk Assessment Experts**

- **Life Science Experts in floral and faunal management**

- **Forestry and Wildlife Experts**

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

- **Environmental Economics Expert with experience in project appraisal**

3. The Membership of the EAC shall not exceed 15 (fifteen) regular Members. However the Chairperson may co-opt an expert as a Member in a relevant field for a particular meeting of the Committee.*

4. The Chairperson shall be an outstanding and experienced environmental policy expert or expert in management or public administration with wide experience in the relevant development sector.

5. The Chairperson shall nominate one of the Members as the Vice Chairperson who shall preside over the EAC in the absence of the Chairman /Chairperson.

6. A representative of the Ministry of Environment and Forests shall assist the Committee as its Secretary.

7. The maximum tenure of a Member, including Chairperson, shall be for 2 (two) terms of 3 (three) years each.

8. The Chairman / Members may not be removed prior to expiry of the tenure without cause and proper enquiry.

I; II; III (i), (ii); IV (a), (b); V (i), (ii), (iii)(a), (b), (c), (iv), (v), (vi) (a), (b), (vii), (viii) (a), (b), (ix), (x), (xi), (xii) (a), (b) , (xiii), (xiv) (a), (b), (xv) (a), (b), (xvi) (a), (b), (xvii); VI (a), (b); VII & VIII of the Notification, S.O. 3067(E) dated 01.12.2009 of the Ministry of Environment and Forests, (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii), No. 2002] New Delhi, Tuesday, November 1, 2009; an amendment to EC notification S.O.1533(E) dated 14.09.2006

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ANNEXUR R-2/2

रजिस्ट्री सं० डी० एल-33004/99

REGD. NO. D.L.-33004/99

भारत का राजपत्र
The Gazette of India

असाधारण
EXTRAORDINARY
भाग II—खण्ड 3—उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)
प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 686] नई दिल्ली, सोमवार, जुलाई 4, 2005/आषाढ़ 13, 1927
No. 686] NEW DELHI, MONDAY, JULY 4, 2005/ASADHA 13, 1927

पर्यावरण और वन मंत्रालय

आदेश

नई दिल्ली, 4 जुलाई, 2005

का.आ. 943(अ).—पर्यावरण (संरक्षण) नियम, 1986 के नियम 5 के उप-नियम (3) के खण्ड (घ) के अधीन, उन क्रियाकलापों के सिवाय, जिन्हें पर्यावरणी समाघातों की जांच करने के लिए केन्द्रीय सरकार द्वारा अनुज्ञात किया जाता है, दून घाटी उत्तरांचल में विभिन्न क्रियाकलापों पर निर्बंधन अधिरोपित करने वाली अधिसूचना का.आ. 102(अ) तारीख 1 फरवरी, 1989 द्वारा जारी की गई थी;

और उक्त अधिसूचना ने उद्योगों को तीन प्रवर्गों में वर्गीकृत किया है, अर्थात्, हरा, नारंगी और लाल और दून घाटी क्षेत्र में औद्योगिक ईकाइयों को अनुज्ञा देने और उनको निर्बंधित करने के लिए मार्गदर्शी सिद्धांतों को भी विहित किया है;

और नारंगी प्रवर्ग के अंतर्गत आने वाले उद्योगों को राज्य प्रदूषण नियंत्रण बोर्ड द्वारा निर्धारण किए जाने की और उन्हें "अनापत्ति प्रमाणपत्र" प्रदान करने से पूर्व पर्यावरण और वन मंत्रालय में केन्द्रीय सरकार को विनिर्दिष्ट किए जाने की अपेक्षा की जाती है;

और अब यह सुनिश्चित किया गया है कि उक्त अधिसूचना में यथा-विनिर्दिष्ट नारंगी प्रवर्ग के अधीन आने वाले प्रस्तावों पर का.आ. 60(अ) तारीख 27 जनवरी, 1994 द्वारा जारी पर्यावरण समाघात निर्धारण अधिसूचना के अनुसार पर्यावरणीय निकासी की अपेक्षा करने वाले उद्योगों के रूप में कार्रवाई की जाएगी।

अतः अब पर्यावरण (संरक्षण) अधिनियम, 1986 की धारा 5 में प्रदत्त शक्तियों का प्रयोग करते हुए, यह निदेश दिया जाता है कि अधिसूचना संख्यांक का.आ. 102(अ) तारीख 1 फरवरी, 1989 द्वारा प्रवर्गीकृत नारंगी उद्योग के प्रवर्ग के अंतर्गत आने वाले दून घाटी, उत्तरांचल के विकास संबंधित प्रस्ताव वैसी प्रक्रिया का पालन करेंगे जैसी राजपत्र में इस अधिसूचना के प्रकाशन की तारीख से समय-समय पर यथा-संशोधित का.आ. 60(अ) तारीख 27 जनवरी, 1994 द्वारा जारी पर्यावरण समाघात निर्धारण अधिसूचना, 1994 के अधीन उद्योग सेक्टर परियोजनाओं के पर्यावरण निकासी के लिए पालन किया जा रहा है।

[फा. सं. जे-11013/25/2005-आई.ए. II(I)]

आर. चन्द्रमोहन, संयुक्त सचिव

MINISTRY OF ENVIRONMENT AND FORESTS

ORDER

New Delhi, the 4th July, 2005

S.O. 943(E).— Whereas a notification under clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, imposing restrictions on various activities in Doon Valley Uttranchal, except those activities which are permitted by the Central Government for examining the environmental impacts, was issued *vide* No. S.O. 102(E) dated the 1st February, 1989;

And whereas the said notification classified industries into three categories; namely, green, orange and red and also prescribed guidelines for permitting and restricting industrial units in Doon Valley Area;

And whereas industries falling in the orange category are required to be assessed by State Pollution Control Board and referred to the Central Government in the Ministry of Environment and Forests before granting 'No Objection Certificate';

And whereas it has now been decided that proposals covered under the orange category, as specified in the said notification shall be dealt with as industries requiring environmental clearance as per the Environment Impact Assessment Notification, 1994, issued *vide* No. S.O. 60(E) dated the 27th January, 1994.

Now, therefore, in exercise of the powers conferred by Section 5 of the Environment (Protection) Act, 1986, it is hereby directed that all proposals, relating to development in Doon Valley, Uttaranchal falling in the category of orange industry categorized *vide* notification No. S.O. 102(E) dated the 1st February, 1989, shall follow the same procedure as is being followed for the environment clearance of Industry Sector Projects under Environment Impact Assessment Notification, 1994 issued *vide* No. S.O. 60(E) dated the 27th January, 1994 as amended from time to time with effect from the date of publication of this notification in the Official Gazette.

[F. No. J-11013/25/2005-IA.II(I)]

R. CHANDRAMOHAN, Jt. Secy.

Printed by the Manager, Govt. of India Press, Ring Road, Mayapuri, New Delhi-110064
and Published by the Controller of Publications, Delhi-110054.

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रजिस्ट्री सं० डी० एल०-33004/99

REGD. NO. D. L.-33004/99

ANNEXURE R-2/3

भारत का राजपत्र
The Gazette of India

असाधारण

EXTRAORDINARY

भाग II—खण्ड 3—उप-खण्ड (ii)

PART II—Section 3—Sub-section (ii)

प्राधिकार से प्रकाशित

PUBLISHED BY AUTHORITY

सं. 1539] नई दिल्ली, वृहस्पतिवार, दिसम्बर 13, 2007/अग्रहायण 22, 1929

No. 1539] NEW DELHI, THURSDAY, DECEMBER 13, 2007/AGRAHAYANA 22, 1929

पर्यावरण एवं वन मंत्रालय

आदेश

नई दिल्ली, 13 दिसम्बर, 2007

का.आ. 2125(अ).—जबकि, पर्यावरण (सुरक्षा) नियमावली, 1986 के नियम 5 के उप-नियम (3) के खण्ड (घ) के तहत दून घाटी, उत्तराखण्ड में उन गतिविधियों जिनके लिए केन्द्रीय सरकार ने पर्यावरणीय प्रभाव के परीक्षण के लिए अनुमति दे दी है, को छोड़कर विभिन्न गतिविधियों पर प्रतिबंध लगाने के लिए दिनांक 1 फरवरी, 1989 के सं. का.आ. 102(अ) के तहत एक अधिसूचना जारी की गई थी;

और, जबकि, उक्त अधिसूचना में उद्योगों की तीन श्रेणियों अर्थात् ग्रीन, ओरेंज और रेड में वर्गीकृत किया गया है और दून घाटी क्षेत्र में औद्योगिक इकाईयों को अनुमति देने और उन पर प्रतिबंध लगाने के लिए दिशानिर्देश भी निर्धारित किए गए हैं;

और, जबकि, ओरेंज श्रेणी के अंतर्गत आने वाले उद्योगों का मूल्यांकन राज्य के प्रदूषण नियंत्रण बोर्ड द्वारा किया जाना तथा उन्हें अनापत्ति प्रमाण-पत्र देने से पहले संबंधित प्रस्ताव को केन्द्र सरकार, पर्यावरण एवं वन मंत्रालय के पास भेजा जाना अपेक्षित है;

और, जबकि, यह परिकल्पना की गई थी कि ओरेंज श्रेणी के अंतर्गत शामिल प्रस्तावों के मामले में वही प्रक्रिया अपनाई जाएगी जो कि दिनांक 4 जुलाई, 2005 के का.आ. 943(अ) के तहत जारी पर्यावरण प्रभाव मूल्यांकन अधिसूचना, 1994 के अंतर्गत उद्योग क्षेत्र की परियोजनाओं को पर्यावरणीय मंजूरी देते समय अपनाई जाती है;

और, जबकि, दिनांक 27 जनवरी, 1994 के का.आ. 60(अ) के तहत जारी उक्त पर्यावरण प्रभाव मूल्यांकन अधिसूचना को दिनांक 14 सितम्बर, 2006 के का.आ. 1533(अ) के तहत जारी अधिसूचना द्वारा अधिक्रमित हुआ माना जाएगा;

अतः, अब, पर्यावरण (सुरक्षा) अधिनियम, 1986 की धारा 5 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, एतद्द्वारा, यह निर्देश दिया जाता है कि दून घाटी, उत्तराखंड में विकास कार्यों से संबंधित सभी प्रस्तावों की निम्नलिखित प्रक्रिया अपनाते हुए जांच की जाएगी :–

(i) ऐसी सभी परियोजनाएं जो 14 सितम्बर, 2006 के सं. का.आ. 1533(अ) के तहत जारी पर्यावरण प्रभाव मूल्यांकन अधिसूचना के अंतर्गत अनुसूची में शामिल की गई हैं, के लिए उक्त अधिसूचना में निर्धारित प्रक्रिया ही अपनाई जाएगी ।

(ii) ऐसी सभी परियोजनाएं जो उक्त पर्यावरण प्रभाव मूल्यांकन अधिसूचना के अंतर्गत शामिल नहीं हैं, और ओरेंज श्रेणी के अंतर्गत आती हैं उन पर राज्य स्तर के पर्यावरण प्रभाव मूल्यांकन प्राधिकरण द्वारा विचार किया जाएगा ।

(iii) उत्तराखंड राज्य के लिए राज्य स्तरीय प्रभाव मूल्यांकन प्राधिकरण का गठन होने तक, प्रस्तावों की जांच, राज्य प्रदूषण नियंत्रण बोर्ड की टिप्पणियां प्राप्त होने के पश्चात्, उन्हें मूल्यांकन समिति के पास भेजे बिना, केन्द्र सरकार द्वारा की जाएगी ।

[सं. जे-11013/25/2005-आई ई-II (I)]

रा. आनन्दकुमार, वैज्ञानिक 'जी'

MINISTRY OF ENVIRONMENT AND FORESTS

ORDER

New Delhi, the, 13th December, 2007

S.O. 2125 (E).—Whereas, a notification under clause (d) of sub-rule (3) of rule 5 of the Environment (Protection)

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Rules, 1986, imposing restrictions on various activities in Doon Valley Uttarakhand, except those activities which are permitted by the Central Government for examining the environmental impacts, was issued *vide* No. S.O. 102(E) dated the 1st February, 1989;

And, whereas, the said notification classified industries into three categories; namely, green, orange and red and also prescribed guidelines for permitting and restricting industrial units in Doon Valley Area;

And, whereas, industries falling in the orange category are required to be assessed by State Pollution Control Board and referred to the Central Government in the Ministry of Environment and Forests before granting 'No Objection Certificate';

And, whereas, it was envisaged that the proposals covered under orange category shall follow the same procedure as is being followed for the environment clearance of industry sector projects under Environment Impact Assessment Notification, 1994, issued *vide* S.O. 943(E) dated the 4th July, 2005;

And, whereas, the said Environment Impact Assessment notification issued *vide* S.O. 60(E) dated the 27th January, 1994 has been superseded by the notification *vide* number S.O. 1533(E) dated 14th September, 2006;

Now, therefore, in exercise of the powers conferred by Section 5 of the Environment (Protection) Act, 1986, it is hereby directed that all proposals, relating to development in Doon Valley will be examined as per the following procedure :—

(i) All those projects which are covered in the schedule under the Environment Impact Assessment notification issued *vide* number S.O. 1533(E) dated the 14th September, 2006 will follow the procedure laid down in that notification.

(ii) All those projects which are not covered under the EIA notification but which fall under the orange category shall be considered by the State level Environment Impact Assessment Authority.

(iii) Till such time as the State level Impact Assessment Authority is constituted for the State of Uttarakhand, the proposals will be examined by the Central Government, without referring them to the Appraisal Committee, after obtaining the comments of the State Pollution Control Board.

[No. J-11013/25/2005-IA-II(I)]

R. ANANDAKUMAR, Scientist 'G'

Printed by the Manager, Govt. of India Press, Ring Road, Mayapuri, New Delhi-110064
and Published by the Controller of Publications, Delhi-110054.

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केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
(पर्यावरण एवं वन मंत्रालय, भारत सरकार)
MINISTRY OF ENVIRONMENT & FORESTS, GOVT. OF INDIA

No.B-29012/ESS(CPA)/2015-16/ March 07, 2016

To

The Chairman
All the State Pollution Control Boards / Pollution Control Committees
(List Attached)

SUB: MODIFIED DIRECTIONS UNDER SECTION 18(1)(b) OF THE WATER (PREVENTION & CONTROL OF POLLUTION) ACT, 1974 and THE AIR (PREVENTION & CONTROL OF POLLUTION) ACT, 1981 REGARDING HARMONIZATION OF CLASSIFICATION OF INDUSTRIAL SECTORS UNDER RED / ORANGE / GREEN / WHITE CATEGORIES.

WHEREAS, under section 16 (2)(b) of the Water (Prevention and Control of Pollution) Act, 1974 and under Section 16 (2)(c) of the Air (Prevention & Control of Pollution) Act, 1981, one of the functions of the Central Pollution Control Board (CPCB), constituted under the Water (Prevention and Control of Pollution) Act, 1974, is to coordinate activities of the State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs); and

WHEREAS, under section 16 (2)(c) of the Water (Prevention and Control of Pollution) Act, 1974 and under Section 16 (2)(d) of the Air (Prevention & Control of Pollution) Act, 1981, one of the functions of the CPCB is to provide technical assistance and guidance to SPCBs and PCCs; and

WHEREAS, it was brought to the notice of CPCB, that different SPCBs /PCCs were following different criteria for classification of industrial sectors under Red/Orange/ Green category and that classification was being used by the SPCBs/PCCs for grant of consents to industries and for Inventorization / surveillance of industries.

WHEREAS, the issue regarding classification of industries was deliberated upon in the 56th Conference of Chairmen & Member Secretaries of CPCB & SPCBs/PCCs held on August 31, 2010 and a working group comprising of representatives from SPCBs & CPCB was constituted to prepare a consolidated list of industrial sectors falling under Red/Orange/Green category to bring uniformity in classification of industrial sectors across the country;

WHEREAS, the report prepared by the Working Group was discussed in the 57th Conference of Chairmen & Member Secretaries of CPCB& SPCBs/PCCs held in Delhi on September 15, 2011, wherein some modifications were proposed;

WHEREAS, the final report of the working group was prepared, incorporating the suggestions/observations made in the 57th Conference of Chairmen and Member Secretaries of CPCB & SPCBs/PCCs and in exercise of the powers delegated to the Chairman, CPCB under Section 18(1)(b) of the Water Act, 1974, following directions were issued for compliance to all SPCBs/PCCs to maintain uniformity in categorization of industries as red, orange and green as per list finalized by CPCB, which identified 85 types of industrial sectors as 'Red', 73 industrial sectors as 'Orange' and 86 sectors as 'Green':

a). To maintain uniformity in categorization of industries under Red/ Orange/Green category, the SPCBs /PCCs shall adopt the list as finalized by CPCB based on the recommendations of that Working Group for grant of Consent, inventorization of industries under Red, Orange and Green categories and other related activities.

(b). The SPCBs/PCCs shall revise the list of Red, Orange and Green categories of industries operating in their jurisdiction based on the criteria specified in the final report of that Working Group and submit the same to CPCB within 90 days in hard copy as well as soft copy;

WHEREAS, later-on, it was observed that the process of categorization thus far was primarily based on the size of the industries and consumption of resources and pollution due to discharge of emissions and effluents and its likely impact on health was not considered as primary criteria;

WHEREAS, there have been proposals from the SPCBs / PCCs and industrial associations for categorization of the industrial sectors in a more pragmatic manner. The issue was discussed during the national level conference of the Environment Ministers of the States, held in New Delhi during April 06-07, 2015 and also during the Conference of the Chairmen and Member Secretaries of CPCB and SPCBs/PCCs held in New Delhi on April 08, 2015. Accordingly, a 'Working Group' comprising of the Members from Central Pollution Control Board and State Pollution Control Boards representing the States of Andhra Pradesh, Punjab, Tamilnadu, West Bengal, Madhya Pradesh and Maharashtra, was constituted to revisit the criteria of categorization of industries and suggest rationale based on pollution potential for categorization of industrial sectors and adopting it for implementation of pollution control plan;

WHEREAS, the Working Group has developed the criteria of categorization of industrial sectors based on the concept of Pollution Index which is a function of the emissions (air pollutants), effluents (water pollutants), hazardous wastes generated and consumption of resources. For this purpose the references are taken from the the Water (Prevention and Control

of Pollution) Cess (Amendment) Act, 2003, Standards so far prescribed for various pollutants under Environment (Protection) Act, 1986 and Doon Valley Notification, 1989 issued by MoEFCC. The Pollution Index (PI) of any industrial sector is a number from 0 to 100 and the increasing value of PI denotes the increasing degree of pollution load from the industrial sector;

WHEREAS , based on the series of consultations with SPCBs, different Government / Non-government Institutions including industries and MoEFCC , the following criteria on 'Range of Pollution Index 'for the purpose of categorization of industrial sectors has been finalized:

- Industrial Sectors having Pollution Index score of 60 and above – Red category
- Industrial Sectors having Pollution Index score of 41 to 59 -Orange category
- Industrial Sectors having Pollution Index score of 21 to 40 -Green category
- Industrial Sectors having Pollution Index score incl. & upto 20 -White category

WHEREAS, based on the revised criteria, the 'Final Report on Revised Categorization of Industrial Sectors under Red/Orange/Green/White' has been evolved. The 'Categorization' is based on the relative pollution potential of the industrial sectors and grouping of the industrial sectors based on the use of raw materials, manufacturing process adopted and pollutants likely to be generated;

WHEREAS, based on relative Pollution Index, the number of industries in various categories are as under :

i. The Red category of industrial sectors: 60
ii. The Orange category of industrial sectors: 83
iii. The Green category of industrial sectors: 63 and
iv. The Newly introduced White category: 36

WHEREAS, there shall be no necessity of obtaining the Consent to Operate" for White category of industries and an intimation to concerned SPCB / PCC shall suffice;

WHEREAS, the purpose of categorization is to ensure that the industry is established in a manner consistent with the environmental objectives and to prompt industrial sectors to adopt cleaner technologies, ultimately resulting in generation of no or minimum pollutants.

WHEREAS the new categorization system shall also facilitate in self-assessment by industries;

Now, therefore, in exercise of the powers delegated to the Chairman, CPCB under Section 18(1)(b) of the Water (Prevention & Control of Pollution) Act, 1974 and Section 18(1)(b) of the Air (Prevention & Control of Pollution), Act , 1981 the earlier Directions issued in June 2012 in the context of categorisation of industries as Red, Orange & Green are withdrawn with immediate effect and following **'Directions'** are hereby issued for compliance by all SPCBs and PCCs :

1. That the SPCBs and PCCs shall adopt the Revised Criteria of categorization of industrial sectors as detailed in table nos. F1, F2, F3 and F4 and Revised Lists of Red, Orange, Green and White categories of industrial sectors, presented at table no. G2, G3, G4 and G5 respectively, in the 'Final Report' as attached herewith immediately.
2. That all pending applications for consideration of 'Consent to Establish' and 'Consent to Operate' and future such applications shall be processed as per revised criteria.
3. That the SPCBs and PCCs will provide the list of industries identified in each category existing in the State which have been considered for grant of consents. SPCBs/PCCs will forward the list of such industries before 31.05.2016 and the same will be uploaded on the websites of respective SPCB/PCC.

4. That the 'Revised Lists of Red, Orange, Green and White category of industrial sectors' shall be used by the SPCBs and PCCs for Consent Management and inventorization of industries under Red, Orange ,Green and White categories. Siting of industries shall be only in conforming areas. SPCBs / PCCs shall evolve sector specific plans for control of pollution and industrial surveillance for verifying compliance.

5. That the SPCBs and PCCs shall revise /prepare the inventory of Red, Orange, Green and White categories of industries operating in their jurisdiction based on the revised criteria specified in the Final Report and submit the same to CPCB within 90 days i.e., before 30.05.2016 in hard copy as well as soft copy.

6. That the listed category of industries or those identified later-on under different categories shall not be linked to sanction of loan /finance or bank proceedings.

7. That any further addition of any new or left-over industrial sector and their categorization which is not listed in the revised list of Red, Orange, Green and White industrial sectors, shall be done at the level of concerned SPCB /PCC following revised criteria & guidelines as detailed in the attached document and no concurrence of CPCB shall normally be required. It is further clarified that while categorizing the industries, fractional numbers shall be rounded off to nearest integer.

The SPCBs/PCCs shall acknowledge the receipt of directions and submit the 'Action Taken Report' in compliance with these directions to CPCB before 15.04.2016.

(Arun Kumar Mehta)
Chairman
7/3/16

Copy to:

1. The Chief Secretary of all the States and UTs
2. The Secretary ,
   Ministry of Micro, Small and Medium Entrepreneurs
   Udyog Bhawan, Rafi Marg, New Delhi - 110 011
3. The Secretary ,
   Ministry of Heavy Industries
   Udyog Bhawan, Rafi Marg, New Delhi - 110 011
4. The Secretary,
   Ministry of New and Renewable Energy
   Block-14, CGO Complex,
   Lodhi Road,New Delhi-110 003,
5. The Advisor(CP Division)
   Ministry of Environment ,Forests and Climate Change
   Indira Paryavaran Bhawan
   Jor Bagh Road, New Delhi - 110 003
6. All Zonal Offices of CPCB

(A.B. Akolkar) 3.3.16
Member Secretary

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Final Document

on

Revised

Classification

of

Industrial Sectors

Under

Red, Orange, Green and White Categories

(February 29, 2016)

Central Pollution Control Board

Delhi

Executive Summary

Categorization of Industrial Sectors under Red, Orange, Green and White Category

The Ministry of Environment, Forest and Climate Change (MoEFCC) had brought out notifications in 1989, with the purpose of prohibition/ restriction of operations of certain industries to protect ecologically sensitive Doon Valley. The notification introduced the concept of categorization of industries as " Red", "Orange "and "Green" with the purpose of facilitating decisions related to location of these industries. Subsequently, the application of this concept was extended in other parts of the country not only for the purpose of location of industries, but also for the purpose of Consent management and formulation of norms related to surveillance / inspection of industries.

The concept of categorization of industries continued to evolve and as different State Pollution Control Boards interpreted it differently, a need arose to bring about necessary uniformity in its application across the country. In order to harmonize the 'Criteria of categorization', Directions were issued by CPCB under Section 18(1)(b) of the Water (Prevention & Control of Pollution) , Act, 1974 to all SPCBs/PCCs to maintain uniformity in categorization of industries as red, green and orange as per list finalized by CPCB, which identified 85 types of industrial sectors as 'Red', 73 industrial sectors as 'Orange' and 86 sectors as 'Green'.

The process of categorization thus far was primarily based on the size of the industries and consumption of resources. The pollution due to discharge of emissions & effluents and its likely impact on health was not considered as primary criteria. There was demand from the SPCBs / PCCs and industrial associations for categorization of the industrial sectors in a more transparent manner. Accordingly, the issue was discussed thoroughly during the national level conference of the Environment Ministers of the States, held in New Delhi during April 06-07, 2015 and a 'Working Group' comprising of the members from CPCB, APPCB, TNPCB, WBPCB, PPCB, MPPCB and Maharashtra PCB is constituted to revisit the criteria of categorization of industries and recommend measures for making the system transparent and rational.

The Working Group has developed the criteria of categorization of industrial sectors based on the Pollution Index which is a function of the emissions (air pollutants), effluents (water pollutants), hazardous wastes generated and consumption of resources. For this purpose the references are taken from the the Water (Prevention and Control of Pollution) Cess (Amendment) Act, 2003, Standards so far prescribed for various pollutants under Environment (Protection) Act , 1986 and Doon Valley Notification, 1989 issued by MoEFCC. The Pollution Index PI of any industrial sector is a number from 0 to 100 and the increasing value of PI denotes the increasing degree of pollution load from the industrial sector. Based on the series of brain storming sessions among CPCB, SPCBs and MoEFCC , the following criteria on 'Range of Pollution Index 'for the purpose of categorization of industrial sectors is finalized.

- Industrial Sectors having Pollution Index score of 60 and above – Red category
- Industrial Sectors having Pollution Index score of 41 to 59 –Orange category
- Industrial Sectors having Pollution Index score of 21 to 40 –Green category
- Industrial Sectors having Pollution Index score incl.&upto 20 -White category

The newly introduced White category of industries pertains to those industrial sectors which are practically non-polluting such as Biscuit trays etc. from rolled PVC sheet (using automatic vacuum forming machines), Cotton and woolen hosiers making (Dry process only without any dying/washing operation), Electric lamp (bulb) and CFL manufacturing by assembling only, Scientific and mathematical instrument manufacturing, Solar power generation through photovoltaic cell, wind power and mini hydel power (less than 25 MW).

The salient features of the 'Re-categorization' Exercise are as follows:

- Due importance has been given to relative pollution potential of the industrial sectors based on scientific criteria . Further, wherever possible, splitting of the industrial sectors is also considered based on the use of raw materials, manufacturing process adopted and in-turn pollutants expected to be generated.
- The Red category of industrial sectors would be 60.
- The Orange category of industrial sectors would be 83.
- The Green category of industrial sectors would be 63.
- Newly introduced White category contains 36 industrial sectors which are practically non-polluting.
- There shall be no necessity of obtaining the Consent to Operate" for White category of industries. An intimation to concerned SPCB / PCC shall suffice.
- No Red category of industries shall normally be permitted in the ecologically fragile area / protected area.

The purpose of categorization is to ensure that the industry is established in a manner which is consistent with the environmental objectives. The new criteria will prompt industrial sectors willing to adopt cleaner technologies, ultimately resulting in generation of fewer pollutants. Another feature of the new categorization system lies in facilitating self-assessment by industries as the subjectivity of earlier assessment has been eliminated. This 'Re-categorization' is a part of the efforts, policies and objective of present government to create a clean & transparent working environment in the country and promote the Ease of Doing Business.

Other similar efforts include installation of Continuous Online Emissions/ Effluent Monitoring Systems in the polluting industries, Revisiting of the CEPI (Comprehensive Environment Pollution Index) concept for assessment of polluted industrial clusters, Revision of existing industrial Emission/Effluent discharge standards, initiation of special drive on pollution control activities in Ganga River basin and many more in coming future.

Revised Criteria of Categorization of Industries

"Securing industrial pollution control in accordance with the Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981 by linking with categorization of industries, consent management and vigilance – 'In context of Red, Orange, Green and White categories of industries"

A: Genesis of Categorization:

- The Ministry of Environment, Forest and Climate Change (MoEFCC) had brought out notifications, which inter-alia refers to Prohibition/ Restriction on operation of industries to protect ecologically sensitive areas or areas of specific importance. This has for the first time brought the concept of categorization of industries to" Red", "Orange "and "Green" and restrict their operation in certain areas of importance. Therefore, it is at-once interpreted that Red, Orange and Green categorization is linked with location specific needs.
- The notification of MoEF was first brought on 2nd February,1989 in case of "Restriction on location of industries, mining operations and other developmental activities in Doon Valley in "Uttarakhand" and thereafter another notification on 24th February 1999 regarding restriction on the setting up of industries in Dahanu Taluka in Maharashtra. The categorization had been made mainly on the basis of size of the industries, man power and consumption of resources.
- However, in other parts of the country, there have been variations in context to the classification of industries under Red, Orange and Green categories. SPCBs / PCCs were following their own criteria in different States thereby creating confusion.
- In order to harmonize the 'Criteria of categorization', a 'Working Group' was formed as per resolution passed during the 57th Conference of the Chairmen & Member Secretaries of CPCB and SPCBs. Based on the recommendations of the Working Group, Directions dated 4/6/2012 under Section 18(1)(b) of the Water

(Prevention & Control of Pollution) , Act, 1974 were issued to all SPCBs/PCCs with the effects to maintain uniformity in categorization of industries as red, green and orange as per list finalized by the Working Group. This indicative list included 85 types of industrial sectors as 'Red', 73 industrial sectors as 'Orange' and 86 sectors as 'Green'. However, these identified categories have not been assigned with scores as per existing criteria/ or any new criteria

B: Categorization criteria used by SPCBs/PCCs:

SPCBs and PCCs use the criteria of Red, Orange and Green categories for consent management and vigilance purposes for carrying out inspections to verify compliance to the stipulated standards. However the above categorization do not emphasize on sector-specific plan for control of pollution in accordance with priority based on pollution index.

C: Gap in the process:

1. The categorization has been made mainly on the basis of size of the industries and consumption of resources. The pollution due to discharge of emissions & effluents and its impact on health was not considered as primary criteria.
2. Categorization was on random basis, no scoring system was adopted.

D: Resolutions made during National Level Conferences

The issue was discussed thoroughly during the following national level conferences held in New Delhi:

- Conference of the Environment Ministers of Central Government and State Governments during April 06-07, 2015
- 59th Conference of Chairmen & Member Secretaries of Pollution Control Boards / Pollution Control Committees held on April 08, 2015

Accordingly following resolutions were made during the Conferences:

1. *A 'Working Group' comprising of the members from CPCB, APPCB, TNPCB, WBPCB, PPCB, MPPCB and Maharashtra PCB is constituted.*
2. *This WG shall revisit the categorization of industries that is based on pollution index criteria & environmental issues such as generation of emission, effluent and hazardous wastes.*
3. *The categorization will be done on the basis of composite score (0-100 marks) of Pollution Index given in accordance with the following weightage.*

Air Pollution Score based on parameters namely PM, CO, NOx, SOx, HMs , Benzene, Ammonia and other toxic parameters relevant to the industry.	*40 Marks*
Water Pollution Score based on parameters namely pH, TSS, NH_3-N, BOD, Phenol and other toxic pollutants relevant to the industry.	*40 Marks*
Hazardous wastes (land fillable, incinerable, recyclable) as generated by the industry.	*20 Marks*
Note : • *Parameters to be decided on the basis of the nature of the wastes generating from the industrial sector.* • *Industries having only either water pollution or air pollution, the score will be normalized wrt 100.*	

4. *Based on the score of the Pollution Index, following categorization be made :*
   - *Type of industries, if scores 60 and above be categorized as Red*
   - *Type of industries, if scores from 30 to 59 be categorized as Orange*
   - *Type of industries, if scores from 15 to 29 be categorized as Green*
   - *Type of industries, if less than 15 be categorized as White or non-polluting industry.*
5. *SPCBs/PCCs may issue consent to the industries*
   - *Red category of industries for 5 years.*
   - *Orange category of industries for 10 years.*
   - *Green category of industries for 15 years.*
   - *No necessity of consent for non-polluting industries.*
6. *No red categories of industries will be permitted to establish in eco-sensitive areas and protected areas.*

E: Follow-up Actions made on the Resolutions :-

- Accordingly, a Committee comprising the Chairmen of CPCB, APPCB, TNPCB, MPPCB, MPCB, PPCB, WBPCB and MS, CPCB was constituted vide CPCB OM dated

23.04.2015 to review & classify industrial sectors into different categories based on criteria of respective pollution potential.

- The categorization is made on the basis of following:
  - Quality of emissions (air pollutants) generated
  - Quality of effluents (water pollutants) generated
  - Types of hazardous wastes generated
  - Consumption of resources

- Reference is taken from the following :
  - The Water (Prevention and Control of Pollution) Cess Act, 1977
  - Standards so far prescribed for various pollutants under the Environment (Protection) Act , 1986
  - Doon Valley Notification, 1989 issued by MoEF.

F : Scoring Methodology :

The details on the scoring methodology in respect of the aforesaid 3 components is presented in the following tables F-1 to F-4 .

Table F-1 : Water Pollution Scoring Methodology

Sl. No.	Activity / Types of Discharges	Score
Part A : Score W1 : Score based on types of expected criteria water-pollutants present in industrial processes waste waters. **Maximum of the following seven categories is to be taken.**		
W11	Waste-water which is polluted and the pollutants are - • not easily biodegradable (very high strength waste waters having BOD > 5000 mg/l); or • toxic; or • both toxic and not easily biodegradable. (Presence of criteria water pollutants having prescribed standard limits up-to 10 mg/l or having BOD > 5000 mg/l). For details appendix 1 may be referred)	30
W12	Non-toxic high strength polluted waste-water having BOD in the range of 1000-5000 mg/l and the pollutants are biodegradable. (Presence of criteria water pollutants having prescribed standard limits from 11 mg/l to 250 mg/l and having BOD strength in the range of 1000-5000 mg/l) . For details appendix 1 may be referred)	25
W13	Non toxic- polluted waste-water having BOD below 1000 mg/l and the pollutants are easily biodegradable. (Presence of criteria water pollutants having prescribed standard limits from 11mg/l to 250 mg/l and having BOD strength below 1000 mg/l) . For details appendix 1 may be referred)	20
W14	Waste-water generated from the chemical processes and which is polluted due to presence of high TDS (total dissolved solids) of inorganic nature. (Presence of criteria water pollutants having prescribed standard limits more than 250 mg/l. For details appendix 1 may be referred)	15
W15	Waste-water generated from the physical unit operations / processes and which is polluted due to presence of TDS (total dissolved solids) of inorganic nature and of natural origin like fresh-water RO rejects, boiler blow-downs, brine solution rejects etc. (Presence of criteria water pollutants having prescribed standard limits more than 250 mg/l. For details appendix 1 may be referred)	12
W16	Non-toxic polluted waste-water from those units which are: • Having the overall waste-water generation less than 10 KLD and • The pollutants are easily bio-degradable having BOD below 200 mg/l which can be easily treated in a single stage ASP (activated	12

	sludge process) based Effluent Treatment Plant. Note : This is a special category and is applicable to only those units having over-all liquid waste generation less than 10 KLD with low strength organic load.	
W17	Waste-water from cooling towers and cooling-re-circulation processes	10
Part B : Score W2 : Score based on huge discharges of any kind (Penalty Clause)		
W2	Industry having overall liquid waste generation of 100 KLD or more including industrial & domestic waste-water.	10
Overall Water Pollution Score W = W1+W2		

- **Water Pollutants covered under Group W11:**

  - ✓ Free available Chlorine , Total residual chlorine, Fluoride (as F), Sulphide (as S), Free Ammonical Nitrogen, Dissolved phosphates (as P), Free ammonia (as NH3), Nitrate Nitrogen, Mercury (As Hg), Selenium (as Se), Hexa-valent chromium (as Cr + 6), Lead (as Pb), Tin , Vanadium (as V), Cadmium (as Cd), Manganese (as Mn), Total chromium (as Cr), Copper (as Cu), Iron (as Fe), Nickel (as Ni), Zinc (as Zn), Benzene, Arsenic (as As), Benzo-a-pyrene, Cyanide (as CN), Phenolic compounds (as C_6H_5OH) , Adsorbable Organic Halogens (AOX), Boron and /or
  - ✓ BOD strength of waste water > 5000 mg/l

- **Water Pollutants covered under Group W12:**

  - ✓ Sodium Absorption Ratio (SAR) , Biochemical oxygen demand (3 days at 27°C), Total Kjeldahl nitrogen (TKN), Ammonical nitrogen (as N), Suspended solids, Total nitrogen (as N), Chemical oxygen demand, Oils & grease and
  - ✓ BOD strength of waste water is in the range of 1000-5000 mg/l

- **Water Pollutants covered under Group W13:**

  - ✓ Sodium Absorption Ratio (SAR), Biochemical oxygen demand (3 days at 27°C), Total Kjeldahl nitrogen (TKN), Ammonical nitrogen (as N), Suspended solids, Total nitrogen (as N), Chemical oxygen demand and
  - ✓ BOD strength of waste water is below 1000 mg/l

- **Water Pollutants covered under Group W14 and W15:**

  Chlorides as Cl, Colour , Total dissolved solids (TDS - Inorganic)

- **Water Pollutants covered under Group W16**

  - ✓ BOD strength of waste water is below 200 mg/l and overall discharge is less than 10 KLD.

Table F-2 : Air Pollution Score

Sl. No.	Air Pollutants Group	'Range of Prescribed Standard' of criteria pollutants	Marks
Part 1 : Score A1 = Score based on types of expected criteria Air Pollutants present in the emissions . Maximum of the following seven categories is to be taken. For details appendix 2 may be referred.			
1	Group A1A	Presence of criteria air pollutants having prescribed standard limits up-to 2 mg/Nm3	30
2	Group A1B	Presence of criteria air pollutants having prescribed standard from 3 to10 mg/Nm3	25
3	Group A1C	Presence of criteria air pollutants having prescribed standard from 11 to 50 mg/Nm3	20
4	Group A1D	Presence of criteria air pollutants having prescribed standard from 51 to 250 mg/Nm3	15
5	Group A1E	Presence of criteria air pollutants having prescribed standard from 251mg/Nm3 & above.	10
6	Group A1F	• Generation of fugitive emissions of Particulate Matters which are: o Not generated as a result of combustion of any kind of fossil-fuel. o Generated due to handling / processing of materials without involving the use of any kind of chemicals. o Which can be easily contained /controlled with simple conventional methods	10
7	Group A1G	• Generation of Odours which are : o Generated due to application of binding gums / cements /adhesives /enamels o Which can be easily contained /controlled with simple conventional methods	10
Part 2 : Score A2 = Score based on consumption of fuels and technologies required for air pollution control :			
6	Group A2F1	• All such industries in which the daily consumption of coal/fuel is more than 24 MT/day and the particular (Particulate/gaseous/process) emissions from which can be controlled only with high level equipments / technology like ESPs, Bag House Filters, High Efficiency chemical wet scrubbers etc.	10
7	Group A2F2	• All such industries in which the daily consumption of coal/fuel is from 12 MT/day to 24 MT/day and the particular (Particulate/gaseous/process) emissions from which can be controlled with suitable proven technology.	5
Overall Air Pollution Score –A = A1 + A2			

- Air pollutants covered under Group A1A:

  Cd+Th, Dioxins & Furans, Mercury, Asbestos

- Air Pollutants covered under Group A1B:

  HF, Nickel+ Vanadium, HBr, Manganese, Lead, H2S, P2O5 as H3PO4

- Air Pollutants covered under Group A1C:

  Chlorine, Pesticide compounds, CH3Cl, TOC, Total Fluoride, Hydrocarbons, NH3, HCL vapour & Mist, H2SO4 Mist, SO2

- Air Pollutants covered under Group A1D:

  CO, PM, CO, NOx

- Air Pollutants covered under Group A1E:

  NOx with liquid-fuel, SO2 with liquid-fuel

Table F-3: Hazardous Waste Generation Score

Sl.No.	**Types of Hazardous Waste Generated as** per Schedule 1 / Schedule 2 of Hazardous Waste (Management, Handling & Trans-boundary Movement) Rules , 2008 . **Maximum of the following four categories is to be taken**	**Score**
HW1	• Land disposable HW which require special care & treatment for stabilization before disposal.	20
HW2	• Incinerable HW	15
HW3	• Land disposable HW which doesn't require treatment & stabilization before disposal. • High volume low effect wastes such as fly-ash, phspho-gypsum, red-mud, slags from pyro-metallurgical operations, mine tailings and ore beneficiation rejects)	10
HW4	• Recyclable HW, which are easily recyclable with proven technologies.	10

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Table F-4 : Calculation Sheet

Industrial Sector - .....

1. Water Pollution Score (W)			
Scores	Waste Water Category	Value	
Score on W1			
Score on W2			
Water Pollution Score = W1+W2			
2. Air Pollution Score (A)			
Scores	Air Pollutant Category	Value	
Score on A1			
Score on A2	-	-	
Air Pollution Score = A1+A2			
3. Hazardous Waste Score (HW)			
Score	HW Category	Value	
HW			
Grand Total = W + A + HW			

Note :

1. Any of the industrial sector having only either air pollution (A) or water pollution (W) , the score will be normalized to 100 as per the following formula –

   Normalized Score = {100 x W (or A)} / 40

2. Any of the industrial sector having air pollution (A) and water pollution (W) both but no hazardous waste generation (H) , the joint score of air & water pollution will be normalized to 100 as per the following formula –

   Normalized Score = {100 x (W+A)} / 80

3. Any of the industrial sector having air pollution (A) & hazardous waste generation (H) but no water pollution (W), the joint score of air pollution & hazardous waste generation will be normalized to 100 as per the following formula –

   Normalized Score = {100 x (A+H)} / 60

4. Any of the industrial sector having water pollution (W) and hazardous waste generation (H) but no air pollution (A), the joint score of water pollution & hazardous waste generation will be normalized to 100 as per the following formula –

   Normalized Score = {100 x (W+H)} / 60

G : Developments :

i. The existing Red (85 sectors) , Orange (73 sectors) and Green (86 sectors) i.e a total of 244 industrial sectors have been assessed as per the proposed formula by the Working Group. For this purpose, concerned Engineers / Scientists from the Member SPCBs were also involved & consulted during May 28-29, 2015.

ii. After careful examination and consideration of the suggestions of concerned stake-holders the "Draft Document on Revised Concept of Categorization of Industrial Sectors " was prepared by the Committee and circulated to all the SPCBs, PCCs and concerned Ministries for their information & comments. The ' Draft Document ' was uploaded on the website of CPCB also for information & comments of one & all.

iii. The matter was discussed during the 170th Board Meeting also and issues raised,by the Board Members pertaining to some of the industrial sectors were clarified.

iv. Responses were received from various concerned Ministries, SPCBs, Industrial Associations including individuals.

v. Based on the above, final meeting was convened by the Secretary , MoEFCC with CPCB and senior officers of MoEFCC on January 06, 2016 to resolve the issues appropriately and finalize the 'Re-categorization'. Accordingly , following modifications in the 'Range of Pollution Index 'for the purpose of categorization of industrial sectors were suggested :

- Industrial Sectors having Pollution Index score of 60 and above – Red category
- Industrial Sectors having Pollution Index score of 41 to 59 –Orange category
- Industrial Sectors having Pollution Index score of 21 to 40 –Green category
- Industrial Sectors having Pollution Index score incl.& upto 20 –White category

vi. Based on the final criteria as described in v above , the final categorization is as follows :

Category of Industrial Sector	Existing Categorization	Proposed (New) categorization
Red	85	60
Orange	73	83
Green	86	63
White	---	36
Total	244	242

vii. In the proposed categorization, some of the industrial sectors have been either deleted due to duplication or merged with similar type of sectors on account of same

characteristics of pollution generation. In a similar way, some of the industrial sectors are split into more sectors on account of variation in the raw materials / manufacturing process. As a result final totals of the existing and proposed categorization are different.

viii. The industrial sector which doesn't fall under any of the above four categories (Red, Orange, Green and White) , decision with regard to its categorization will be taken at the level of concerned SPCB/PCC by a committee headed by the Member Secretary , SPCB/PCC and comprising of two senior cadre Engineers / Scientists of the SPCB / PCC in accordance with the scoring-criteria specified in this document.

ix. The summary is presented in the following Table G-1 and final lists of Red, Orange, Green and White categories of industries are presented in Tables G-2, G-3, G-4 and G-5 respectively, which are self explanatory.

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Table G-1: Final Summary Table Red , Orange, Green and White Categories of Industries (16-01-16)

Sl No.	Original Categorization	Initial Nos.	Addition by Splitting into further classes	Deletion/ Shifting to foot-note due to vague term / Merger / other reasons	Re-categorization to Red	Re-categorization to Orange	Re-categorization to Green	Re-categorization to White	Check
		1	2	3	4	5	6	7	(1+2) = (3 to 7)
1	Red	85	11	7	60	26	3	Nil	96=96
2	Orange	73	2	3	Nil	51	19	2	75=75
3	Green	86	Nil	3+2=5	Nil	6	41	34	86=86
Final Categorization		244	13	15	60 (Red)	83 (Orange)	63 (Green)	36 (White)	257 =257 (Total categories including in foot-note)

Table G-2 : Final List of Red Category of Industrial Sectors

Sl No.	Orgnl Sl.No	Industry Sector	W1	W2	W	A1	A2	A	H	W+A+H	Revised Category	REMARKS
1.	38	Isolated storage of hazardous chemicals (as per schedule of manufacturing, storage of hazardous chemicals rules ,1989 as amended)									R-R	As per provisions of Rules, to be kept under Red category especially for safety purposes.
2.	4	Automobile Manufacturing (integrated facilities)	30	-	30	20	-	20	10	60	R-R	i. Such types of plants are having either one or combinations of polluting activities viz. washing, metal surface finishing operations, pickling, plating, electro-plating , phosphating, painting , heat treatment etc. ii. Some of such plants may outsource some /all of the polluting activities. In such cases, after thorough inspection of such units by concerned SPCB, re-categorization of the industry shall be made accordingly.
3.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Spent cleared metal catalyst containing copper,, Spent cleared metal catalyst containing zinc,,	30	-	30	20	-	20	10	60	R-R	All the three types of pollutants are expected.
4	44	Manufacturing of lubricating oils ,grease and petroleum based products	20	-	20	20	-	20	20	60	R-R	Generates all sorts of pollution.
5.	66 E	DG Set of capacity > 5 MVA	-	-	-	20	5	25	-	62.5	R-R	i. Mainly air polluting. ii. DG sets consume the diesel @ 0.21 litres/hr/KVA at full load. iii. Average running is taken @ 12 hrs / day although many of the DG sets run for more than this period.
6	33	Industrial carbon including electrodes and graphite blocks, activated carbon, carbon black	10	-	-	20	5	25	10	62.5	R-R	Mainly air polluting. Air pollution score is normalized to 100.

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7.	39	Lead acid battery manufacturing(excluding assembling and charging of lead-acid battery in micro scale)	10	-	10	25	-	25	10	62.5	R-R	i. Mainly air polluting. Air pollution scores are normalized to 100. ii. Lead Acid Battery manufacturing consists of various stages which broadly involve (after producing or receiving lead oxide): Paste Mixing , Grid Casting , Grid Pasting & Curing , Hydro-setting, parting & enveloping , Stacking, grouping & inter-cell welding , Formation. iii. Exposure of workmen to lead during all or any of the processes outlined above exceeds the prescribed standards if appropriate equipment in this respect is not installed at any Battery Manufacturing Unit. iv. All of the above processes, some more than others, involve release of lead particles or fumes into the environment. Pollution from the above processes can be grouped into two possible types, viz: (a) Lead Oxide becomes airborne and there is Particulate Pollution (b) Fumes are generated and there is Gaseous Pollution
8.	62	Phosphate rock processing plant	30	-	30	20	-	20	-	62.5	R-R	i. The separation of phosphate rock from impurities and non-phosphate materials for use in fertilizer manufacture consists of beneficiation, drying or calcining at some operations, and grinding. Phosphate rock from the mines is first sent to beneficiation units to separate sand and day and to remove impurities. Steps used in beneficiation depend on the type of rock. ii. The water & air pollution scores are normalized to 100.

9.	66	Power generation plant [except Wind and Solar renewable power plants of all capacities and Mini Hydel power plant of capacity <25MW]	10	-	10	15	10	25		62.5	R-R	1. Mainly air polluting. It uses a mixture of biomass (agro based) and coal (< 10 %) as a fuel. Almost, round the year operation. 2 . In case of DG sets of 5 MVA & more and emissions of SO2 will take place due to use of liquid fuel. Air pollution score will be =20 + 10 = 30, Normalized score will be 75. 3. In case of 'Waste to Energy Plants' , water will be used for cooling and air score will be - 30+10 = 40.
10.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Spent catalyst containing nickel, cadmium, Zinc, copper, arsenic, vanadium and cobalt,	30	-	30	25	-	25	10	65	R-R	All the three types of pollutants are expected.
11.	67	Processes involving chlorinated hydrocarbons	30	-	30	20	-	20	15	65	R-R	Chlorinated hydrocarbons are used in the manufacture of insecticides, pesticides and organo chloro pesticides. Effluents & emissions are toxic in nature.
12.	74	Sugar (excluding Khandsari)	20	10	30	15	10	25	10	65	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Sugar mills generate all sorts of pollution problems.
13	22	Fibre glass production and processing (excluding moulding)	-	-	-	20	-	20	20	67	R-R	i. The use of styrene in most methods of fiberglass production causes hazardous air pollution that is harmful to breathe at excessive levels. ii. It is mainly air polluting & HW generating industry. The air pollution & HW scores are normalized to 100. iii. In case of lead containing glass, the score of A1 will be 25 and final normalized score will be 75 and shall be categorized as Red.
14.	23	Fire crackers manufacturing and bulk storage facilities	-	-	-	20	-	20	20	67	R-R	i. This is the normalized score based on air pollution & HW generation. ii. Various hazardous chemicals are used in the manufacturing process. iii. These chemicals are namely Potassium Nitrate , Potassium per-chlorate, Barium Nitrate, Aluminium compounds, Copper Chloride etc.

												iv. These chemicals are highly hazardous and cause serious diseases among the workers. especially ability of blood to carry oxygen leading to headaches, methemoglobinemia and kidney problems , skin problems, thyroid metal fume etc.
15.	34	industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Dismantlers Recycling Plants -- Components of waste electrical and electronic assembles comprising accumulators and other batteries included on list A, mercury-switches, activated glass cullets from cathode-ray tubes and other activated glass and PCB-capacitors, or any other component contaminated with Schedule 2 constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in part C of this Schedule.	-	-	-	30	0	30	10	67	R-R	Mainly air polluting and hazardous waste generating. Air & HW pollution scores are jointly normalized to 100.
16.	47	Milk processes and dairy products(integrated project)	20	10	30	20	5	25	-	68.75	R-R	i. Water as well as air polluting due to use of boilers. ii. Water & air pollution scores are normalized to 100.
17.	63	Phosphorous and its compounds	30	-	30	25	-	25	-	68.75	R-R	Water pollution & air pollution containing compounds of phosphorous are expected
18	61	Pulp & Paper (waste paper based without bleaching process to manufacture Kraft paper)	20	10	30	15	10	25	0	68.75	R-R	Mainly water & air polluting . Water & air pollution scores are normalized to 100.
19.	13	Coke making , liquefaction, coal tar distillation or fuel gas making	30	-	30	20	-	20	20	70	R-R	It is a kind of petrochemical industry.

20.	41	Manufacturing of explosives, detonators, fuses including management and handling activities	30	-	30	20	-	20	20	70	R-R	i. Explosives manufacture and use contribute some measure of hazardous waste to the environment. ii. Nitroglycerin produces several toxic byproducts such as acids, caustics, and oils contaminated with heavy metals. These must be disposed of properly by neutralization or stabilization and transported to a hazardous waste landfill. iii. The use of explosives creates large amounts of dust and particulate from the explosion, and, in some cases, releases asbestos, **lead,** and other hazardous materials into the atmosphere.
21.	45	Manufacturing of paints varnishes, pigments and intermediate (excluding blending/mixing)	30	-	30	25	-	25	15	70	R-R	i. The process may cause considerable emissions of volatile organic compounds (VOC). VOC contribute to the creation of ozone in the lower layers of the atmosphere (photochemical air pollution) and can present danger to health. ii. Dust and odour may also be a problem. iii. Washing of vessels will contribute waste-waters. iv. Large quantity of HWs are also produced.
22.	56	Organic Chemicals manufacturing	30	-	30	20	-	50	20	70	R-R	Such types of industrial sectors generate all sorts of pollution.
23.	1	Airports and Commercial Air Strips	20	10	30	-	-	-	10	75	R-R	i. The Airports are generating mainly the waste-waters. ii. This is the water pollution normalized score for airports having discharge more than 100 KLD. iii. The airports / strips having discharge less than 100 KLD will have score of 50 and hence orange category. iv. If the score is normalized wrt water + HW both, then all the airports will come under Orange category (score - 58.33).
24.	3	Asbestos and asbestos based industries	-	-	-	30	-	30	10	75	R-R	i. This is mainly air polluting industry. ii. Final score is based on air pollution score only. iii. Asbestos is cardinogenic and banned in many countries.
25.	5	Basic chemicals and electro chemicals and its derivatives including manufacturing of acid	30	-	30	-	-	-	10	75	R-R	i. Standards prescribed for Inorganic Chemicals are adopted. ii. It is mainly water polluting industry having effluents which are toxic and not easily biodegradable.

												iii. Water pollution score normalized to 100 is undertaken. iv. The earlier Red category industrial sector namely "Hydrocyanic acid and its derivatives " is also merged under this industrial sector.
26.	7	Cement	-	-	-	20	10	30	-	75	R-R	This is mainly air polluting industry & hence normalized air pollution score.
27.	9	Chlorates, per-chlorates & peroxides	30	-	30	-	-	-	-	75	R-R	i. It is mainly water polluting industry having effluents which are toxic and not easily biodegradable. ii. Water pollution score normalized to 100 is undertaken.
28.	10	Chlorine, fluorine, bromine, iodine and their compounds	30	-	30	-	-	-	-	75	R-R	i. It is mainly water polluting industry having effluents which are toxic and not easily biodegradable. ii. Water pollution score normalized to 100 is undertaken.
29.	16	Dyes and Dye- Intermediates	30	-	30	20	5	25	20	75	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution.
30.	26	Health-care Establishment (as defined in BMW Rules)	20	10	30	-	-	-	-	75	R-R	i. Mainly water polluting. ii. The water pollution score is normalized to 100 & valid for Hospitals having total waste-water generation > 100 KLD. iii. The hospitals with incinerator will be categorized as Red irrespective of the quantity of the waste-water generation. iv. The hospitals having total waste-water generation less than 100 KLD and without incinerator, the normalized water pollution score will be 50 and will be categorized as Orange category.
31.	29	Hotels having overall waste-water generation @ 100 KLD and more.	20	10	30	15	-	15	-	75	R-R	i. Mainly water polluting. Small boiler may be installed. ii. The water pollution score is normalized to 100 & valid for Hotels having waste-water generation > 100 KLD. iii. The hotels having more than 20 rooms and waste-water generation less than 100 KLD and having a coal / oil fired boiler , the pollution score will be 35/40 & are categorized as Orange. iv. The hotels having more than 20 rooms and waste-water generation less than 10 KLD and

												having no-boiler & no hazardous waste generation, the pollution score will be 20 & are categorized as Green.
32.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Lead acid battery plates and other lead scrap/ashes/residues not covered under Batteries (Management and Handling) Rules, 2001. [* Battery scrap, namely: Lead battery plates covered by ISRI, Code word "Rails" Battery lugs covered by ISRI, Code word "Rakes". Scrap drained/dry while intact, lead batteries covered by ISRi, Code word "rains".	30	-	30	25	--	25	20	75	R-R	All the three types of pollutants are generated.
33.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M. H& TBM) rules, 2008 - items namely - Integrated Recycling Plants -- Components of waste electrical and electronic assembles comprising accumulators and other batteries induded on list A, mercury-switches, activated glass cullets from cathode-ray tubes and other activated glass and PCB-capacitors, or any other component contaminated with Schedule 2 constituents (e.g. cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they exhibit hazard characteristics indicated in part C of this Schedule.	30	-	30	25	-	25	20	75	R-R	All the three types of pollutants are expected.
34.	43	Manufacturing of glue and gelatin	30	10	40	20	-	20	-	75	R-R	Highly water polluting & obnoxious air polluting.
35.	49	Mining and ore beneficiation	30	10	40	15	5	20	-	75	R-R	Both air and water polluting. Score is normalized with air & water pollution.

36.	52	Nuclear power plant	10	-	10	30	-	30	15	75	R-R	i. Mainly air polluting due to incinerator. Others - cooling water. ii. Air pollution score is normalized to 100.
37.	58	Pesticides (technical) (excluding formulation)	30	-	30	25	-	25	20	75	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution.
38.	64	Photographic film and its chemicals	30	-	30	-	-	-	-	75	R-R	i. Silver salts and other chemicals are used in preparation. Slight quantity of effluents is generated. ii. Water pollution scores are normalized to 100.
39.	68	Railway locomotive work shop/Integrated road transport workshop/Authorized service centers	20	10	30	-	-	-	10	75	R-R	i. Mainly water polluting industry. Water is used in the washing of locomotives, road transport vehicles during servicing. ii. This score is valid for those Centers having discharge more than 100 KLD. iii. Service Centers having waste-water generation < 100 KLD, the normalized score will be =(100*20)/40= 50.
40.	84	Yarn / Textile processing involving any effluent/emission generating processes including bleaching, dyeing, printing and colouring	30	10	40	15	-	15	20	75	R-R	In this sector all sorts of pollution are generated.
41.	8	Chlor Alkali	30	10	40	20	10	30	10	80	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Chlor-alkali units are having different section like NaOH, Cl2, SBP etc which are having toxic effluents. Additionally, fuel consumption is also on higher-side.
42	70	Ship Breaking Industries	30	-	30	30	-	30	20	80	R-R	i. The ship-breaking industry creates numerous hazards for the coastal and marine environment. ii. Ship-breaking releases a large number of dangerous pollutants, including toxic waste, oil, poly-chlorinated biphenyls, and heavy metals, into the waters and sea bed. iii. While most of the oil is removed before a ship is scrapped, sand used to mop up the remaining oil is thrown into the sea. High concentrations of oil and grease are then found in the coastal waters, choking marine life.

												iv. Solid waste strewn on the shore, 45 tonnes on any given day according to a study by the Central Pollution Control Board, also finds its way into the sea. v. Adding to the stress on coastal waters, the organic load from the thousands of workers living in cramped conditions with little or no sanitary facilities results in unacceptably high levels of BOD.
43.	53	Oil and gas extraction including CBM (offshore & on-shore extraction through drilling wells)	30	-	30	-	-	-	20	83	R-R	i. Mainly water polluting & hazardous waste generating. ii. The water pollution & HW generation scores are normalized to 100.
44.	36	Industry or process involving metal surface treatment or process such as pickling/ electroplating/paint stripping/ heat treatment using cyanide bath/ phosphating or finishing and anodizing / enamellings/ galvanizing	30	-	30	-	-	-	20	83	R-R	Mainly water polluting & toxic hazardous waste generating industry. Scores are normalized to 100.
45.	80	Tanneries	30	-	30	-	-	-	20	83	R-R	Mainly water polluting & hazardous waste generating industry. Scores are normalized to 100.
46.	65	Ports and harbour, jetties and dredging operations	30	10	40	15	10	25	20	85	R-R	This category contain all sorts of pollution.
47.	77	Synthetic fibers induding rayon ,tyre cord, polyester filament yarn	30	10	40	25	10	35	10	85	R-R	This sector generates all sorts of pollution problems.
48.	81	Thermal Power Plants	30	10	40	20	10	30	15	85	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. TPP generate all sorts of pollution problems.
49.	71	Slaughter house (as per notification S.O.270(E)dated 26.03.2001)and meat processing industries, bone mill, processing of animal horn, hoofs and other body parts	25	10	35	-	-	-	-	87.5	R-R	Mainly water polluting and obnoxious odour generating industry. The water pollution score is normalized to 100
50.	2	Aluminium Smelter	30	10	40	20	10	30	20	90	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. This sector is generating all sorts of pollution i.e. air, water and HW.
51.	12	Copper Smelter	30	10	40	20	10	30	20	90	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Integrated Copper Smelters contain all sorts of

												pollution.
52.	20	Fertilizer (basic) (excluding formulation)	30	10	40	20	10	30	20	90	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Generates all sorts of pollution.
53.	37	Iron & Steel (involving processing from ore/ integrated steel plants) and or Sponge Iron units	30	10	40	20	10	30	20	90	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution.
54.	61	Pulp & Paper (waste paper based units with bleaching process to manufacture writing & printing paper)	25	10	35	25	10	35	20	90	R-R	Waste paper based Pulp & Paper mills with bleaching process generate all sorts of pollution.
55.	85	Zinc Smelter	30	10	40	20	10	30	20	90	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Integrated Zinc smelter generates all sorts of pollution problems.
56.	55	Oil Refinery (mineral Oil or Petro Refineries)	30	10	40	25	10	35	20	95	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution.
57.	59	Petrochemicals Manufacturing (including processing of Emulsions of oil and water)	30	10	40	25	10	35	20	95	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution. iii. The earlier red category industrial sector namely "Processing of Emulsions of Oil & Water " is merged with this industrial sector.
58.	60	Pharmaceuticals	30	10	40	30	5	35	20	95	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Such types of industrial sectors generate all sorts of pollution.
59.	61	Pulp & Paper (Large-Agro + wood) , Small Pulp & Paper (agro based-wheat straw/rice husk)	30	10	40	25	10	35	20	95	R-R	i. This industrial sector is the one among the '17 categories of Highly Polluting Industries'. ii. Large /Small Agro based Pulp & Paper mills contribute all sorts of pollution problems.
60.	15	Distillery (molasses / grain / yeast based)	30	10	40	-	-	-	-	100	R-R	Mainly water polluting industry. Final score is the normalized water pollution score.

Note :

i. *Under the column Revised Category, the full forms of the abbreviations are as follows :*

   a. *R-R means original category was Red and revised category is also Red*
   b. *R-O means original category was Red and revised category is Orange*
   c. *O-O means original category was Orange and revised category is also Orange*
   d. *O-G means original category was Orange and revised category is Green*
   e. *O-W means original category was Orange and revised category is White*
   f. *G-O means original category was Green and revised category is Orange*
   g. *G-G means original category was Green and revised category is also Green*
   h. *G-W means original category was Green and revised category is White*

ii. *There are specific remarks in respect of some of the industrial sectors. These sectors are either merged with other relevant sectors or deleted due to duplication. The overall details are as follows :*

Sl No.	Original Sl No.	Industry Sector	Original Category	Remarks
1	14	Common treatment and disposal facilities(CETP, TSDF, E-waste recycling, CBMWTF, effluent conveyance project, incinerator, solvent/acid recovery plant, MSW sanitary land fill site)	R	i. All such facilities are classified as Red but special category projects as these are parts of pollution control facilities. ii. In case of CETP, the categorization will depend upon the category of member industries being served.
2	18	Processing of Emulsions of Oil & Water		It is a part of Petrochemical industries. Transferred and merged with the industrial sector namely 'Petrochemicals' at Sl. No. 54.
3	27	Heavy engineering including ship building (with investment on Plant & Machineries more than Rs 10 crores)	R	Most of the pollution generating processes / operations under this category are similar to the industry category namely "Automobile Manufacturing (integrated facilities)" at Sl . No. 1 and may be referred accordingly.
4	30	Hydrocyanic acid and its derivatives	R	Have been merged with the red category industrial sector namely " Basic chemicals and electro chemicals and its derivatives including manufacturing of acid " at Sl. No. 24
5	32	Industrial estates/ parks / complexes/ areas/ export processing zones/ SEZs/ Biotech parks/ leather complex	R	The classification will depend upon the category(ies) of the industries operating / proposed to be permitted in the area. In this context, guidelines prescribed in EIA Notification, 2006 shall be followed.
6	33	Industrial inorganic gases namely- a) Chemical gas- Acetylene, hydrogen, chlorine, fluorine, ammonia, sulphur dioxide, ethylene, hydrogen sulphide, phosphine b) Hydrocarbon gases- Methane , ethane, propane	R	These gases are generally secondary products and produced alongwith other main products. To be classified as per the main parent plant.
7	69	Reprocessing of used oils & waste oils	R	i. The industry generates mainly the air pollution and oil bearing hazardous wastes. The normalized (air pollution & HW generation score is 58.33. ii. To be deleted as already covered under HW Recyclers / Re-processors (Used oils / Waste Oils) under Orange Category

Table G-3 : Final List of Orange Category of Industrial Sectors

Final Sl No	Orgnl S.No	Industry Sector	W1	W2	W	A1	A2	A	H	W+A+H	Revised category	Remarks
1.	20	Dismantling of rolling stocks (wagons/ coaches)	--	--	--	15	--	15	10	41.67	O-O	Emissions of dust and generation of waste oils take place during dismantling. Air pollution & HW generation scores (15+10=25) are normalized to 100.
2.	5	Bakery and confectionery units with production capacity > 1 TPD. (With ovens / furnaces)	20	--	20	15	--	15	--	43.75	O-O	
3.	10	Chanachur and ladoo from puffed and beaten rice(muri and shira) using husk fired oven	20	--	20	15	--	15	--	43.75	O-O	Normal water and air polluting.
4.	23	Coated electrode manufacturing	15	0	15	20	0	20	0	43.75	**G-O**	Preparation of core wire / rod, preparation of dry mix, preparation of wet mix, application of coating by extrusion, baking of coated electrodes
5.	24	Compact disc computer floppy and cassette manufacturing / Reel manufacturing	15	0	15	20	0	20	0	43.75	**G-O**	Generates waste-water and process emissions.
6.	24	Flakes from rejected PET bottle	20	-	20	15	-	15	-	43.75	R-O	Normal water & air pollutions are generated.
7.	30	Food and food processing including fruits and vegetable processing	20	--	20	15	--	15	--	43.75	O-O	Normal water and air polluting.
8.	40	Jute processing without dyeing	20	--	20	15	--	15	--	43.75	O-O	CPCB has notified standards for this category. Both air and water pollutions are generated.
9.	56	Manufacturing of silica gel	15	0	15	20	0	20	0	43.75	**G-O**	Waste-waters containing TDS and emissions of H_2SO_4 are generated.

10.	45	Manufacturing of tooth powder, toothpaste, talcum powder and other cosmetic items	20	--	20	15	--	15	--	43.75	O-O	Both air and water pollution are generated.
11.	55	Printing or etching of glass sheet using hydrofluoric acid	15	--	15	20	--	20	--	43.75	O-O	Both air and water pollution are generated.
12.	65	Silk screen printing, sari printing by wooden blocks	20	--	20	15	--	15	--	43.75	O-O	Wash-water and PM emissions from boilers .
13.	76	Synthetic detergents and soaps(excluding formulation)	20	-	20	15	-	15	-	43.75	R-O	i. This is the score for units having generation of waste-waters less than 100 KLD. ii. The units having waste-water generation more than 100 KLD will become mainly water polluting and accordingly normalized water pollution score will be 75 and be categorized as Red.
14.	71	Thermometer manufacturing	15	--	15	20	--	20	--	43.75	O-O	Process - making glass bulb, forming reservoir in the glass tube for fluid, inserting fluid, scale marking. Use of fuel to heat the glass tubes and hydrofluoric acid to seal the scaling. Small quantities of spent acids are generated.
15.	14	Cotton spinning and weaving (medium and large scale)	--	--	--	15	--	37.5	10	47.5	O-O	Mainly air polluting industry. Sources of air pollution (PM) are the fine particles of cotton from spinning process. Air pollution score is normalized to 100.
16.	1	Almirah, Grill Manufacturing (Dry Mechanical Process)	--	--	--	20	--	20	--	50	O-O	Air pollution due to spray painting (emissions of VOCs). Units without painting operations shall be categorized as White.

17.	2	Aluminium & copper extraction from scrap using oil fired furnace (dry process only)	--	--	--	20	--	20	10	50	O-O	i. Normalized Air pollution score. ii. Significant air pollution due to melting (emissions of SO2, PM).
18.	3	Automobile servicing, repairing and painting (excluding only fuel dispensing)	20	--	20	20	--	20	10	50	O-O	Normal water & air polluting and recyclable waste oil generating. If the waste water generation is more than 100 KLD, it will become mainly water polluting and Red category unit.
19.	4	Ayurvedic and homeopathic medicine	20	--	20	15	--	15	15	50	O-O	
20.	7	Brickfields (excluding fly ash brick manufacturing using lime process)	--	--	--	20	--	20	--	50	O-O	Significantly air polluting.
21.	8	Building and construction project more than 20,000 sq. m built up area	20	--	20	20	--	20	--	50	O-O	1. In the pre-construction stage., it is mainly air-polluting due to generation of dust (PM) emissions. 2. After construction, it is mainly water polluting. If the discharge is more than 100 KLD, it will be having the normalized score of 75 and be categorized as Red.
22.	6	Ceramics and Refractories	-	-	-	20	-	20	-	50	R-O	i. Mainly air polluting industry. ii. This score is for the units having coal consumption < than 12 MT/day. iii. For the units having coal consumption > 12 MT /day, the normalized air pollution score will be 62.5 and shall be categorized as Red.

23.	11	Coal washeries	15	10	25	15	-	15	-	50	R-O	i. Wet washeries are mainly water polluting industry generating effluents which are having inorganic SS & TDS. Additionally, air pollution due to PM emissions is also generated. ii. Water & air pollution scores are jointly normalized to 100.
24.	16	Dairy and dairy products (small scale)	20	--	20	20	--	20	--	50	O-O	Water and air polluting both.
25.	18	DG set of capacity >1MVA but < 5MVA	--	--	--	20	--	20	--	50	O-O	Mainly air polluting . air pollution score is normalized to 100.
26.	17	Dry coal processing, mineral processing, industries involving ore sintering, pelletisating, grinding & pulverization	-	-	-	20	-	20	-	50	R-O	Mainly air polluting industry. Final score is the normalized air pollution score.
27.	19	Fermentation industry including manufacture of yeast, beer, distillation of alcohol (Extra Neutral Alcohol)	20	-	20	-	-	-	-	50	R-O	i. Mainly water polluting industry. This is the normalized water pollution score for units having discharge < 100 KLD. ii. For the units having discharge > 100 KLD, the normalized water pollution score will be 75 and shall be accordingly categorized as Red.
28.	21	Ferrous and Non- ferrous metal extraction involving different furnaces through melting, refining, re-processing, casting and alloy-making	-	-	-	15	5	20	10	50	R-O	i. Mainly air polluting. ii. This score is applicable to secondary production of ferrous & non-ferrous metals (excluding lead) up-to 1 MT/hour production.

												iii. For lead, the normalized air pollution score will be = (100*25)/40= 62.5 and is categorized as Red. iv. For Induction Furnace clubbed with AOD furnace – separate calculation shall be made based on the capacity of the furnaces. In such industries, the molten metal from induction furnace is transferred to AOD furnace where other metals like manganese and nickel are added to get the metal of desired constituents. The lime and silicon are also added for reduction of the metal oxides to the base metal. the normalized air pollution score will be = (100*25)/40= 62.5 and is categorized as Red.
29.	26	Fertilizer (granulation / formulation / blending only)	--	--	--	20	--	20	--	50	O-O	Air polluting.
30.	27	Fish feed, poultry feed and cattle feed	--	--	--	20	--	20	--	50	O-O	Obnoxious odour , H2S etc. AP score is normalized to 100
31.	28	Fish processing and packing (excluding chilling of fishes)	20	--	20	--	--	--	--	50	O-O	Mainly water polluting. WP score is normalized to 100.

32.	31	Forging of ferrous and non- ferrous metals (using oil and gas fired furnaces)	--	--	--	20	--	20	--	50	O-O	Heating furnace. Mainly air polluting.
33.	32	Formulation/peiletization of camphor tablets, naphthalene balls from camphor/ naphthalene powders.	--	--	--	20	--	20	--	50	O-O	Mainly air polluting. Emissions of Benzene, HC are expected.
34.	33	Glass ceramics, earthen potteries and tile manufacturing using oil and gas fired kilns, coating on glasses using cerium fluorides and magnesium fluoride etc.	--	--	--	20	--	20	--	50	O-O	Mainly air polluting. Emissions of SO2 are expected.
35.	35	Gravure printing, digital printing on flex, vinyl	20	--	20	20	--	20	10	50	O-O	Waste waters , emissions of VOCs
36.	36	Heat treatment using oil fired furnace (without cyaniding)	--	--	--	20	--	20	--	50	O-O	Mainly air polluting and noise generating. AP Score is normalized to 100.
37.	28	Hot mix plants	-	-	-	20	-	20	-	50	R-O	Mainly air polluting. Air pollution scores are normalized to 100.
38.	37	Hotels (< 3 star) or hotels having > 20 rooms and less than 100 rooms.	20	--	20	20	--	20	--	50	O-O	Mainly water polluting. WP score is normalized to 100.
39.	38	Ice cream	20	--	20	20	--	20	--	50	O-O	Wash-water and boilers / oven for pasteurization.
40.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Paint and ink Sludge/residues	-	-	-	20	0	20	0	50	R-O	Mainly air polluting. Air pollution score is normalized to 100
41.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Brass Dross „ Copper Dross„ Copper Oxide Mill Scale„ Copper Reverts, Cake & Residues„ Waste Copper and copper alloys in	10	-	10	20	-	20	10	50	R-O	Mainly air polluting.

		dispersible form„ Slags from copper processing for further processing or refining „ Insulated Copper Wire„ Scrap/copper with PVC sheathing including ISRI-code material namely "Druid" „ Jelly filled Copper cables „ Zinc Dross-Hot dip Galvanizers SLAB„ Zinc Dross-Bottom Dross„ Zinc ash/Skimming arising from galvanizing and die casting operations„ Zinc ash/Skimming/other zinc bearing wastes arising from smelting and refining„ Zinc ash and residues including zinc alloy residues in dispersible from„										
42.	35	Industry or processes involving foundry operations	-	-	-	20	-	20	-	50	R-O	i. This score is valid for the foundries having capacity < 5 MT/hr as such units require the coal/coke @ <500 kg/hr. ii. The units having capacity of 5 MT/hr and more, the coal/coke consumption will be more than 500 kg/hr and the normalized score will be 62.5 and classified accordingly as Red.
43.	40	Lime manufacturing (using lime kiln)	-	-	-	20	-	20	-	50	R-O	Mainly air polluting
44.	41	Liquid floor cleaner, black phenyl, liquid soap, glycerol mono-stearate manufacturing	20	--	20	20	--	20	--	50	O-O	Both air and water pollution are generated.

45.	42	Manufacturing of glass	10	-	-	20	-	20	-	50	R-O	i. Mainly air polluting (melting at 1500ºC and refining . ii. In case of lead glass , the score of A1 will be 25 and accordingly the normalized scores will be 62.5 i.e. Red .
46.	43	Manufacturing of iodized salt from crude/ raw salt	12	--	12	20	--	20	--	50	O-O	Boiling in Evaporators (multiple effect evaporators), centrifuging, iodization with KIO3 mixing . Mainly air polluting. Air pollution score is normalized to 100.
47.	42	Manufacturing of mirror from sheet glass	--	--	--	20	--	20	--	50	O-O	Evaporator & furnace for heating the metal to be applied as reflector on mirror. Mainly air polluting.
48.	44	Manufacturing of mosquito repellent coil	--	--	--	20	--	20	--	50	O-O	Mainly air polluting. Toxic fumes are expected.
49.	46	Manufacturing of Starch/Sago	25	-	25	15	-	15	-	50	R-O	i. Water and air polluting industry. Boiler is used for steam generation. ii. Water & air pollution scores are normalized to 100
50.	46	Mechanized laundry using oil fired boiler	20	--	20	20	--	20	--	50	O-O	Both air and water pollution are generated.
51.	47	Modular wooden furniture from particle board, MDF< swan timber etc, Ceiling tiles/ partition board from saw dust, wood chips etc., and other agricultural waste using synthetic adhesive resin, wooden box making (With boiler)	--	--	--	20	--	20	--	50	O-O	1. Mainly air polluting. Boiler as well as VOCs from use of adhesives. 2. Without boiler, it will be a Green category industry.
52.	50	New highway construction project	-	-	-	20	-	20	-	50	R-O	Mainly air polluting project.

53.	51	Non-alcoholic beverages(soft drink) & bottling of alcohol/non alcoholic products	20	-	20	15	5	20	-	50	R-O	i. Both air and water polluting. Score is normalized with air & water pollution. This score is valid for industries having waste-water generation < 100 KLD. ii. For the units having waste-water generation > 100 KLD the , normalized score would be 62.5 and categorized as Red.
54.	49	Paint blending and mixing (Ball mill)	20	--	20	20	--	20	10	50	O-O	Both air and water pollution are generated.
55.	62	Paints and varnishes (mixing and blending)	20	0	0	20	0	20	0	50	**G-O**	Waste-waters as well as fumes of VOCs due to solvents, pigments, varnishes.
56.	51	Ply-board manufacturing(including Veneer and laminate) with oil fired boiler/ thermic fluid heater(without resin plant)	0	--	0	20	--	20	--	50	O-O	Mainly air polluting because of use of boiler. AP score is normalized to 100
57.	52	Potable alcohol (IMFL) by blending, bottling of alcohol products	20	--	20	--	--	--	--	50	O-O	Mainly water polluting. WP score is normalized to 100.
58.	54	Printing ink manufacturing	20	--	20	20	--	20	--	50	O-O	1. Pigments, binders and solvents are used. 2. Boiler is also used. 3. Emissions of VOCs take place.
59.	70	Printing press	20	0	20	20	0	20	0	50	**G-O**	Colored waste-waters containing dyes and VOC emissions are generated.
60.	59	Reprocessing of waste plastic including PVC	20	--	20	20	--	20	--	50	O-O	Large quantities of wash-water and fugitive emissions are generated.
61.	61	Rolling mill (oil or coal fired) and cold rolling mill	10	--	10	20	--	20	--	50	O-O	Mainly air polluting. Air pollution score is normalized to 100. Others - cooling water and recyclable waste oils etc. are generated.
62.	67	Spray painting, paint baking, paint shipping	--	--	--	20	--	20	10	50	O-O	Mainly air polluting. Emissions of VOCs and HC are generated.

63.	72	Steel and steel products using various furnaces like blast furnace /open hearth furnace/induction furnace/arc furnace/submerged arc furnace / basic oxygen furnace /hot rolling reheated furnace	10	-	10	20	-	20	10	50	R-O	i. Mainly air polluting. In the emissions, oxides of manganese, nickel etc. are also present. ii. Air pollution score is normalized to 100.
64.	73	Stone crushers	-	-	-	20	-	20	-	50	R-O	Mainly air polluting. Air pollution score is normalized to 100.
65.	75	Surgical and medical products including prophylactics and latex	20	-	20	20	-	20	-	50	R-O	Both air as well as water polluting. Air and water pollution scores are normalized to 100.
66.	85	Tephlon based products	0	0	0	20	0	20	0	50	G-O	Due to spraying applications, emissions (HC) are generated
67.	70	Thermocol manufacturing (with boiler)	--	--	--	20	--	20	--	50	O-O	Polystyrene is heated. Mainly air polluting with boiler.
68.	82	Tobacco products including cigarettes and tobacco/opium processes	20	-	20	20	-	20	-	50	R-O	Such industries generate both air as well as water pollution. These scores are normalized to 100.
69.	72	Transformer repairing/ manufacturing (dry process only)	--	--	--	20	--	20	10	50	O-O	Mainly air polluting because of ovens, shot-blasting etc.
70.	73	Tyres and tubes vulcanization/ hot retreating	10	--	10	20	--	20	--	50	O-O	Mainly air polluting . Emissions of PM, VOCs and obnoxious odour are generated.
71.	83	Vegetable oil manufacturing including solvent extraction and refinery /hydrogenated oils	20	-	20	15	5	20	10	50	R-O	i. All sorts of pollution are generated. ii. This score is valid for plants having waste-water generation < 100 KLD. iii. If the waste-water generation is more than 100 KLD, the unit shall be classified as Red.
72.	74	Wire drawing and wire netting	20	--	20	--	--	--	--	50	O-O	Mainly water polluting. WP score is normalized to 100.

73.	21	Dry cell battery (exduding manufacturing of electrodes) and assembling & charging of acid lead battery on micro scale	30	--	30	15	--	15	10	55	O-O	Water and air polluting both.
74.	50	Pharmaceutical formulation and for R & D purpose (For sustained release/ extended release of drugs only and not for commercial purpose)	20	--	20	20	--	20	15	55	O-O	i. All sorts of pollution are generated. ii. R&D activities are to be shifted to Red category.
75.	78	Synthetic resins	20	-	20	20	-	20	15	55	R-O	All sorts of pollution are generated.
76.	79	Synthetic rubber excluding molding	20	-	20	20	-	20	15	55	R-O	i. Most synthetic rubber is created from two materials, styrene and butadiene. Both are currently obtained from petroleum. ii. Process is similar to a part of Petrochemical plants.
77.	9	Cashew nut processing	25	--	25	20	--	20	--	56	O-O	Normal water and air polluting.
78.	12	Coffee seed processing	25	--	25	20	--	20	--	56	O-O	Normal water & air polluting industry.
79.	37	Parboiled Rice Mills	25	-	25	20	-	20	-	56	R-O	i. Rice Mills are generating both air and water pollution. Waste-waters are having high strength in respect of BOD. ii. This is the normalized air & water pollution score for units having waste-water generation < 100 KLD and fuel consumption less than 12 MTD. iii. For units having waste-water generation > 100 KLD or fuel consumption > 12 MTD or both , the unit shall be classified as Red.

80.	29	Foam manufacturing	--	--	--	20	--	20	15	58	O-O	i. Raw material is polyurethane, latex etc. ii. Emissions of VOCs and HAPs. CH3Cl2 and similar compounds as blowing agents. iii. Outdated raw materials and spoiled slots are discarded as HW.
81.	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Used Oil -- As per specifications prescribed from time to time.	10	0	10	20	0	20	15	58.33	R-O	Mainly air polluting and hazardous waste generating industry. Air pollution & HW scores are normalized to 100
82	34	Industries engaged in recycling / reprocessing/ recovery/reuse of Hazardous Waste under schedule iv of HW(M, H& TBM) rules, 2008 - Items namely - Waste Oil ---As per specifications prescribed from time to time.	-	-	-	20	0	20	15	58.33	R-O	Mainly air polluting and hazardous waste generating industry. Air pollution & HW scores are normalized to 100.
85.	56	Producer gas plant using conventional up drift coal gasification (linked to rolling mills glass and ceramic industry refectories for dedicated fuel supply)	--	--	--	20	--	20	15	58.33	O-O	Mainly air polluting & tar (HW) generating. SO2, CO, NOx are generated. Tar is the by-product and utilized by other industries in co-processing.

Note :

i. *Under the column Revised Category, the full forms of the abbreviations are as follows :*
   a. *R-R means original category was Red and revised category is also Red*
   b. *R-O means original category was Red and revised category is Orange*
   c. *O-O means original category was Orange and revised category is also Orange*
   d. *O-G means original category was Orange and revised category is Green*
   e. *O-W means original category was Orange and revised category is White*
   f. *G-O means original category was Green and revised category is Orange*
   g. *G-G means original category was Green and revised category is also Green*
   h. *G-W means original category was Green and revised category is White*

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ii. *There are specific remarks in respect of some of the industrial sectors. These sectors are either merged with other relevant sectors or deleted due to duplication / vague category. The overall details are as follows:*

Sl No.	Original Sl No.	Industry Sector	Original Category	Remarks
1	24	Excavation of sand from the river bed (excluding manual excavation)	O	Since such types of activities cause ecological disturbances, the instructions issued by the government from time to time be followed. To be categorized by MoEF&CC.
2	39	Infrastructure Development Project	O	Vast variety of such projects come under such category. This is to be decided by the concerned SPCB in line of EIA Notification , 2006.
3	53	Power press	O	Very vague term hence deleted. Such types of general engineering units have already been covered.

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Table G-4 : Final List of Green Category of Industrial Sectors

Sl. No.	Orgnl Sl. No.	Industry Sector	W1	W2	W	A1	A2	A	H	W+A+H	Revised Category	Remarks
1.	2	Aluminium utensils from aluminium circles by pressing only (dry mechanical operation)	--	--	--	10	--	10	--	25	G-G	Minor air pollution due to some fugitive PM emissions from buffing operations.
2.	6	Ayurvedic and homeopathic medicines (without boiler)	10	--	10	--	--	--	--	25	G-G	Small quantities of waste-waters are generated from washing operations.
3	8	Bakery /confectionery /sweets products (with production capacity <1tpd (with gas or electrical oven)	10	--	10	--	--	--	--	25	G-G	Small quantities of waste-waters are generated from washing operations.
4.	6	Bi-axially oriented PP film along with metalizing operations	10	--	10	--	--	--	--	25	O-G	Mainly extrusion process involving Cooling water recirculation
5.	10	Biomass briquettes (sun drying) without using toxic hazardous wastes	--	--	--	10	--	10	--	25	G-G	Minor air pollution due to some fugitive PM emissions from pulverization / mixing operations.
6.	13	Blending of melamine resins & different powder, additives by physical mixing	--	--	--	10	--	10	--	25	G-G	Minor air pollution due to some fugitive PM emissions from pulverization / mixing operations.
7.	15	Brass and bell metal utensils manufacturing from circles(dry mechanical operation without re-rolling facility)	--	--	--	10	--	10	--	25	G-G	Minor air pollution due to some fugitive PM emissions from buffing operations.
8.	16	Candy	10	--	10	10	--	10	--	25	G-G	Small quantities of waste-water and minor

												PM emissions are generated.
9.	17	Cardboard or corrugated box and paper products (excluding paper or pulp manufacturing and without using boilers)	--	--	--	10	--	10	--	25	G-G	This score is valid with Small gas / electricity operated oven / furnace for making glue.
10.	18	Carpentry & wooden furniture manufacturing (excluding saw mill) with the help of electrical (motorized) machines such as electrical wood planner, steel saw cutting circular blade, etc.	--	--	--	10	--	10	--	25	G-G	Minor air pollution due to some fugitive PM emissions from cutting operations.
11.	19	Cement products (without using asbestos / boiler / steam curing) like pipe ,pillar, jafri, well ring, block/tiles etc.(should be done in closed covered shed to control fugitive emissions)	--	--	--	10	--	10	--	25	G-G	Minor air pollution due to some fugitive PM emissions from mixing operations.
12.	20	Ceramic colour manufacturing by mixing & blending only (not using boiler and wastewater recycling process)	--	--	--	10	--	10	--	25	G-G	Minor air pollution due to some fugitive PM emissions.
13.	11	Chilling plant, cold storage and ice making	10	--	10	--	--	--	--	25	O-G	Cooling water recirculation only.
14.	13	Coke briquetting (sun drying)	--	--	--	10	--	10	--	25	O-G	Mainly air polluting industry. Sources of air pollution (PM) are pulverizes and mixers. Air pollution score is normalized to 100.
15.	28	Cotton spinning and weaving (small scale)	--	--	--	10	--	10	--	25	G-G	Minor PM emissions from spinning process.
16.	17	Dal Mills	--	--	--	10	--	10	--	25	O-G	Some fugitive emissions of PM.

17.	29	Decoration of ceramic cups and plates by electric furnace	--	--	--	10	--	10	--	25	G-G	Fumes of enamels. Minor air pollution.
18.	19	Digital printing on PVC clothes	--	--	--	10	--	10	--	25	O-G	Minor emissions / odour generations are expected.
19.	25	Facility of handling, storage and transportation of food grains in bulk	--	--	--	10	--	10	--	25	O-G	Some fugitive emissions of PM during handling of grains.
20.	36	Flour mills (dry process)	--	--	--	10	--	10	--	25	G-G	Fugitive dust emissions.
21.	41	Glass , ceramic, earthen potteries, tile and tile manufacturing using electrical kiln or not involving fossil fuel kiln	--	--	--	10	--	10	--	25	G-G	Minor fugitive emissions only.
22.	34	Glue from starch (physical mixing) with gas / electrically operated oven /boiler.	--	--	--	10	--	10	--	25	O-G	Some fugitive emissions of PM during mixing of raw materials.
23.	42	Gold and silver smithy (purification with acid smelting operation and sulphuric acid polishing operation) (using less or equal to 1 litre of sulphuric acid/ nitric acid per month)	--	--	--	10	--	10	--	25	G-G	Minor fumes from cleaning process.
24.	36	Heat treatment with any of the new technology like ultrasound probe , induction hardening , ionization beam, gas carburizing etc.	10	--	10	10	--	10	--	25	O-G	• Cooling waters and minor heat fumes. • Finalization of categorization subject to field verification.
25.	46	Insulation and other coated papers (excluding paper or pipe manufacturing)	--	--	--	10	--	10	--	25	G-G	Minor fumes due to application of poly-urethane
26.	49	Leather foot wear and leather products (excluding tanning and hide processing except cottage scale)	--	--	--	10	--	10	--	25	G-G	Minor fumes due to use of adhesives / gums.

27.	50	Lubricating oil, greases or petroleum based products (only blending at normal temperature)	--	--	--	10	--	10	--	25	G-G	Minor fumes at the time of transfers from one container to other.
28.	54	Manufacturing of pasted veneers using gas fired boiler or thermic fluid heater and by sun drying	--	--	--	10	--	10	--	25	G-G	1. Minor fumes due to application of gums / adhesives / pastes etc. 2. This score is valid only for gas fired boiler.3. The units having coal fired boilers shall be categorized as Orange.
29.	59	Oil mill Ghani and extraction (no hydrogenation / refining)	10	--	10	--	--	--	--	25	G-G	Small quantities of floor washings & equipments washings are generated.
30.	48	Packing materials manufacturing from non asbestos fibre, vegetable fibre yarn	--	--	--	10	--	10	--	25	O-G	Some fugitive emissions of PM are expected.
31.	65	Phenyl/toilet cleaner formulation and bottling	--	--	--	10	--	10	--	25	G-G	Minor fumes of VOCs in the work zone
32.	67	Polythene and plastic processed products manufacturing (virgin plastic)	10	--	10	10	--	10	--	25	G-G	Cooling water & emissions due to mixing of raw materials.
33.	68	Poultry, Hatchery and Piggery	--	--	--	10	--	10	--	25	G-G	Obnoxious odour containing H_2S, CH_4 etc. and fugitive PM emissions
34.	69	Power looms (without dye and bleaching)	--	--	--	10	--	10	--	25	G-G	Minor emissions of PM.
35.	71	Puffed rice (muri) (using gas or electrical heating system)	--	--	--	10	--	10	--	25	G-G	Minor emissions of PM.
36.	57	Pulverization of bamboo and scrap wood	--	--	--	10	--	10	--	25	O-G	Some fugitive emissions of PM are expected.
37.	72	Ready mix cement concrete	--	--	--	10	--	10	--	25	G-G	PM emissions.
38.	73	Reprocessing of waste cotton	--	--	--	10	--	10	--	25	G-G	PM emissions.
39.	60	Rice mill (Rice hullers only)	--	--	--	10	--	10	--	25	O-G	PM emissions are generated. Mainly air

												polluting. AP score is normalize[illegible]o 100
40.	62	Rolling mill (gas fired) and cold rolling mill	10	--	10	10	--	10	--	25	O-G	Mainly air polluting. AP score is normalized to 100
41.	75	Rubber goods industry (with gas operated baby boiler)	--	--	--	10	--	10	--	25	G-G	Some PM emissions and obnoxious odour.
42.	63	Saw mills	--	--	--	10	--	10	--	25	O-G	Mainly air polluting. PM and noise are generated.
43.	77	Soap manufacturing (hand made without steam boiling / boiler)	10	--	10	--	--	--	--	25	G-G	Small quantities of waste-water are generated.
44.	80	Spice grinding (upto-20 HP motor)	--	--	--	10	--	10	--	25	G-G	Small quantities of fugitive emissions of raw materials.
45.	66	Spice grinding (>20 hp motor)	--	--	--	10	--	10	--	25	O-G	Mainly air polluting. Fugitive emissions of PM.
46.	81	Steel furniture without spray painting	--	--	--	10	--	10	--	25	G-G	Obnoxious gases from welding as well as noise pollution.
47.	82	Steeping and processing of grains	10	--	10	--	--	--	--	25	G-G	Washing waters are generated.
48.	86	Tyres and tube retreating (without boilers)	--	--	--	10	--	10	--	25	G-G	Due to applications of binding gum / adhesives / cement, some obnoxious fumes may generate.
49.	22	Chilling plant and ice making without using ammonia	12	--	12	--	--	--	--	30	G-G	Cooling water and brine water circuits. Spillages / blow down may take place
50.	26	CO_2 recovery	12	--	12	--	--	--	--	30	G-G	Normal water pollution from scrubbing action
51.	32	Distilled water (without boiler) with electricity as source of heat	12	--	12	--	--	--	--	30	G-G	TDS as distillation residues

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52.	45	Hotels (up to 20 rooms and without boilers)	12	--	12	--	--	--	--	30	G-G	This score is valid for hotels having overall waste-water generation less than 10 KLD.
53.	53	Manufacturing of optical lenses (using electrical furnace)	12	--	12	--	--	--	--	30	G-G	Small quantities of waste-waters containing TDS, SS are generated.
54.	58	Mineralized water	12	--	12	--	--	--	--	30	G-G	RO Rejects.
55.	68	Tamarind powder manufacturing	12	--	12	15	--	15	--	33.75	O-G	• Dried tamarind fruits - cleaned and after soaking them in water they are boiled in steam jacketed kettle for about 40-45 minutes. Then pulp is extracted in pulper and dried in drum type drier and on cooling, the final product is packed. • Generates small quantities of waste waters and air emissions. Joint score is normalized to 100.
56.	15	Cutting, sizing and polishing of marble stone	15	--	15	--	--	--	--	37.5	O-G	Mainly water polluting . Water pollution score is normalized to 100.
57.	22	Emery powder (fine dust of sand) manufacturing	--	--	--	15	--	15	--	37.5	O-G	Air polluting. PM emissions take place during various stages of grindings of naturally occurring minerals.
58.	25	Flyash export, transport & disposal facilities	-	-	-	15	-	15	-	37.5	R-G	• This is mainly air polluting activity. • This is the normalized score based on air pollution.
59.	48	Mineral stack yard / Railway sidings	15	-	15	15	-	15	-	37.5	R-G	• Mainly air pollution due to loading, unloading, storage and transportation of the minerals.

												• Waste-water generation mainly during rains only.
60.	54	Oil and gas transportation pipeline	-	-	-	10	5	15	-	37.5	R-G	• Contains small gas based power plants up-to 5 MWs. • Air pollution score is normalized to 100. • In case , if these power plants are bigger / liquid fuel / oil based, scores will be calculated accordingly.
61.	64	Seasoning of wood in steam heated chamber	--	--	--	15	--	15	--	37.5	O-G	Air pollution due to use boiler for supply of steam. Air pollution score is normalized to 100.
62.	84	Synthetic detergent formulation	--	--	--	15	--	15	--	37.5	G-G	• This score is valid for the industries which are not manufacturing LABSA. It is procured from outside. • Small quantities of emissions are generated from mini boiler. • Air pollution score is normalized to 100.
63.	69	Tea processing (with boiler)	--	--	--	15	--	15	--	37.5	O-G	With boiler, it is an orange category industry. Without boiler, it will be green category industry.

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Note :

i. *Under the column Revised Category, the full forms of the abbreviations are as follows :*
   a. *R-R means original category was Red and revised category is also Red*
   b. *R-O means original category was Red and revised category is Orange*
   c. *O-O means original category was Orange and revised category is also Orange*
   d. *O-G means original category was Orange and revised category is Green*
   e. *O-W means original category was Orange and revised category is White*
   f. *G-O means original category was Green and revised category is Orange*
   g. *G-G means original category was Green and revised category is also Green*
   h. *G-W means original category was Green and revised category is White*

ii. *There are specific remarks in respect of some of the industrial sectors. These sectors are either merged with other relevant sectors or deleted due to duplication. The overall details are as follows :*

Sl No	Original Sl No.	Industry Sector	Original Category	Remarks
1	47	*Jobbing and Machining*	G	*Vague category to be deleted, as such activities have already been covered in other categories.*
2	66	*Reel manufacturing*	G	*Already covered in other categories. Hence, deleted*
3	1	*Assembling of acid lead batteries (up to 10 batteries per day excluding lead plate casting)*	G	*Already covered in Orange category. Hence, deleted*
4	5	*Automobile fuel outlets (only dispensing)*	G	*Minor air pollution due to some fugitive emissions during fuel filling operations. May be exempted from the purview of Consent management.*
5	30	*Diesel generator sets (15 KVA to 1 MVA)*	G	• *Normal operation – 12 hrs a day.* • *Consumption of diesel = 1680 litres for 1 MVA DG set at full load @ 0.21 litres / KVA / hr.* • *Stand-alone DG Sets having total capacity 1 MVA or less and equipped with acoustic enclosures alongwith adequate stack height may be exempted from the purview of Consent management. Higher capacity DG sets have already been covered under Red / Orange categories .*

Table G-5: Final List of White Category of Industries

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Sl. No.	Orgnl Sl. No.	Industry Sector	W1	W2	W	A1	A2	A	H	W+A+H	Revised Category
1.	3	Assembly of air coolers /conditioners ,repairing and servicing	--	--	--	--	--	--	--	--	G-W
2.	4	Assembly of bicycles ,baby carriages and other small non motorizing vehicles	--	--	--	--	--	--	--	--	G-W
3.	7	Bailing (hydraulic press)of waste papers	--	--	--	--	--	--	--	--	G-W
4.	9	Bio fertilizer and bio-pesticides without using inorganic chemicals	--	--	--	--	--	--	--	--	G-W
5.	11	Biscuits trays etc from rolled PVC sheet (using automatic vacuum forming machines)	--	--	--	--	--	--	--	--	G-W
6.	12	Blending and packing of tea	--	--	--	--	--	--	--	--	G-W
7.	14	Block making of printing without foundry (excluding wooden block making)	--	--	--	--	--	--	--	--	G-W
8.	21	Chalk making from plaster of Paris (only casting without boilers etc. (sun drying / electrical oven)	--	--	--	--	--	--	--	--	G-W
9.	25	Compressed oxygen gas from crude liquid oxygen (without use of any solvents and by maintaining pressure & temperature only for separation of other gases)	--	--	--	--	--	--	--	--	G-W
10.	27	Cotton and woolen hosiers making (Dry process only without any dying / washing operation)	--	--	--	--	--	--	--	--	G-W
11.	31	Diesel pump repairing and servicing (complete mechanical dry process)	--	--	--	--	--	--	--	--	G-W
12.	33	Electric lamp (bulb) and CFL manufacturing by assembling only	--	--	--	--	--	--	--	--	G-W

13.	34	Electrical and electronic item assembling (completely dry process)	--	--	--	--	--	--	--	--	G-W
14.	23	Engineering and fabrication units (dry process without any heat treatment / metal surface finishing operations / painting)	--	--	--	--	--	--	--	--	O-W
15.	35	Flavoured betel nuts production/ grinding (completely dry mechanical operations)	--	--	--	--	--	--	--	--	G-W
16.	37	Fly ash bricks/ block manufacturing	--	--	--	--	--	--	--	--	G-W
17.	38	Fountain pen manufacturing by assembling only	--	--	--	--	--	--	--	--	G-W
18.	39	Glass ampules and vials making from glass tubes	--	--	--	--	--	--	--	--	G-W
19.	40	Glass putty and sealant (by mixing with machine only)	--	--	--	--	--	--	--	--	G-W
20.	43	Ground nut decorticating	--	--	--	--	--	--	--	--	G-W
21.	44	Handloom/ carpet weaving (without dying and bleaching operation)	--	--	--	--	--	--	--	--	G-W
22.	46	Leather cutting and stitching (more than 10 machine and using motor)	--	--	--	--	--	--	--	--	G-W
23.	53	Manufacturing of coir items from coconut husks	--	--	--	--	--	--	--	--	G-W
24.	52	Manufacturing of metal caps containers etc	--	--	--	--	--	--	--	--	G-W
25.	55	Manufacturing of shoe brush and wire brush	--	--	--	--	--	--	--	--	G-W
26.	57	Medical oxygen	--	--	--	--	--	--	--	--	G-W
27.	60	Organic and inorganic nutrients (by physical mixing)	--	--	--	--	--	--	--	--	G-W
28.	61	Organic manure (manual mixing)	--	--	--	--	--	--	--	--	G-W
29.	63	Packing of powdered milk	--	--	--	--	--	--	--	--	G-W
30.	64	Paper pins and u clips	--	--	--	--	--	--	--	--	G-W
31.	58	Repairing of electric motors and generators (dry mechanical process)	--	--	--	--	--	--	--	--	O-W
32.	74	Rope (plastic and cotton)	--	--	--	--	--	--	--	--	G-W

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33.	76	Scientific and mathematical instrument manufacturing	--	--	--	--	--	--	--	--	G-W
34.	78	Solar module non conventional energy apparatus manufacturing unit	--	--	--	--	--	--	--	--	G-W
35.	79	Solar power generation through solar photovoltaic cell, wind power and mini hydel power (less than 25 MW)	--	--	--	--	--	--	--	--	G-W
36.	83	Surgical and medical products assembling only (not involving effluent / emission generating processes)	--	--	--	--	--	--	--	--	G-W

Note : Under the column Revised Category, the full forms of the abbreviations are as follows :

a. *R-R means original category was Red and revised category is also Red*
b. *R-O means original category was Red and revised category is Orange*
c. *O-O means original category was Orange and revised category is also Orange*
d. *O-G means original category was Orange and revised category is Green*
e. *O-W means original category was Orange and revised category is White*
f. *G-O means original category was Green and revised category is Orange*
g. *G-G means original category was Green and revised category is also Green*
h. *G-W means original category was Green and revised category is White*

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Annexure

केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
(पर्यावरण एवं वन मंत्रालय, भारत सरकार)
(MINISTRY OF ENVIRONMENT & FORESTS, GOVT OF INDIA)

No. B-29012/ESS/CPA/2015-16

19.08.2015

Sub: "Harmonization of Classification of Industries under Red / Orange / Green / White Categories".

During the Conference of the Environment Ministers of States held in New Delhi during April 06-07, 2015, it was resolved to adopt pollution potential criteria for categorization of Red, Orange & Green categories of industries and that a Committee be constituted with State representatives. Further, in the 59th Conference of Chairmen & Member Secretaries of Pollution Control Boards/PCCs held in New Delhi on April 08, 2015, it was agreed to constitute a Committee to look into categorization system of industries based on their respective pollution potential index.

2. Accordingly, a Committee comprising the Chairmen of CPCB, APPCB, TNPCB, MPPCB, MPCB, PPCB, WBPCB and MS, CPCB was constituted vide CPCB OM dated 23.04.2015 to review & classify industrial sectors into different categories based on criteria of respective pollution potential indices.

3. The existing Red (85 sectors) , Orange (75 sectors) and Green (86 sectors) industrial sectors have been assessed as per the proposed formula by a group of Scientists from CPCB . For this purpose , concerned Engineers / Scientists from the Member SPCBs of the Committee were also involved & consulted during May28-29, 2015.

4. After careful examination and consideration of the suggestions of concerned stake-holders the "Draft Document on Revised Concept of Categorization of Industrial Sectors " is prepared by the Committee .

In this context, the Undersigned is directed to forward a copy of the " Draft Document on Revised Concept of Categorization of Industrial Sectors to all the SPCBs, PCCs and concerned Ministries for their comments. Accordingly, the same is enclosed herewith and all the SPCBs, PCCs and concerned Ministries are, heraby requested to provide their comments by 04.09.2015. The comments may kindly be sent through hard copy as well as soft copy at e-mail: nkgupta.cpcb@nic.in , nkgcpcb@hotmail.com .

Encl : As above

[N.K. Gupta]
Incharge - ESS

To:

1. All the State Pollution Control Boards / Pollution Control Committees
2. The Secretary, Ministry of Micro Small and Medium Enterprises, New Delhi
3. The Secretary, Ministry of Heavy Industries & Public Enterprises, New Delhi
4. The Advisor & Incharge , CP Division, MoEFCC, New Delhi
5. CPCB Website

'परिवेश भवन' पूर्वी अर्जुन नगर, दिल्ली -110032
'Parivesh Bhawan', East Arjun Nagar, Delhi - 110032
दूरभाष / Tel. : 43102030, फैक्स / Fax : 22305793, 22307078, 22307079, 22301963, 22304948
ई-मेल / e-mail cpcb@nic.in वेबसाईट / Website : www.cpcb.nic.in

399911/2023/ESZ

ANNEXURE-R2/5

No:- /22 /X-3-19-13(04)/2018

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From,

Utpal Kumar Singh,
Chief Secretary,
Governemnt of Uttarakhand,
4 Subhash Road,
Dehradun -248001.

To,

Secretary
Ministry of Environment, Forest and Climate Change,
Indira Paryavaran Bhavan, Aliganj, Jor Bagh Road,
New Delhi-110003

Forest & Environment Section-3 **Dehradun: Dated:- 10 April, 2019**

Subject:-Re-examination and amendment of the Doon Valley Notification, 1989 for restrictions on location of industries, mining operations and other development activities.

Sir,

As you are aware, restrictions on industrial and various other activities have been in force in the Doon Valley (Uttarakhand) vide MoEF&CC notifications S.O.102(E), dated 01 February, 1989, S.O. 943(E), dated 04-07-2005 and S.O 2125(E) dated 13-12-2007. The industries in the Valley have been classified as green, orange and red and that consent to establish (CTE) and consent to operate (CTO) is being granted by the State Pollution Control Board (SPCB) as per the provisions of the said notifications referred to above.

2- In the meantime, the CPCB vide letter No. B-29012/ESS (CPA)/ 2015-16 dated 07 March, 2016 issued directions under the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981 to all SPCBs creating four categories of industries viz. red, orange, green and white based on the concept of pollution index. This classification is pragmatic, fair and has a sound scientific rationale, arrived at after a series of consultations with various stakeholders.

3- You will appreciate that scientific indexing of pollution was not as well developed in 1989 when the Doon Valley notification was first issued. It is worth noting that the CPCB had taken the Doon Valley notifications into account while arriving at classification of industries based on potential to pollute. The two sets of notifications/direction, one from the MoEF&CC and the other from CPCB have led to operational difficulties on the ground since both, the Doon Valley notifications and CPCB

Cont....2

directions are binding on SPCB. The conflicting nature of the MoEFF&CC and CPCB directions are evident from the fact that the Doon Valley notifications categorised 49 industries as green, 35 orange and 45 as red whereas CPCB categorises 63 industries as green, 83 orange and 60 as red. In addition, CPCB categorises 36 industries as white, a category which is non-existent in the Doon Valley notifications. Hotels, ashrams, hospitals etc., for instance have not been identified and categorised under the Doon Valley notifications which have since been included in the CPCB classifications.

There are other infirmities in the Doon Valley notifications e.g. an industry considered as 'green' within an industrial area suffers a change in status to 'orange' if established outside an industrial area; a non polluting industry such as a call centre employing 100 persons is classified as orange, and red if it employs more than 500 persons; any industry discharging less than 500 KL liquid effluent per day is automatically classified as 'orange', and 'red' in case the discharge is more, without any reference to the noxious & hazard status of the effluent.

In the light of the above, the state government is of the view that the ambiguities, anomalies and contradictions with relation to establishing and running of industries in the Doon Valley can be eliminated by adopting the directions of CPCB dated 07.03.2016 and as such the MoEF&CC may consider making following amendment in the Doon Valley Notification of 1989:-

(a)- Substitution of Para-(i) of the Doon Valley Notification-1989 by "As per directions related to categorization of industries as issued by CPCB from time to time."

(b)- A new para VI "Environment Clearance will be required and granted as per the Environment Impact Assessment notifications dated 14 Sept, 2006 (As amended from time to time)" be inserted after para V.

Annexures:-as above

Yours Faithfully,

(Utpal Kumar Singh)
Chief Secretary

MINUTES OF 36th ESZ EXPERT COMMITTEE MEETING FOR THE DECLARATION OF ECO-SENSITIVE ZONE (ESZ) AROUND PROTECTED AREAS (WILDLIFE SANCTUARIES/NATIONAL PARKS/TIGER RESERVES) HELD ON 18th JULY 2019 IN THE MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE

The 36th meeting of Expert Committee on Eco-Sensitive Zone was held under the Chairmanship of Shri Ravi Agrawal, Additional Secretary on 18th July, 2019 in the Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhawan, New Delhi. List of participants is annexed.

2. At the outset, the Chairman welcomed the Members and the participants from the States of Jharkhand, Uttarakhand, Uttar Pradesh and Maharashtra. Discussions on each of agenda item were taken up ad-seriatim.

3. Following 14 proposals, including thirteen (13) Eco-Sensitive Zone proposals and Doon Valley Notification in Uttarakhand were listed in the agenda for consideration. The representatives of respective State Government presented their proposal for the consideration of the Expert Committee:

S. No.	State	Protected Area	Status
1.	Uttarakhand	Amendment of Doon Valley Notification	For Amendment of Gazette Notification
2.	Jharkhand	Palkot Sanctuary	Draft Proposal
3.	Jharkhand	Udhwa Lake Bird Sanctuary	Draft Proposal
4.	Jharkhand	Hazaribagh Wildlife Sanctuary	Draft Proposal
5.	Jharkhand	Lawalong Sanctuary	Draft Proposal
6.	Jharkhand	Gautam Buddha Sanctuary	Draft Proposal
7.	Jharkhand	Palamau Tiger Reserve WLS	Draft Proposal
8.	Jharkhand	Parasnath and Topchanachi	Draft Proposal

S. No.	State	Protected Area	Status
		Sanctuary	
9.	Jharkhand	Koderma Sanctuary	Draft Proposal
10.	Uttar Pradesh	Soor Sarovar Bird Sanctuary	Draft Proposal
11.	Uttar Pradesh	National Chambal Sanctuary	Draft Proposal
12.	Uttar Pradesh	Vijay Sagar Bird Sanctuary	Draft Proposal
13.	Maharashtra	Tansa Wildlife Sanctuary	Expired Draft Proposal
14.	Maharashtra	Tungareshwar Wildlife Sanctuary	Draft Proposal

4. Discussion on the ESZ Proposals

UTTARAKHAND

4.1 Amendment of Doon Valley Notification, Uttarakhand

The Government of Uttarakhand vide letter no. 122/X-3-19-13(04)/2018 dated 10.04.2019 requested MoEF&CC for amendment in the Doon Valley Notification, 1989.

Shri S.P. Subudhi, Member Secretary, Uttarakhand Environment Protection and Pollution Control Board made a presentation on the proposal.

It was mentioned that Doon Valley Notification was issued by Government of India on 1st February, 1989. The categorization of industries in the said Notification was based on the earlier system in place at that time and which has now been revised in the year 2016 by the Ministry. In order to make the notification compatible with new guidelines, the State Government has requested the Ministry to amend the relevant paragraphs of the Notification, which are as under:

(a) Substitution of Para-(i) of the Doon Valley Notifiction-1989 by "As per directions related to categorization of industries as issued by CPCB from time to time."

(b) A new para VI "Environment Clearance will be required and granted as per the Environment Impact Assessment notifications dated 14 Sept, 2006 (As amended from time to time)" be inserted.

The Expert Committee considered the matter. For this purpose representatives of CPCB, CP Division and IA Division in the Ministry, were called as special invitees. The Committee was of the view that the new CPCB guideline on categorization of industries is based on scientific indexing of pollution i.e. scoring system, therefore, the new guideline be suitably incorporated in the notification, replacing the existing one. The Committee was also of the view that the concern raised by State Governments on EIA Notification, 2006 has already been incorporated vide S.O. No. 2128(E) dated 13.12.2007. Therefore, there may not be any need for inserting any para, as requested by the State Government. The State government agreed with the interpretation, as above.

Based on the presentation made and discussions held, the Committee recommended for amendment in the Notification by adopting the categorization as notified by the CPCB from time to time. The corresponding notification to amend the Doon Valley Notification, 1989, may be drafted in consultation with the State & CPCB. Accordingly the present categorization viz. red, orange and green, may be substituted with new guidelines for categorization of Industries providing for red, orange, green and white categories.

JHARKHAND

4.2. Palkot Wildlife Sanctuary, Uttarakhand

Shri Dileep Kumar Yadav, DFO, Hazaribagh, Government of Jharkhand made a presentation on the proposal. It was informed that the draft ESZ Notification of Palkot Sanctuary, Jharkhand was published by the MoEF&CC *vide* S.O. 776(E) dated 22nd February, 2018. The salient features of the draft Eco-sensitive Zone (ESZ) are as follows:

Area of PA : 183.18 sq. km

Proposed ESZ area : 1287.16 sq. km
Proposed Extent : 350 metre to 5 km

No comments were received from public/stakeholders on the draft notification. The Committee was apprised by the State Government that the draft Notification provided for presence of 101 villages within the Eco-sensitive Zone. In addition State has now provided another list of enclave villages in the ESZ for including it in the final Notification. The State government has also requested Committee to replace the name of the villages in the Notification, with the name available as per village code listed in the Census of India. It was also proposed by the State Government that DFO Territorial to be included as member of Monitoring Committee.

Based on the presentation made and discussions held, the Committee agreed to accept the suggestion of the State Government and recommended for the finalization of draft Notification with above said changes.

4.3. Udhwa Lake Bird Sanctuary, Jharkhand

Shri. Dileep Kumar Yadav, DFO Hazaribagh, Government of Jharkhand made a presentation on the proposal. It was informed that the draft ESZ Notification of Udhwa Bird Sanctuary, Jharkhand was published by the MoEF&CC *vide S.O. No.*

624(E) dated 9th February, 2018. The salient features of the draft Eco-sensitive Zone (ESZ) are as follows:

Area of PA	:	5.65 sq. km
Proposed ESZ area	:	56.94 sq. km
Proposed Extent	:	0.5 km to 2 km

On the calculation of ESZ area with respect to provided area of PA and extent of ESZ, the representative of the State revealed that the area of ESZ is larger due to inclusion of enclave villages located within the protected area into ESZ area.

No comments were received from the public/stakeholders on the draft notification. Further, the detail of villages has been updated with village code of Census of India. The Committee also agreed to the suggestion of State Government for inclusion of DFO Territorial as Member of the Monitoring Committee and Divisional Forest Officer-in charge of the Protected Area as Member Secretary of the Monitoring Committee.

Based on the presentation made and discussions held, the Committee recommended for the finalisation of draft Notification with above said changes.

4.4. Hazaribagh Wildlife Sanctuary, Jharkhand

Shri Dileep Kumar Yadav, DFO Hazaribagh, Government of Jharkhand, made a presentation on the proposal. It was informed that the draft ESZ Notification of Hazaribagh Wildlife Sanctuary, Jharkhand was published by the MoEFCC *vide* S.O. 695 (E) dated 16th February, 2018. The salient features of the draft Eco-sensitive Zone (ESZ) are as follows:

Area of PA	:	186.25 sq. km
Proposed ESZ area	:	667.87 sq. km
Proposed Extent	:	2 km to 5 km

The State representative informed the Committee that public consultation was held based on the comments received from stakeholders on the draft Notification. The issues raised by the public were duly considered and a few modifications have been made on the draft Notification. The following changes are proposed on draft to final Notification:-

a) The area of ESZ area would be 573.86 sq. km with an extent of 900 meters to 5 kilometres.
b) District Forest Officer - Territorial to be included as Member of the Monitoring Committee.
c) Divisional Forest Officer - In charge of the protected area to be the Member Secretary of the Monitoring Committee.
d) The number of villages will be reduced from 176 to 146 nos.
e) List of villages to be updated as per the village code of Census of India.

Based on the presentation made discussions held, the Committee recommended for the finalisation of draft Notification with above said changes.

4.5. Lawalong Sanctuary, Jharkhand

Shri Dileep Kumar Yadav, DFO Hazaribagh, Government of Jharkhand, made a presentation on the proposal. It was informed that the draft ESZ Notification of Lawalong Sanctuary, Jharkhand was published by the MoEF&CC *vide* S.O. 775 (E) dated 21st February, 2018. The salient features of the draft Eco-sensitive Zone (ESZ) are as follows:

Area of PA	:	211.03 sq. km
Proposed ESZ area	:	570.19 sq. km
Proposed Extent	:	1.80 km to 5 km

The State representative has informed the Committee that the comments received from the stakeholders/public were duly considered. The Committee was requested for updating names of villages as per the village code mentioned in Census of India. It was further mentioned that there is no change in ESZ area and

extent. A request was made before the Committee for inclusion of DFO territorial as Member of the Monitoring Committee.

Based on the presentation made and discussions held, the Committee recommended for the finalization of draft Notification with the above said changes.

4.6. Gautam Buddha Sanctuary, Jharkhand

Shri Dileep Kumar Yadav, DFO Hazaribagh, Government of Jharkhand, made a presentation on the proposal. It was informed that the draft ESZ Notification of Gautam Buddha Sanctuary, Jharkhand was published by the MoEFCC *vide* S.O. 777(E) dated 22nd February, 2018. The salient features of the draft Eco-sensitive Zone (ESZ) are as follows:

Area of PA	:	121.224 sq. km
Proposed ESZ area	:	327.59 sq. km
Proposed Extent	:	0 (zero) to 5 km

No comments were received from the stakeholders/public on the draft Notification and no changes in ESZ area and extent have been made on the draft Notification. The Committee was informed that the Sanctuary has a wide range of biodiversity and it is considered as an important habitat for various wildlife and also serves as a corridor for migrating elephants. The Committee was requested for inclusion of DFO Territorial as Member of the Monitoring Committee.

Based on the presentation made and discussions held, the Committee recommended for the finalization of draft Notification, with above said change.

4.7. Palamau Tiger Reserve, Jharkhand

Shri. P. K. Das, CCF-FD, Palamau, Forest Department, Govt. of Jharkhand, made a presentation on the proposal. It was informed that the draft ESZ Notification

of Palamau Tiger Reserve, Jharkhand was published by the MOEFCC *vide* S.O. No. 779(E) 22nd February, 2018. The salient features of the draft Eco-Sensitive Zone (ESZ) are as follows:

Area of PA	:	1042.52 sq. km
Proposed ESZ area	:	1572.45 sq. km
Proposed Extent	:	0 (zero) to 5 km *(Zero extent of ESZ is due to interstate boundary)*

Public consultation was held on the draft Notification and comments received were duly considered. Based on the public consultation, the State Government has proposed certain modifications on the draft Notification, such as, (i) area of ESZ to be reduced from 1572.45 sq. km to 1129.2 sq km. (ii) ESZ extent to be changed from 0 to 5.0 km to 0 to 6.6 km .and (iii) deletion of 23 villages from the draft Notification.

During the discussions, the Expert Committee pointed out that there is potential omission of certain forest land in the modified proposal. and insisted for inclusion of forest area in ESZ area, thereby increasing the total ESZ area. The State Government agreed on the observation of the Expert Committee. The State Government demonstrated the revised maps and made following changes in the notification and submitted the requisite maps.

a) The area of ESZ would be 1253.49 sq km. with an extent of 0-7 km from the boundary of the protected areas.
b) The number of villages would be 382 nos. (207 villages inside the ESZ and 175 as enclave villages) in the final Notification.
c) DFO Territorial to be included as Member of the Monitoring Committee.
d) DFO In-charge of the Protected Area to be nominated as Member Secretary of the Monitoring Committee.

Based on the presentation made and discussions held, the Committee agreed to the suggestions of the State Government and recommended for the finalization of draft Notification with above said changes.

4.8. Parasnath and Topchanachi Sanctuary, Jharkhand

Shri Dileep Kumar Yadav, DFO Hazaribagh, Jharkhand, made a presentation on the proposal. It was informed that the draft ESZ Notification of Parasnath and Topchanachi Sanctuary, Jharkhand was published by the MoEFCC *vide* S.O. 798 (E) dated 26th February, 2018. The salient features of the draft Eco-Sensitive Zone (ESZ) are as follows:

Area of PA	:	49.33 sq. km. & 12.82 sq. km
Proposed ESZ area	:	352.77 sq. km
Proposed Extent	:	0 (zero) to 5 km

The Committee was informed that the sanctuaries is an important wildlife corridor through Kulu/Nandan Pahar and is also home for various trees, shrubs and climbers.

The public consultation was held on the modified draft and comments received from the stakeholders/public were duly considered. The State has proposed some modifications on the draft Notification in the light of the public grievances/ comments received on the draft Notification:

a) The extent of the ESZ proposed to be changed from 0 (zero) to 5 km to 0 (zero) to 25 km with total ESZ area of 208.82 sq. km.

Based on the presentation made and discussions held, the Committee recommended for the finalization of draft Notification with above said changes.

4.9. Koderma Wildlife Sanctuary, Jharkhand

Shri Dileep Kumar Yadav, DFO Hazaribagh, Government of Jharkhand, made a presentation on the proposal. It was informed that the draft ESZ Notification of

Koderma Wild Sanctuary, Jharkhand was published *vide* S.O 774(E) dated 22nd February, 2018. The salient features of the draft Eco-sensitive Zone (ESZ) are as follows:

Area of PA	:	150.628 sq. km
Proposed ESZ area	:	133.247 sq. km
Proposed Extent	:	0 (zero) to 5 km

The Comments received from the stakeholders/public on draft notification were duly considered. The area is an important habitat for wild animals including elephants. The elephants from Palamu, Chatra and Giridh are also known to move through this Sanctuary. The State Government has requested Expert Committee for inclusion of DFO Territorial as member of the Monitoring Committee and DFO in-charge of the protected area as Member Secretary.

Based on the presentation made and discussions held, the Committee recommended for the finalization of draft notification with above said changes.

MAHARASHTRA

4.10. Tansa Wildlife Sanctuary, Maharashtra

Shri. V. P. Ghule DCF, Forest Department, Govt. of Maharashtra, made a presentation on the proposal. It was informed that the draft ESZ Notification of Tansa Wildlife Sanctuary, located in Thane and Palighat districts of Maharashtra was published by the MoeEFCC vide S.O. 2566(E) dated 10th August, 2017. The salient features of the draft Eco-sensitive Zone (ESZ) are as follows:

Area of PA	:	304.81 sq. km
Proposed ESZ area	:	625.30 sq. km
Proposed Extent	:	600 metre to 9.5 km

The representative of the State Government informed that there were mistakes in calculation of area of Wildlife Sanctuary as well as ESZ area while submitting the proposal to the Ministry. This was due to the fact that private areas were wrongly included in Sanctuary area. The State Government has proposed following changes in the notification:

a) The revised ESZ extent would be 250 m to 9.0 km with an ESZ area of 490.29 sq km.
b) Modified the maps of the Sanctuary area and ESZ area (due to inter rationalisation of few areas from PA to ESZ and vice versa) Five villages located inside the PA are now included into ESZ.
c) List of villages changed from 145 to 156.

The Committee was informed that public consultation has been done by the State Government on the above modifications and submitted the relevant documents to the Ministry.

Based on the presentation made and discussions held, the Committee recommended the proposal for final notification.

4. 11. Tungareshwar Wildlife Sanctuary, Maharashtra

Dr. Jitendra S. Ramgaokar, DCF Thane, Govt. of Maharashtra, made a presentation on the proposal. It was informed that the draft ESZ Notification of Tungareshwar Wildlife Sanctuary, Maharashtra was published by MoEFCC *vide* S.O. 6310(E) on 24th December, 2018. The salient features of the draft Eco-Sensitive Zone (ESZ) are as follows:

Area of PA	:	85.70 sq. km
Proposed ESZ area	:	67.26 sq. km
Proposed Extent	:	100 metre to 4.0 km

It was mentioned that the Tungareshwar Wildlife Sanctuary is an important protected area supporting a large number of flora and fauna including mammalian species like leopard, wild boar, four headed antelope, etc. The minimum extent of the ESZ is 100 metre from the protected area.

The Expert Committee Suggested for increasing the ESZ extent in Southern side beyond 100 m by inclusion of certain green patch/forest areas as shown in the map. The State Government representative, however, explained their inability and justified that southern part of the PA is adjoining another protected area of Sanjay Gandhi National Park (SGNP) and the ESZ of Tungreshwar WLS has continuity with the ESZ of SGNP. The Committee also suggested to include the fragmented forest patches observed in the map on North-West side in the ESZ area, however the State Government again explained their inability as the area is surrounded by the densely populated municipalities and also proposed ESZ boundary has been prepared based on the feasibility and public consultation.

The comments received from the stakeholders/public were duly considered. The State Government requested for rationalization of some of the activities in ESZ such as construction activities, solid waste management, land use pattern, Zonal Master Plan and its term of references, etc. They also requested to exclude four villages from ESZ based on public hearing. However, the Expert Committee did not agree on this.

The Chairman of the Committee mentioned that rules given in the ESZ Notification are broad in nature and the State may prepare the Zonal Master Plan and the Tourism Master Plan on time and the above mentioned issues could be addressed in the Master Plan.

On the composition of Monitoring Committee, State Government requested Chief Conservator of Forests, Sanjay Gandhi National Park as member of the Committee instead of Member Secretary in Monitoring Committee of Tungareshwar Wildlife Sanctuary ESZ as he is already having position Sanjay Gandhi National Park. Therefore Divisional Forest Officer, Sanjay Gandhi National Park Borivali may be taken as Member Secretary of the Monitoring Committee. It was also requested to include the survey number of villages listed in the ESZ Notification to bring more clarity in the notification.

Based on the presentation made and discussions held, the Committee recommended for the finalization of draft Notification including the suggested changes proposed by the State Government with regard to monitoring committee.

UTTAR PRADESH

4.12. National Chambal Sanctuary, Uttar Pradesh

Shri. Anand Kumar, DCF, Forest Department, Govt. of Uttar Pradesh made a presentation and apprised the Committee about the proposal. It was informed that the draft ESZ Notification of National Chambal Sanctuary, Uttar Pradesh was published *vide* S.O. No. 1653 dated 16th April, 2018. The salient features of the draft Eco-Sensitive Zone (ESZ) are as follows:

Area of PA	:	635.0 sq. km
Proposed ESZ area	:	178.98 sq. km
Proposed Extent	:	zero to 1.0 km

It was mentioned that National Chambal Sanctuary is situated in Agra and Etawah districts of Uttar Pradesh. The Sanctuary is the first and only tri-state riverine protected area of India that crosses the states of Uttar Pradesh, Rajasthan and Madhya Pradesh.

The Expert Committee reiterating its earlier recommendations and asked Government of Uttar Pradesh to have a meeting with Government of Rajasthan and Madhya Pradesh, for preparing an integrated ESZ proposal.

Based on the presentation made and discussions held, the Committee deferred consideration of draft Notification and suggested for tri state consultation for preparation of an integrated ESZ proposal. The Government of UP was also asked to take a lead in this initiative. If felt necessary, a meeting may be called in the Ministry with all the three States.

4.13. Soor Sarovar Bird Sanctuary, Uttar Pradesh

Shri. Ashutosh Jaiswal, DFO, Karnmoor, Govt. of Uttar Pradesh, made a presentation on the proposal. It was informed that the draft ESZ Notification of Soor Sarovar Bird Sanctuary, Uttar Pradesh was earlier considered by the Expert Committee on ESZ during its 31st meeting held on 13-14 September, 2018. During the meeting the Committee asked State Government to submit the correct area of the Sanctuary along with Gazette Notification. The State Government has furnished the requisite details to the Ministry.

It was informed that the actual area of the Sanctuary is 4.03 Sq km instead of 8.0 Sq. Km and correspondingly the ESZ area is reduced from 18.17 sq. km to 10.20 sq. km. is 10.20 sq. km. The extent of ESZ shall remain unchanged i.e. 1 km all around the sanctuary. Accordingly, the State Government presented the revised maps and geo-coordinates of WLS as well as ESZ. There is no change in the list of villages falling in ESZ.

No comments were received from the stakeholders/public on the draft notification. Based on the presentation made and discussions held, the Committee recommended for the finalization of draft Notification with above said changes.

4.14. Vijay Sagar Bird Sanctuary, Uttar Pradesh

Shri. Sunil Choudhary, APCCF Wildlife, Forest Department, Govt. of Uttar Pradesh, made a presentation on the proposal. It was informed that Vijay Sagar Bird Sanctuary is a small bird Sanctuary declared by Government of Uttar Pradesh *vide* G.O. No 1305 dated 26th June, 1990 and it is located about 5.0 km from Mahoba town. The Sanctuary represents a typical eco-system and is known for its open habitat for many faunal species including migratory birds. The draft ESZ Notification of Vijay Sagar Bird Sanctuary, was published by the MoEFCC *vide* S.O. No.1652 dated 16th April, 2018. The salient features of the draft Eco-Sensitive Zone (ESZ) are as follows:

Area of PA	:	2.622 sq. km
Proposed ESZ area	:	4.0532 sq. km
Proposed Extent	:	1 km uniform

No comments were received from the stakeholders/public on the draft notification. Based on the presentation made and discussion held, the Committee recommended for the finalization of draft Notification.

5. In the context of process relating to processing of ESZ Notifications, Chairman apprised Members of the Committee that a number of draft notifications have since expired due to situations such as Model Code of Conduct (MCC) imposed by the Election Commission of India or other technical issues. In such cases, final Notifications could not be issued even after the approval of Expert Committee. Some of the proposals have expired while being processed due to

delays in submission of replies/requisite supporting documents by the States within available timeframe. Chairman sought views of Members on the issue so that proposals can be appropriately placed before the Expert Committee.

5.1 The Committee deliberated on the issue and took note of Para 5(4) of Environment (Protection) Rules, 1986 that lay down that

> "Notwithstanding anything contained in sub-rule (3), whenever it appears to the Central Government that it is in public interest to do so, it may dispense with the requirement of notice under clause (a) of sub-rule (3)."

5.2 In the light of the above, the Committee was of the view that it would be prudent in public interest to process the pending proposals further on case by case basis from the stage where they lie as on dare provided there is no material change in ESZ area, ESZ extent, list of villages and activities thereon except calculation mistakes, clerical errors or justifiable omissions.

6. Based on the draft Eco-Sensitive Zone Notifications, and references on Doon Valley Notification, comments received from stakeholder/public, presentations made on the proposals and detailed discussions on each proposal the Expert Committee recommended the following:

Sl. No.	Protected Area	State	Recommendation of Expert Committee
1.	Doon Valley Notification	Uttarakhand	Recommended for Amendment in the Notification
2.	Palkot Sanctuary	Jharkhand	Recommended for finalization
3.	Udhwa Lake Bird Sanctuary	Jharkhand	Recommended for finalization
4.	Hazaribagh Wildlife Sanctuary	Jharkhand	Recommended for finalization
5.	Lawalong Sanctuary	Jharkhand	Recommended for finalization
6.	Gautam Buddha Sanctuary	Jharkhand	Recommended for finalization
7.	Palamau Tiger Reserve	Jharkhand	Recommended for finalization

Sl. No.	Protected Area	State	Recommendation of Expert Committee
	Wildlife Sanctuary		
8.	Parasnath and Topchanachi Wildlife Sanctuary	Jharkhand	Recommended for finalization
9.	Koderma Wildlife Sanctuary	Jharkhand	Recommended for finalization
10.	Soor Sarovar Bird Sanctuary	Uttar Pradesh	Recommended for finalization
11.	National Chambal Sanctuary	Uttar Pradesh	Deferred the proposal
12.	Vijay Sagar Bird Sanctuary	Uttar Pradesh	Recommended for finalization
13.	Tansa Wildlife Sanctuary	Maharashtra	Recommended for finalisation
14.	Tungareshwar Wildlife Sanctuary	Maharashtra	Recommended for finalization

7. Meeting ended with vote of thanks to and from the Chair.

Annexure

36th Expert Committee Meeting on ESZ held on 18th July, 2019

List of Participants

Members of Expert Committee

1. Shri Ravi Agrawal, Additional Secretary, Chairperson.
2. Dr. S. C. Garkoti, Adviser, MoEF&CC.
3. Shri. S. A. Hussain, Scientist 'G', WII, Dehradun.
4. Shri. K. Chandra Sekar, Scientist 'E', GB Pant Institute of Himalayan Environment & Development, Almora.
5. Shri. P. K. Gupta, Scientist-'E', CPCB.
6. Shri A. A. Ansari, Scientist 'E' (Retd.), BSI, BGIR, Noida.
7. Ms. Vishaish Uppal, Director, WWF India.
8. Dr. Anjum N Rizvi, Sr. Scientist, Z.S.I., Kolkata.
9. Dr. Sarita Jain, RD, NCTO, ICFRE, Dehradun.
10. Shri. H. Padalia, Head FED, IIRS, ISRO, Dehradun.
11. Shri. S. K. Singh, STA, Forest Survey of India, Dehradun.
12. Dr. Sandeep Kumar Rawat, Associate Town & Country Planner, TCPO, Ministry of Housing & Urban Affairs.
13. Dr. Mayaunk D Dwivedi, Research Associate, BSI, BGIR, Noida.
14. Dr. Subrata Bose, Director (SC-'F'), Member Secretary(ESZ), MoEF & CC.

Ministry of Environment, Forest and Climate Change, GOI

15. Shri Sharath Kumar Pallerla, Director (SC-'F'), MoEF & CC.
16. Shri Pankaj Verma, Additional Director (SC-'E'), MoEF & CC.
17. Dr. Susan George K., Scientist-'D', MoEF&CC.
18. Dr. Veenu Joon, Deputy Director (SC-'C'), MoEF&CC.
19. Dr Shaikhom Inaotombi Singh (Consultant), MoEF&CC.

Officials of Government of Uttar Pradesh

20. Shri. Sunil Choudhary, APCCF Wildlife, Forest Department, Govt. of Uttar Pradesh.
21. Shri. Ashutosh Jaiswal, DFO, Karnmoor, Govt. of Uttar Pradesh.
22. Shri. Anand Kumar, DCF, National Chambal Sanctuary Project, Forest Department, Govt. of Uttar Pradesh.

Officials of Government of Maharashtra

23. Dr. Jitendra S. Ramgaokar, DCF Thane, Govt. of Maharashtra.
24. Shri. V. P. Ghule DCF, Forest Department, Govt. of Maharashtra.

Officials of Government of Jharkhand

25. Shri. A. Siddiqvi, Secretary, Department of Mines & Geology, Govt. of Jharkhand.
26. Shri. K. Ravi Kumar, Secretary, Department of Industry, Govt. of Jharkhand.
27. Shri. P. K. Verma, PCCF Wildlife, Department of F, E &CC, Secretary, Govt. of Jharkhand.
28. Shri. Dileep Kumar Yadav, DFO Wildlife Division Hazaribhag, Forest Department, Govt. of Jharkhand.
29. Shri. P. K. Das, CCF-FD, PTR, Palamau, Forest Department, Govt. of Jharkhand.
30. Shri. Manish Kumar Bakshi, GIS Expert, Palamau Tiger Reserve, Govt. of Jharkhand.

Officials of Government of Uttarakhand

31. Shri Arvind Singh Tyanta, Secretary, Forest & Environment Department, Government of Uttarakhand.
32. Shri. S. P. Subudhi, Member Secretary, Environment and Forest Department, Govt. of Uttarakhand.
33. Dr. Ankur Kansal, Env. Engg., Environment and Forest Department, Govt. of Uttarakhand.

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ANNEXURE-R2/7

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रजिस्ट्री सं. डी.एल.- 33004/99 REGD. NO. D. L.-33004/99

भारत का राजपत्र
The Gazette of India

सी.जी.-डी.एल.-अ.-10012020-215285
CG-DL-E-10012020-215285

असाधारण
EXTRAORDINARY
भाग II—खण्ड 3 उप-खण्ड (ii)
PART II—Section 3—Sub-section (ii)
प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं. 86] नई दिल्ली, सोमवार, जनवरी 6, 2020/पौष 16, 1941
No. 86] NEW DELHI, MONDAY, JANUARY 6, 2020/PAUSHA 16, 1941

पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय

अधिसूचना

नई दिल्ली, 6 जनवरी, 2020

का.आ. 94(अ).— अधिसूचना संख्या का.आ. 102 (अ), तारीख 1 फरवरी, 1989 (इसमें इसके पश्चात उक्त अधिसूचना कहा गया है) को, तत्कालीन पर्यावरण और वन मंत्रालय ने तत्कालीन उत्तर प्रदेश (अब उत्तराखंड) में दून घाटी में, उत्तर में मसूरी रिज़ से घिरा, उत्तर-पूर्व में हिमालयी पर्वतश्रेणी, दक्षिण-पश्चिम में शिवालिक श्रेणियों द्वारा, दक्षिण-पूर्व में गंगा नदी और उत्तर-पश्चिम में यमुना नदी में उद्योगों, खनन कार्यों और अन्य विकासात्मक क्रियाकलापों पर, क्षेत्र में पर्यावरणीय प्रभाव को ध्यान में रखते हुए प्रतिबंध लगा दिया था;

और, उक्त अधिसूचना के संबंध में कतिपय दिशा-निर्देश अधिसूचना संख्या का.आ. 943 (अ), तारीख 4 जुलाई, 2005 और का.आ. 2125 (अ), तारीख 13 दिसंबर, 2007 द्वारा जारी किए गए हैं;

और, इस बीच, केंद्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) ने पत्र सं. बी-29012/ईएसएस(सीपीए)/2015-16, तारीख 7 मार्च, 2016 को उद्योगों के वर्गीकरण पर भी दिशा-निर्देश जारी किए हैं;

और, उत्तराखंड सरकार ने पत्र सं. 122/डी-3-19-13(04)/2018, तारीख 10 अप्रैल, 2019 को उक्त अधिसूचना में संशोधन के लिए पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय से अनुरोध किया;

और, पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय ने उत्तराखंड सरकार के अनुरोध की जांच की है;

और, उपर्युक्त संशोधनों और दिशा-निर्देशों को समेकित करने और उक्त निर्देशों और संशोधनों के आधार पर शर्तों का सामंजस्य करने की भी आवश्यकता है;

अतः, अब, केन्द्रीय सरकार पर्यावरण (संरक्षण) नियम, 1986 के नियम 5 के उपनियम (4) के साथ पठित पर्यावरण (संरक्षण) अधिनियम, 1986 (1986 का 29) की उपधारा (1), के साथ धारा 3 की उपधारा (2) के खंड (v) द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए, उक्त अधिसूचना में निम्नलिखित संशोधन करती हैं और उपरोक्त मानदंड में मिल कर बनने वाली दून घाटी में आने वाले क्रियाकलापों के संबंध में निम्नलिखित शर्तें अधिरोपित करें, अर्थात्:-

उक्त अधिसूचना में, खंड (i), (ii), (iii), (iv), (v) और उपाबंध, के लिए निम्नलिखित को प्रतिस्थापित किया जाएगा, अर्थात्:-

" (i) **औद्योगिक इकाइयों के अवस्थान/स्थल** – केंद्रीय प्रदूषण नियंत्रण बोर्ड (सीपीसीबी) द्वारा पत्र सं. बी-29012/ईएसएस(सीपीए)/2015-16, तारीख 7 मार्च, 2016 को धारा 18 (1) (बी) के तहत जल (प्रदूषण की रोकथाम और नियंत्रण) अधिनियम, 1974 और वायु (प्रदूषण की रोकथाम और नियंत्रण) अधिनियम, 1981 लाल/नारंगी/हरा/सफ़ेद श्रेणियों के अंतर्गत औद्योगिक क्षेत्रों के वर्गीकरण के सांमजस्य के संबंध में जारी किए गए संशोधित दिशा-निर्देशों के अनुसार होना चाहिए और सीपीसीबी और पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय द्वारा समय-समय पर संशोधित किया जा सकता है।

(ii) **खनन-** किसी भी खनन क्रियाकलाप को शुरू करने से पहले संघ पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय की मंजूरी अभिप्राप्त करनी होगी।

(iii) **पर्यटन-** पर्यटन विकास योजना (टीडीपी) के अनुसार, राज्य पर्यटन विभाग द्वारा तैयार किया जाना चाहिए और संघ पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय द्वारा यथानियम अनुमोदित किया जाना चाहिए।

(iv) **चराई-** राज्य सरकार द्वारा तैयार की जाने वाली योजना के अनुसार और संघ पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय द्वारा यथानियम अनुमोदित किया जाना चाहिए।

(v) **भूमि उपयोग-** संपूर्ण क्षेत्र के विकास और भूमि उपयोग योजना के महायोजना के अनुसार, राज्य सरकार द्वारा तैयार किया जाना है और संघ पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय द्वारा अनुमोदित किया जाएगा।

टिप्पण:

(क) दून घाटी में उद्योगों की लाल प्रवर्गों की अनुमति नहीं होगी;

(ख) दून घाटी में ईंधन जलाने वाले उद्योगों की कुल संख्या को सभी स्रोतों से सल्फर डाइऑक्साइड के 8 टन प्रति दिन तक सीमित किया जाएगा। (यह 1% सल्फर के साथ प्रति दिन 400 टन कोयले के समान है।);

(ग) औद्योगिक क्षेत्रों के स्थल निर्धारित मानदंड पर और सक्षम प्राधिकारी की पूर्व स्वीकृति के साथ होगी;

(घ) विद्यमान नारंगी प्रवर्ग के उद्योग, जो अब उद्योगों की लाल प्रवर्गों में हैं, को जारी रखा जाएगा, तथापि, किसी विस्तार की अनुमति नहीं प्रदान की जाएगी।"।

[फा. सं. 25/6/2012-ईएसजेड]

डॉ. सतीश चन्द्र गढ़कोटी, वैज्ञानिक 'जी'

टिप्पण: मूल अधिसूचना भारत के राजपत्र में, असाधारण, भाग II, धारा 3, उप-धारा (ii), संख्या का.आ. 102 (अ), तारीख 1 फरवरी, 1989 को प्रकाशित की गई थी।

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 6th January, 2020

S.O. 94(E).—WHEREAS, *vide* notification number S.O. 102(E), dated the 1st February, 1989 (hereinafter referred as the said notification) the erstwhile Ministry of Environment and Forests imposed restriction on location of industries, mining operations and other developmental activities in the Doon Valley, bounded on the North by Mussoorie ridge, in the North-East by Lesser Himalayan ranges, on the South-West by Shivalik ranges, river Ganga in the South-East and river Yamuna in the North-West in erstwhile Uttar Pradesh (now Uttarakhand), keeping in view the environmental impact in the region;

AND WHEREAS, in respect of the said notification certain directions have been issued *vide* notification number S.O. 943 (E), dated the 4th July, 2005 and S.O. 2125 (E), dated the 13th December, 2007;

AND WHEREAS, in the meantime the Central Pollution Control Board (CPCB) has also issued directions on the categorisation of industries *vide* letter No. B-29012/ ESS(CPA)/2015-16, dated the 7th March, 2016;

AND WHEREAS, the Government of Uttarakhand *vide* letter No. 122/D-3-19-13(04)/2018, dated the 10th April, 2019 requested the Ministry of Environment, Forest and Climate Change for amendment in the said notification;

AND WHEREAS, the Ministry of Environment, Forest and Climate Change has examined the request of the Government of Uttarakhand;

AND WHEREAS, there is a need to consolidate the amendments and the directions as above and also to harmonise the conditions based on the said directions and amendments;

NOW THEREFORE, in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 read with sub-rule (4) of Rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby makes the following amendments in the said notification and impose following conditions in respect of the activities falling the Doon Valley comprising of the above criteria, namely: -

In the said notification, for clauses (i), (ii), (iii), (iv), (v) and ANNEXURE, the following shall be substituted, namely:-

"(i) **Location/siting of industrial units** – It has to be as per modified directions issued by the Central Pollution Control Board (CPCB) *vide* letter No. B-29012/ESS(CPA)/2015-16, dated the 7th March, 2016 under section 18(1)(b) of the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981 regarding harmonization of classification of industrial sectors under red/orange/green/white categories and as may be amended from time to time by the CPCB and the Ministry of Environment, Forest and Climate Change.

(ii) **Mining** – Approval of the Union Ministry of Environment, Forest and Climate Change must be obtained before starting any mining activity.

(iii) **Tourism** – It should as per Tourism Development Plan (TDP), to be prepared by the State Department of Tourism and duly approved by the Union Ministry of Environment, Forest and Climate Change.

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(iv) **Grazing** – As per the plan to be prepared by the State Government and duly approved by the Union Ministry of Environment, Forest and Climate Change.

(v) **Land Use** – As per Master Plan of development and Land Use Plan of the entire area, to be prepared by the State Government and approved by the Union Ministry of Environment, Forest and Climate Change.

Note:

(a) Red categories of industries shall not be permitted in Doon Valley;

(b) The total number of fuel burning industries that shall be permitted in the Doon Valley shall be limited by 8 tonnes per day of Sulphur Dioxide from all sources. (This corresponds to 400 tonnes per day Coal with 1 % Sulphur);

(c) Siting of Industrial areas shall be based on the prescribed criterion and with prior approval of Competent Authority;

(d) Existing orange categories industries, which are now in the red categories of industries shall be continued, however, no expansion shall be allowed.".

[F. No. 25/6/2012-ESZ]

DR. SATISH C. GARKOTI, Scientist 'G'

Note: The principal notification was published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) vide number S.O. 102 (E). dated the 1st February,1989.

Uploaded by Dte. of Printing at Government of India Press, Ring Road, Mayapuri, New Delhi-110064
and Published by the Controller of Publications, Delhi-110054.

ANNEXURE-R2/8

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No. 11/14/2018-ESZ
Government of India
Ministry of Environment, Forest and Climate Change
(ESZ-Division)

Indira Paryavaran Bhawan,
Jorbagh Road, Aliganj,
New Delhi- 110003

Dated: 30th January, 2020

To,

As per list enclosed

Subject: Guidelines for Assessing Carrying Capacity of Hill Stations including cities and Eco-Sensitive Zones-reg.

Sir,

The Hon'ble National Green Tribunal, Principal Bench, New Delhi in O.A. No. 462 of 2018 [earlier O.A. No. 11/2018 (SZ)] filed by Shri D. V. Girish Vs. UoI & Ors. directed Ministry of Environment, Forest and Climate Change to frame a set of Guidelines w.r.t. carrying capacity assessment of Hill Stations including Cities and Eco Sensitive Zones.

2. A copy of Guidelines for Assessing Carrying Capacity of Hill Stations including cities and Eco-Sensitive Zones is prepared and hereby enclosed for necessary action at your end.

Yours faithfully,

Encls: -As above

J. Bose

(Dr. Subrata Bose)
Director/Scientist'F'
Tel: 011-24695422(O)
Email: subrata.bose@nic.in

O/C

Issued
30/1/20

List: 963

1. The Principal Secretary, Municipal Administration & Urban Development (MA&UD) Department, L Block, G Floor, Room No-105, A.P. Secretariat, Hyderabad - 500 022.

2. The Principal Secretary, Dept of Urban Development & Housing, (UD&H), Civil Secretariat, Itanagar, Arunachal Pradesh.

3. The Principal Secretary, Urban Development Department (UDD), Directorate of Town & Country Planning, Dispur, Guwahati 781006.

4. The Principal Secretary, Urban Development and Housing Department (UDHD), Vikas Bhawan, Bailey Road, Patna, Bihar-800015.

5. The Principal Secretary, Urban Development (UD), Secretariat, 66 KVA Road. Amli, Silvassa – 396230.

6. The Principal Secretary, Urban Development (UD), Secretariat, Fort Area, Moti Daman, Daman (U.T.) – 396220.

7. The Principal Secretary, Urban Development Department (UDD), Government of NCT Delhi, 9th & 10th Level, Delhi Secretariat, I.P. Estate, NEW DELHI - 110 002.

8. The Principal Secretary, Department of Urban Development (UDD), Secretariat, Porvoriam, Goa – 403521.

9. The Principal Secretary, Urban Development and Housing Department (UD&H), Block No. 14, 9th Floor, Sachivalaya, Gandhi Nagar – 382010, Gujarat.

10. The Principal Secretary, Urban Local Bodies Department (DULB), Room No. 506, 5th Floor New Civil Secretariat, Sector 17, Chandigarh, Haryana.

11. The Principal Secretary, Directorate of Urban Development (DUD), 101-Armsdale Building, Himachal Pradesh Government Secretariat, Shimla – 171002.

12. The Principal Secretary, Housing & Urban Development Department (H&UD), Civil Secretariat, Srinagar – 190006, Jammu & Kashmir.

13. The Principal Secretary, Urban Development Department (UDD), 4th Floor, Project Building, Dhurwa, Ranchi – 834004. Jharkhand.

14. The Principal Secretary, Urban Development Department (UDD), Karnataka Government Secretariat, Room No.435, Vikasa Soudha, 4th Floor, Bengaluru – 560001.

15. The Principal Secretary, Urban Development & Local Self Government (UD&LSG), Room No. 404, 4th Floor, Govt. Secretariat (Annexe), Thiruvananthapuram – 695001, Kerala.

16. The Principal Secretary, Department of Urban Development (UDD), UT of Lakshadweep Administration, Kavaratti – 682555.

17. The Principal Secretary, Urban Development & Environment Department (UA&ED), Room No. 327, MP Mantralaya, Bhopal – 462001.

18. The Principal Secretary, Urban Development Department (UDD), UD Department, Mantralaya, 4th Floor, Mumbai – 400032.

19. The Principal Secretary, Department of Municipal Administration, Housing & Urban Development (MAHUD), Western Block, New Secretariat, Manipur-795001.

20. The Principal Secretary, Meghalaya Urban Development Authority (MUDA), Room No.- 507, Additional Secretariat Building, Shillong-793 001.

21. The Principal Secretary, Directorate of Urban Development and Poverty Alleviation (DUDPA), Urban Development, Room No216 & 217, New Secretariat Complex, Aizawl, Mizoram796001.

22. The Principal Secretary, Planning & Urban Development (P&UD), B-06, Plánning & Urban Development, Civil Secretariat, Kohima-797001, Nagaland.

23. The Principal Secretary, Housing & Urban Development Department (H&UD), Housing & Urban Development Department, Govt of Odisha, Annexure Building, Odisha State Secretariat, Bhubaneswar751001.

24. The Principal Secretary, TOWN AND COUNTRY PLANNING DEPARTMENT, Chief Secretariat, Puducherry – 605001.

25. The Principal Secretary, Department of Local Self Government (LSG), Room No. 8223, SSO Building, Shashan Sachivalaya, Jaipur, Rajasthan.

26. The Principal Secretary, Urban Development & Housing Department (UD&H), Deptt. of UD & Housing, Govt. of Sikkim, NH-31A, Gangtok, Sikkim – 737 101.

27. The Principal Secretary, Muncipal Administration & Water Supply Department (MA&WS), Municipal Administration & Water Supply Dept., Government of Tamil Nadu, Secretariat, Fort St. George, Chennai - 600 009, Tamil Nadu.

28. The Principal Secretary, Municipal Administration & Urban Development (MA&UD) Department, MA&UD Department, Telangana State Secretariat, NTR Marg, Public Gardens, Central Secretariat, Khairatabad, Hyderabad, Telangana 500004.

29. The Principal Secretary, Urban Development Department (UDD), Department of Urban Development Gorkha Basti, PO Kunjaban, Agartala, West ,Tripura-799006.

30. The Principal Secretary, Urban Development Department (UDD), 834, Bapu Bhawan, Lucknow226001, Uttar Pradesh.

31. The Principal Secretary, Directorate of Urban Development (DUD), 43/6 Mata Mandir Road, Dharampur, Dehradun, Uttarakhand-248001.

32. The Principal Secretary, Department of Municipal Affairs (DMA), Nagarayan, Sector-I, Block-DF-8, Bidhan Nagar, Kolkata-700064, West Bengal.

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ANNEXURE-R2/9

IN THE SUPREME COURT OF INDIA
CIVIL APPELLATE JURISDCITION
IN
CIVIL APPEAL No. 868 OF 2019

IN THE MATTER OF:

PUSHPINDAR SINGH CHOPRA & ORS. Appellant(s)

VERSUS

HIMACHAL PRADESH TOURISM DEVELOPMENT CORPORATION LTD. & ORS. Respondent(s)

INDEX

FILED BY

. ADVOCATE FOR RESPONDENT NO.5 (MOEF&CC)

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IN THE SUPREME COURT OF INDIA

CIVIL APPELLATE JURISDCITION

IN

CIVIL APPEAL No. 868 OF 2019

IN THE MATTER OF:

PUSHPINDAR SINGH CHOPRA & ORS. Appellant(s)

VERSUS

HIMACHAL PRADESH TOURISM DEVELOPMENT CORPORATION LTD. & ORS. Respondent(s)

Additional Affidavit on behalf of the Respondent no.5 (Ministry of Environment, Forest and Climate Change)

I, W. Bharat Singh son of Late Shri W.K. Singh aged about 54 years, presently working as Scientist 'F' in the Ministry of Environment, Forest & Climate Change (*hereinafter referred to as MoEFCC*), Government of India, Jor Bag Road, Aliganj, New Delhi-110003, do hereby, in my official capacity, solemnly affirm and state on oath as follows:-

1. That I am acquainted with the facts and circumstances of the instant case and duly competent to swear the present affidavit on behalf of this respondent Ministry (MoEFCC) on the basis of the official records maintained therein.
2. It is respectfully submitted that this answering respondent had in its original reply affidavit submitted before this Hon'ble Court had stated that -

"Ministry of Environment, Forest and Climate Change has recently entrusted the responsibility of framing the guidelines for hill stations to the

NOTARY Rajendra Kumar Delhi Regd. No. 5780 Date of Expiry 27th April-2023 GOVT. OF INDIA

the GBP NIHESD, once prepared and submitted to the Ministry, will be placed on record of the registry of this Hon'ble Court".

3. It is humbly submitted that the said report on the Carrying Capacity of Hill Station prepared by the GB Pant National Institute of Himalayan Environment and sustainable Development, has been submitted to this respondent Ministry and a true copy of the report is annexed herewith as **Annexure-1.**

4. It is humbly submitted that the Guidelines for Assessing Carrying Capacity of Hill Stations including Cities and Eco Sensitive Zones (Annexure- I) has been accepted by the Ministry of Environment, Forest and Climate Change. The said Guidelines along with template was circulated to all the concerned States *vide* letter dated 30th January, 2020, for necessary action. A Copy of letter is annexed herewith as **Annexure-2.**

5. It is humbly submitted that the contents mentioned in this additional affidavit are true and correct to the best of my knowledge and belief.

DEPONENT
(W. BHARAT SINGH)
वैज्ञानिक 'एफ'/Scientist 'F'
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
M/o Environment, Forest and Climate Change
भारत सरकार, नई दिल्ली
Govt. of India, New Delhi

VERIFICATION

I, the above named Deponent, do hereby verify that the contents of the above affidavit are true and correct to my knowledge as per the records of the answering respondents. No part of it is false and nothing material has been concealed there from.

Verified at DELHI on this.... 27 SEP 2021 day of....., 2021.

DEPONENT
(W. BHARAT SINGH)
वैज्ञानिक 'एफ'/Scientist 'F'
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
M/o Environment, Forest and Climate Change
भारत सरकार, नई दिल्ली
Govt. of India, New Delhi

NOTARY
Rajendra Kumar
Delhi
Regd. No. 5780
Date of Expiry
27th April-2023
GOVT. OF INDIA

CERTIFIED THAT THE CONTENTS EXPLAINED TO THE DEPONENT EXECUTANT WHO IS SEEMED PERFECT TO UNDERSTAND & AFFIRMED DEPOSED BEFORE ME AT DELHI ON 27 SEP 2021 IDENTIFIED BY IDENTIFY THE EXECUTANT/DEPONENT WHO HAS SIGNED IN MY PRESENCE

R.K. Swami

IDENTITY THE EXECUTANT / DEPONENT WHO WAS SIGNED IN THE PRESENCE OF

BEFORE ME
RAJENDRA KUMAR
NOTARY, DELHI-R-5780
GOVERNMENT OF INDIA
SUPREME COURT OF INDIA
COMPOUND, NEW DELHI
Register Pg./Sl. No....27 SEP 2021
Mobile No.: 9899446209

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ANNEXURE-1

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Guidelines for Assessing Carrying Capacity of Hill Stations including cities and Eco-Sensitive Zones

Ministry of Environment, Forest & Climate Change
New Delhi

2020

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Table of Contents

Chapter - 1

1. Background

The definition of environment as provided in the Environment(Protection) Act, 1986 states that "environment includes water, air and land and the inter- relationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property". Thus, the term environment includes not just nature and life forms, but also air pollution, water pollution, heritage sites, waste management, etc. Overcrowding of hills stations, cities, etc. due to tourism influx beyond carrying capacity, leading to degradation of environment. Therefore, the issues need to be addressed and carrying capacity of such areas are required to be assessed for Quality of Life in the areas. The carrying capacity dimensions for any areas generally comprises of air, noise, water, land and biological environment. If these dimensions are controlled and within the hold of the areas (be it city, hill stations, eco-sensitive, etc.), the habitant of those areas will have proper and normal quality of life as the areas supports physiological needs, social needs and self-fulfillment needs of habitant. Though satisfying the human needs in the present context is next to impossible as the needs keep on moving from lower level needs to higher level needs; however, endeavor is to provide good quality of life to all. In order to find out the actual situation, the carrying capacity of these areas are to be ascertained in the first place, so that the corrective/mitigative measures, if required to be taken.

1.1 Carrying Capacity Definitions/Connotations

The carrying capacity has been defined differently in relation to the contexts of reference and use of particular resource, ecosystem, and environment. In most simplistic terms the carrying capacity is the population that can be supported indefinitely by its supporting systems. The carrying capacity of a biological species in an environment is the maximum population size of the species that the environment can sustain indefinitely, given the food, habitat, water, and other necessities available in the environment (Hui, 2006). According to Encyclopedia Britannica, the Carrying capacity, is the average population density or population size of a species below which its

numbers tend to increase and above which its numbers tend to decrease because of shortages of resources (Encyclopedia Britannica). For a resource the carrying capacity is the maximum number of people/ consumers to which the resource can be made available in a sustainable way for infinite period of time, and usually expressed as the ratio of availability of the resource on a renewable basis over a period of time to the standard individual consumption of that resource over that time.

A reference to 'environmental carrying capacity' defines it as an ecological concept which discusses and determines the maximum number of population which can be sustained in a given environment under steady-state condition considering the environmental factors like food, habitat, water, air etc. are available indifferently; it may be described as a test of the ability of land, water and air to keep itself usable and toxicity free, despite pollution and effluent discharges and harmful developments over it (NEERI). Sharma et al. (2012) define the carrying capacity of an area as an extreme limit that when exceeded is counteracted by nature by imposing pressures to resist the abrupt growth and development of the people resulting into an equilibrium; and these pressure are exhibited in the form of floods, droughts, landslides, famine etc. In context of the human population, carrying capacity refers to the number of individuals who can be supported in a given area within natural resource limits, and without degrading the natural, social, cultural and economic environment for present and future generations.

Defining and assessment of carrying capacity is a complicated task as it not only includes the natural elements but also the man-made attributes such as economic, cultural, infrastructural aspects, etc. Oh et al. (2002) puts the concept of urban carrying capacity as the material developments of human activities, population growth, and land utilization which can realize the sustainable development of living environmental systems without causing degradation or irreversible damage.

According to World Trade Organisation (WTO) (1999) the carrying capacity of a tourist destination is - "the maximum number of tourists that can visit a location over a given

period of time such that local environment, physical, economic, and socio-cultural characteristics are not compromised, and the visitor satisfaction not reduced

Ali (2013), defines Carrying Capacity as a quantitative concept that assumes the limit, though difficult to estimate, of the ability of natural ecosystem to support continued growth of population within the limits of abundance of resource and within the tolerance of environmental degradation. The size of population that the carrying capacity of a resource can support depends on the size of the need of that population, and the size of need cannot exceed the limit of carrying capacity to maintain the sustainability.

The G. B. Pant National Institute of Himalayan Environment and Sustainable Development (GBPNIHESD) proposes the definition of carrying capacity as-the carrying capacity of a hill station/ place at a given period/ point of time with a given/ existing state of natural resources, and set of infrastructure and facilities, is the maximum number of people (inhabitants and floating population) that it can support without adversely affecting its characteristic attributes, relating to recreational/ aesthetic /cultural values, environmental sanctity, educational and learning experience, the stipulated economic/ societal goals relating to its establishment/ developed, and the envisaged quality of tourist experience that it proposes to offer.

1.2 Historical Perspective

The concept carrying capacity was pioneered by Thomas Malthus in 1798, who described it as the maximum size of population that the earth can support without damaging the natural, cultural and social environment and degrading its future carrying capabilities of supporting the human population (Abernethy, 2001). Alternatively, it says earth can hold a definite amount of human growth for a definite time; the concept also relates the quality and state of ecosystem with respect to pressures meted out by the demands of dwelling population; it is basically an ecological concept that also embraces socio-economic parameters. The carrying capacity is very frequently used in animal

population growth analyses/ studies and expressed as constant 'K' in the logistic growth model/ equation, given by Pierre Verhulst in 1838, stated as under:

$$Nt = \frac{K}{1+e(a-rt)} \quad \text{or} \quad \frac{dN}{dt} = rN\left(\frac{K-N}{K}\right)$$

where N = population size, r= intrinsic rate of natural increase; t =time, a = constant of integration ; the expression $\left(\frac{K-N}{K}\right)$ is the density dependent unused growth potential , which increases with lower values of N and equals zero when N=K, which is the carrying capacity point the population ceases to grow. The carrying capacity is the upper size limit of a population of a species that cannot be exceeded permanently in an environment with a given set of abiotic conditions and set of species and interactions.

Carrying capacity was originally used to determine the number of animals that could graze on a segment of land without destroying it. Later, the idea was expanded to more complex populations, like humans. In recent years with observations of perceived impacts of increasing population, industrialization, developmental activities etc., in terms of decreasing availability of natural resources, degradation of ecosystems & their service flows, environmental pollution, and disasters the concept/ term also began to be used to assess/ plan various developmental contexts. Now the use of the concept for development of - settlements, tourism, industries, construction of roads, traffic management, etc. is being advocated so that the amenable living conditions, environmental quality, ecology and culture is not adversely affected and the societies can be sustained simultaneously.

1.3 Use of Carrying Capacity

The carrying capacity is the maximum limit up to which an area environment/ ecosystem can be stressed without irreversibly affecting the productivity of natural resources, environmental quality & aesthetics, culture and survival of species so that the ecological, social and cultural integrity of the system is maintained. So, the carrying capacity assessment is sensitive to the thresholds & impacts that govern such limits, and it is a useful planning tool for determining the scope and level of

development, and assessment of optimal points for abatement measures, and identification of suitable impact management interventions.

Further, the carrying capacity of an environment, ecosystem and destination is not fixed, and it can suffer adversely due to degradation in environmental quality, and can be improved through infrastructural augmentation, use of technology, planned development, supply substitutions, capacity building, better community organizations/ policy environment/ natural resource management, and use of best practices. There are many factors that can influence the carrying capacity of a region; the pattern and extent of resource use is a primary factor that considerably affects the carrying capacity. The education and awareness building also helps in efficient use of resources, and acceptability of best practices which helps in avoiding overexploitation and mitigating the pressure on resources, and thus improving the resilience and tolerance limit of the environment and improving the carrying capacity. The assessment of carrying capacity can be useful in following contexts.

i) ***Identification of carrying capacity problems and threshold overshoots of places at the Verge of carrying capacity*** - This is useful as a learning experience to be reckoned with development of new places, and understanding of various institutional, societal, environmental and developmental issues leading to the problems.

ii) ***Carrying Capacity Assessment for Impact Management*** - This case is more relevant for destinations witnessing rapid growth of population (resident and floating) and infrastructure which may lead to carrying capacity problems in future. The suitable impact management measures can keep the situation below the carrying capacity limits.

iii) ***Carrying Capacity assessment for development of new settlements/ Special Economic Zones(SEZs)/ destinations*** - This requires a holistic stock-taking of social, cultural, and environmental concerns vis-a-vis the envisaged scope of economic development and need a proper description of vision and specific objectives of development.

iv) ***Understanding of natural resource status and resource use pattern*** - This is helpful in understanding the system vulnerabilities, pressure on resources; demand-supplies, and identification of critical resources, that need to be protected and strengthened through community action, R&D, and conservation interventions.

v) ***Recommendation of suitable policy measures*** - The understanding of threshold vulnerabilities and sensitivities will help in identification of activities and areas for policy interventions.

vi) ***Scenario Simulation and Forecasting*** - The carrying capacity assessments can also help understanding the future state of affairs, and can be used for short, medium, and long term management/ mitigation planning.

1.4 Present Context (Purpose of this study)

The present context pertains to 'Development of Guidelines for Assessment of Carrying Capacity of Hill Stations and Eco-Sensitive Zones including cities' to be prepared by MoEF&CC in the country. This task of framing guidelines for carrying capacity assessment was entrusted to MoEF&CC by Hon'ble National Green Tribunal in relation to a hearing on the matters pertaining to the threats imposed by construction works for development of tourism infrastructure in Kasauli Himachal Pradesh and Chikmangluru, Karnataka, to prevent hazards of unregulated developments threatening the fragile ecology and safety in the region and other hill stations, ESZs including cities of the country. The MoEF&CC assigned this task to GBPNIHESD.

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Chapter - 2

2. Introduction

Hills and mountains occupy about one fourth of the world's land surface and shelter about ten percent of its population. Another forty percent population occupies the watershed areas of hills and mountains. Thus half of the world population depends directly or indirectly on hills and mountains. They provide water, energy, minerals, forest and agricultural products and recreation. They also harbor a large part of the biological diversity necessary for the sustainability of human life.

Hills and hill areas have been playing an important role in the economic and social development ever since the dawn of human civilization. In recognition of this, the United Nations General Assembly(UNGA) declared the year 2002 as International Year for Mountains(IYM). In India hill ecosystem form a major environmental resource. Out of the eighteen biodiversity hotspots in the world, India has two, one is in the Western Ghats and other is in the Eastern Himalayas. Human activities including urbanization, agriculture, mining, construction of large dams and tourism in these areas have caused damage –sometimes irreversible-to these fragile ecosystems.

Hill stations have suffered a great deal of degradation. In some hill stations the situation may have passed to the point of no return. The immediate action is therefore needed to prevent further degradation.

Good healthy hill areas, besides being prosperous themselves, also bring prosperity downstream. Similarly, degraded hill or mountain areas bring poverty and drudgery downstream. Therefore, it is important to maintain the environmental balance and economic and social viability of hill areas, both for the sake of mountains inhabitants and for those living in low areas.

Hill region provide several valuable goods and services. The important goods include water food, wood, a variety of non -- timber forest products and minerals. Important

services include the maintenance of soil fertility and structure, and associated limitation of soil erosion; downstream movement of soil nutrients; avoidance and mitigation of damaging impacts of floods landslides, avalanches; opportunities for tourism and recreation; biodiversity not only benefits local areas, but in its cycling and storage of carbon and soil nutrients, plays a role of global significance.

Hill and mountain ecosystems play a major role on micro- climatic conditions. Local climate change may cause regional environmental problems, which in course of time may affect global climate and other natural ecological cycles in the earth system.

In India, most hill stations are facing human onslaught in the form of industrialization, urbanization, commercialization, destruction of heritage sites and deforestation. They have resulted in landslides, loss of catchment values and frequent floods in the densely populated plains to south of the Himalayan region in the Ganga, the Brahmaputra basin and elsewhere.

In all the hill areas in the last few decades there has been an unprecedented growth in human population and a corresponding rise in commercial activities, including housing, unregulated tourism, industry, agriculture, mining and communications. Consequently, there has been a rapid shrinkage in the size of remaining natural habitats, forests, and man-made heritage sites.

In the hill region the ecology and environment of most hill stations, have suffered to a large extent. It is becoming evident that increased tourism, mining, urbanization, commercialization and allied industrial development without appropriate planning and management can become a threat to the integrity of both ecosystems and local cultures in sensitive natural areas. Tourism and seasonal migration of population from the plains to hill areas have a series of social - cultural, socio – economic, physical and environmental impacts on the habitats. Hence systematic evaluation and analysis, using scientific techniques, is necessary before development decisions are taken.

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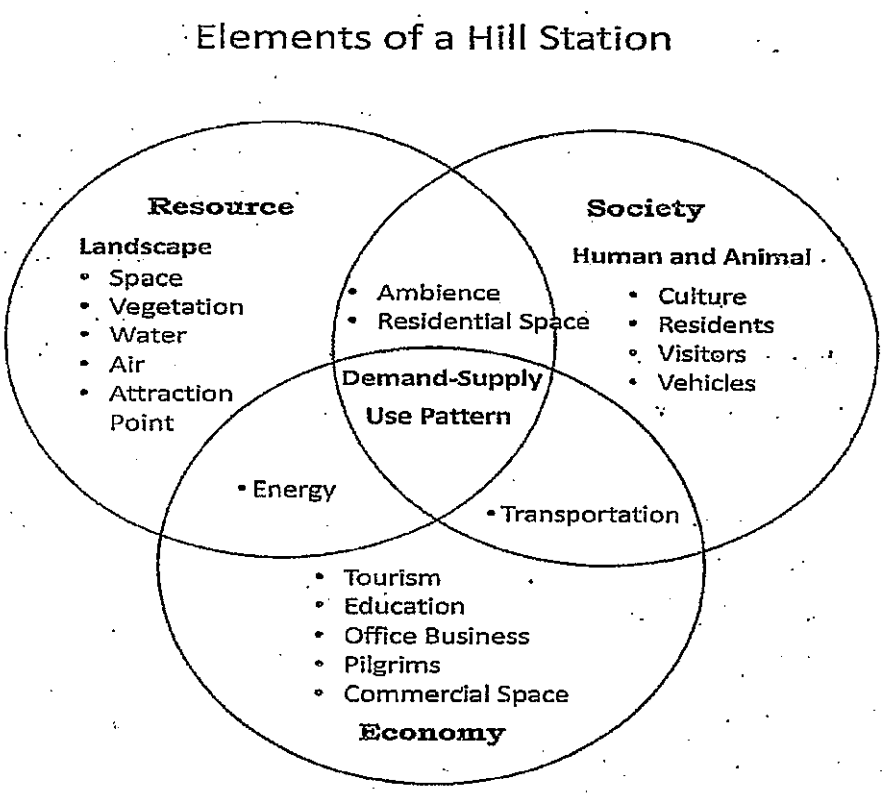
2.1 Elements of Hill Stations



2.2 Criteria for determining Environmentally Sensitivity

1. Geo-morphology – a study on land forms and their features for designated uses/purposes.
2. Demography – population pressures owing to density and distribution of population (including immigration, reliance on natural resources like food, fodder, fuel wood, etc.)
3. Urbanisation – unplanned urban development leading to resource depletion especially in the ecotone areas.
4. Commercialisation – unplanned, rapid and de-centralised commercialization without any concern for environmental aspects such as health, sanitation, sustainability etc.
5. Surfeit of Tourism and accompanying pollution.

6. Natural and scenic beauty and scenic areas – these areas need protection and preservation.

7. Natural features – caves, waterfalls, etc. – these areas need protection and preservation.

8. Historical, heritage and archaeological sites - these areas need protection and preservation.

9. Watershed / Catchment areas – ecologically sound approach 'integrating' the qualitative & quantitative and spatial & temporal aspects of surface and ground water resources would ensure sustainable use of watersheds.

10. Important or critical ground water recharge area – Scientific and legislative measures to avoid activities which would pollute the ground water resources are to be incorporated.

11. Earthquake prone regions – areas to be identified, monitored and managed to avoid damages to structures of communication and habitation.

12. Land slide prone regions – areas with loose soil, unfit for construction activities.

13. Soil erosion – to be avoided by proper regional environmental planning methods.

14. Steep slopes – slopes play an important role in all types of developmental and conservation activities.

15. Intense Rainfall Areas – areas having high precipitation concentration over a short period.

16. Proximity to national parks, sanctuaries and biosphere reserves – proper sitting of National Parks, demarcation of sanctuary areas following National guidelines and declaration of bio-reserves in and around hill areas and hill stations are to be done in such a manner that the proposed development activities do not change their environmental quality and disturb the ecological harmony.

17. Carrying capacity – if the peak floating population exceeds the carrying capacity (which it seems to do in most places), this could be a criterion for ensuring corrective action to be taken to preserve both natural and manmade resources.

18. Infrastructure availability (water/power/roads/sanitation etc.)–infrastructure facilities' to be provided.

2.3 Methodology for determination of Environmental Sensitivity

2.3.1 Environmental Sensitivity

Environmental sensitivity can be quantified in terms of carrying capacity for specified environmental parameters, preservation of forests, pressure on civic amenities, state of heritage both natural and manmade etc.

The socio-environmental parameters such as population density, diversity, infrastructure facilities, transportations, communication, and commercial developments are also to be considered while assessing environmental sensitivity.

2.3.2 Assessment of ecological/environmental sensitivity

Step -I

Collection and processing of past environmental / ecological information or data in any form in respect of parameters as cited above.

Step-II

Collection and processing of the present environmental / ecological information or data in any form in respect of all parameters as cited above.

Step-III

Assessment and expression of environmental sensitivity based on level of impact significance.

2.4 It may be relevant to mention that the Ministry of Environment, Forest and Climate Change (MoEF&CC) has notified a number of rules and regulations for safeguarding and conserving the environment, which *inter alia* include Environment Impact Assessment Notification(EIA), 2006; eco-sensitive zone notifications around protected areas (national park and wildlife sanctuaries),Mahableshwar–Panchgani Eco-sensitive Zone, Maharashtra,Matheran Eco-sensitive Zone, Maharashtra, Mount Abu, Eco-sensitive Zone, Rajasthan,Bhagirathi Eco-sensitice Zone, Uttarakhand, etc.The Bhagirathi ESZ is one of its kind, which has adopted catchment area approach for declaring stretch of Bhagirathi river from Gaumukh to Uttarkashi.

2.5. Carrying Capacity in Indian Context

India is a developing economy where population is growing at a very fast pace. The country is also witnessing a rapid growth in urbanization, infrastructure and industrial development. This is resulting in increasing consumerism and demands, and overexploitation of natural resources. Today, open spaces and green spaces in urban settlements are shrinking, urban sprawl is eclipsing the rural pockets, rural areas transforming into semi-urban and urban moulds, and agricultural and forest land is being diverted for other uses. Water logging & floods in metropolitan areas and cities during rainy seasons has become a regular feature, receding water table, pollution of water bodies in tourist areas, water scarcity, traffic jams, lack of parking space, parking along highways, air pollution in cities, etc. are common observations and concerns suggesting overshoot of carrying capacity limits. In hill stations, overcrowding and cluttered growth of settlements are not compatible with the fragile ecology /geology of the areas, and deforestation for construction of houses and access roads also adversely affect the subterranean water regimes, perenniality of water sources, and resulting in seasonal water crises, soil erosion, defilement of aesthetic ambience, and blockage of scenic views and thereby diluting the quality of touristic experience and leisurely living in the isolated settlements amidst the forested areas in the hills. The accumulation of solid waste and littering is another problem of most of the cities/ towns and many hill stations/ tourist places of the country. According to Niti Aayog Working Group Report (2018) data for year 2009-12 reveals that the Indian Himalayan states are accumulating 22,372 metric tons of municipal solid waste per day. The littering of this waste along hill slopes and amidst forest areas suggest technical and managerial incapacities, enforcement lacunae and lack of human alacrity for disciplined and responsible response.

Different groups or researchers works on the subject of carrying capacity ranging from urban carrying capacity, ecological carrying capacity, biological carrying capacity, physical carrying capacity, tourist carrying capacity etc. Further, many studies are also available in literature, which are in-line or supplementary to the cause of carrying

capacity which includes many Environmental Impact Assessment & Ecological Footprint studies with the objective of assessing impacts of different natural and anthropogenic activities on the environment. In view of shortage of time it's not possible here to mentioned all the studies. However, the major genesis of the carrying capacity, its scope and relevancy in today's scenarios is highlighted in above and subsequent paragraphs.

2.6 Review of works done

With the raising concerns over environmental degradation in and around some of the prominent hill stations in India, protective measures were taken by the State and Central Governments to save the environmental conditions. State of Maharashtra took a lead in this context, where out of three notifications on eco-sensitive zones issued so far two pertained to the State. Besides many provisions, these notifications of eco-sensitive zone also emphasize (i) regulated use of ground water, and (ii) identification of significance for precincts of historical, architectural, aesthetical, and cultural value for protection and conservation planning (particularly their exteriors) of buildings, structures, artifacts, and areas as *Man-Made Heritage*. In 1983, under Maharashtra Regional and Town Planning Act (1966) Government of Maharashtra established (Urban Development Department Bombay, 1983) a region as "Mahableshwar - Panchgani Region" (entire area Mahablashewar Tehsil and five villages of Jaoli Tehsil of Satara district). This notification includes municipal areas of hill station of colonial genesis viz., Mahableshwar (19.55 km^2) and Panchgani (6.16 km^2), and residential zones outside municipal limits. In the year 2001, after a process, Government of India (Ministry of Environment and Forests) notified "Mahableshwar-Panchgani Region" as an Eco

Hill Stations Landscapes- Legal Protection

- Notified as Éco-sensitive Zone' - Three notifications
- Four hill stations all have colonial genesis
- Maharashtra (Two notifications covering three hill stations - Mahablashwer, Panchgani, and Matheran)
- Only hill station in Rajasthan, i.e., Mount Abu

Sensitive Zone under provisions of Environment (Protection) Act, 1986. In 2003, Government of India (Ministry of Environment and Forests) notified another area as eco-sensitive zone in the State of Maharashtra, which comprised of a hill station of colonial genesis (Matheran) as the core element with surrounding eighty villages of two districts. Here it must be realized that till date Matheran is the only pedestrian hill station in entire Asia.

In 2009, the only hill station of Rajasthan State, Mount Abu, having natural heritage (Nakki Lake) and man-made heritage (Dilwara temple and other heritage buildings/structures) and with an ecologically important tropical dry deciduous forests at lower altitude and evergreen forests at higher altitude and the flora and fauna of the region comprising of several endemic and rare species, was notified as eco-sensitive zone by the Government of India (Ministry of Environment and Forests).

The **Wild Life Conservation Strategy-2002**, adopted during the XXIst meeting of Indian Board for Wildlife (IBWL) held on 21st January 2002 under the chairmanship of Hon'ble Prime Minister, stipulated that:

> *"Lands falling within 10 Km of the boundaries of National Parks and sanctuaries should be notified as eco-fragile zones under section 3 (v) of the Environment (Protection) Act and Rule 5 Sub –rule 5 (viii) & (x) of the Environment (Protection) Rules.".*

The National Board for Wildlife in 2005 decided that delineation of Eco-sensitive zones would have to be site specific and relate to regulation rather than prohibition of specific activity. Aforesaid decision was reinforced by a number of Orders/directions passed by the Hon'ble Supreme Court of India. In all such Protected Areas(PAs), where a PA-specific Eco Sensitive Zone(ESZ) has not been notified, a 10 km area around the PAs is treated by default as ESZ.

In 2011, the Wildlife Division has prepared the Guidelines for preparation of ESZ proposals to support the state Governments. The Guidelines include an indicative list of activities that are Prohibited/Regulated and Promoted. Copy of Guidelines is attached(**Annexure-I**) and is also available in the website of the Ministry(moef.gov.in).

Following these Guidelines, Ministry has developed a template in consultation with Ministry of Law and Justice to facilitate the State Governments in preparation of the ESZ proposals. A copy of template is attached**(Annexure-II)**.

2.6.1 As of now 251 ESZ notifications covering 374 protected areas have been notified by the MoEF&CC. The ESZ notification mandates the State Government to draw a Zonal Master Plan in consultation with local people taking into account the requirement of local populations, development issues and the environment concerns. The Zonal Master Plan *inter-alia* is expected to not put any restrictions on approved existing land use, infrastructure and activities, unless specified in the notification and shall factor in improvement of all infrastructures and activities to be more efficient and eco-friendly. The provision of these notifications also provides that the tourism master plan has to be prepared keeping in view the carrying capacity of the ESZ and it shall form a component of the Zonal Master Plan.

2.7 Estimation of carrying capacity for an area/entity remains subjective in its '*context*' and '*parameters*'. Further, such estimation requires description of threshold values for each parameter. Further, carrying capacities in nature are not fixed, static, or simple relations. They are contingent on technology, preferences, structure of production and consumption, ever changing state of interactions between the physical and biotic environment (Arrow et al., 1995). As different types of capacities of a system (ecological, social, physical, or facility) have different types/ levels of impacts tolerance, establishing a carrying capacity involves information on - (i) descriptive parameters (management factors which can be manipulated by a manager), and (ii) impact parameters (describing the consequences of different management regimes) and its evaluative component (Shelby and Heberlein 1984).The later component is based on value judgments (the type of experience to be offered and specific standards defining the important dimensions of that experience) while capacity determination requires integration of both components. The carrying capacity estimation is important from sustainable development and thus crucial for very survival of humankind, yet it is very difficult to estimate or calculate (Sarma et al., 2012). There are various studies available

(national and/or international level) which proposes the establishment of carrying capacity approaches to mitigate the impacts due to specific developmental and/or tourism activities. However, this report limits itself to review certain works done by different groups/establishments of India Table 2.1).

Table 2.1 Studies with respect to Carrying Capacity Assessment

Sr. No.	Organisation(s)	Thematic area
1	Ministry of Housing and Urban Affairs(MoHUA)	Urban environment
2.	Indian Institute of Technology(IIT) Guwahati	Urban Area
3.	Ministry of Environment, Forest and Climate Change (MoEF & CC)	Eco-tourism and Protected Area
4.	National Environmental Engineering Research Institute (NEERI)	Environmental carrying capacity
5.	National Environmental Engineering Research Institute (NEERI)	Carrying capacity based Developmental Planning of Doon Valley
6.	G. B. Pant National Institute of Himalayan Environment and Sustainable Development(GBPNIHESD)	Hill Stations & Tourist Places
7.	National Institution for Transforming India(NITI) Aayog	Tourism
8.	Ministry of Tourism (MoT)	Tourism (Accommodation sector and Tour operator)

2.7.1 Ministry of Housing and Urban Affairs(MoHUA)

The Urban & Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, 2015, which contains planning process, contents of the plans suggested in the planning system, resource mobilization for plan implementation including land and finance (as the primary resources for sustainable development), institutional reforms

particularly at State level, and approaches and strategies for regional and urban planning. For addressing sustainability, various sections focus on land suitability, and urban renewal norms; and provide a framework for Crisis/Disaster Management Plans as part of Development Plan. To speed up the process of plan formulation, simplified planning techniques, and norms and standards for social and physical infrastructure planning are detailed along with simplified development promotion regulations. Various cities of all classes across the country from different regions have been covered as best practices for review. The overall recommendations for future actions have also been included.

The URDPFI Guidelines 2015 are intended to be comprehensive for promoting balanced and orderly regional and urban planning and development. These guidelines inter-alia provide the framework, necessary techniques, norms and standards, options for resource mobilization including land assembly approaches, and development promotion regulations. Since conditions vary from place to place and even within a settlement, these guidelines may not be uniformly applicable to all situations and places and would need to be modified and adopted depending on local conditions, felt needs and technological innovations so that the Planning process may serve as an efficient and dynamic instrument. The URDPFI guidelines are expected to provide an integrated framework for urban and regional plan formulation and implementation. The Urban and Regional Development Plan Formulation and Implementation' Guidelines 2015 is available at http://mohua.gov.in/link/urdpfiguidelines.php.

2.7.2 Ministry of Environment, Forest and Climate Change (MoEF & CC)

The Ministry of Environment, Forest and Climate Change has developed a policy draft for Eco-tourism in forest and wildlife areas. The policy document developed with the objective of adopting nature tourism that ensures ecological integrity, promotes biodiversity richness and heritage values of India's wilderness. While developing the draft MoEFCC emphasized on engaging partnership with stakeholders, and local communities in eco-tourism activities. While highlighting the guiding principles for

ecotourism viz. eco-tourism plan, eco-tourism zone, community participation and infrastructure development; the policy envisages assessment of carrying capacity, mechanism for revenue sharing and establishment of local, State level and National level committees. Policy also developed the broad framework for effective implementation of the Eco-tourism policy; wherein, the carrying capacity (physical, real and effective permissible carrying capacity) for number vehicle entries per day has been estimated for Kanha Tiger Reserve.

2.7.3 National Environmental Engineering Research Institute (NEERI), Nagpur

The National Environmental Engineering Institute (NEERI) have made compendium of methodologies for environmental carrying capacity assessment. While elaborating different facets of environmental carrying capacity, they presented simpler expression of carrying capacity as a function of natural resources, ecosystem and its services, environmental impacts, infrastructure and urban services, public perception, institutional setting and society supporting capacity. A simplified step by step approach for evaluation of carrying capacity of any region is explained along with generic template of required relevant data points of different aspect ranging from urban land carrying capacity, air environment, water environment and the solid waste. However, report also mentioned that site-specific indicators may be included in above data points to evaluate tailored carrying capacity of the region. Report also provides simplified approaches which can be used to evaluate carrying capacity of a region considering each aspect of environment stating from land use, air, water and solid waste. Most of the studies referred in the report were carried out in different countries, therefore involve uncertainty in implementation in Indian context. Hence, methodologies relevant to Indian context are required to be used for determination of carrying capacity of hill station and eco-sensitive zones of the country. NEERI, Nagpur had also carried out a study entitled 'Carrying Capacity based Developmental Planning of Doon Valley', in the year 1996. This study was sponsored by the MoEF&CC.

2.7.4 Indian Institute of Technology(IIT) Guwahati

IIT Guwahati reviewed existing concepts and methods of evaluating urban carrying capacity. Graphical model, Uni-constraint model, Impact Population Affluence Technology(IPAT) equation, Ecological Footprint model, Energy analysis model and Pressure-State-Response model are some of the models for assessing carrying capacity of urban area has been mentioned and reviewed in the report. With emphasis on ultimate objective of developing a hazard free ecologically sustainable urbanization, a new method of computing carrying capacity by analyzing adverse impact of population growth on the urban environment is proposed. This new method labeled as Sustainable Accommodation through Feedback Evaluation(SAFE), is especially suitable for eco-sensitive urban areas. The method was first developed for calculating carrying capacity of hilly urban area; however, the concept can be applied to any urban area. A framework for calculation of carrying capacity using SAFE method is also presented in the report.

2.7.5 G. B. Pant National Institute of Himalayan Environment and Sustainable Development (GBPNIHESD)

A study conducted by GBPNIHESD in Sikkim Himalaya tourism trends attempted to map the state of progress and prospects of tourism in the state, and for the general understanding of patterns of tourist influx and simulation of tourist inflow volumes in future. The study quotes the growth of tourism in Sikkim Himalayas is revealing impacts on forests in terms of extraction pressures for firewood, fodder and timber, changes in species composition, and poor regeneration status of firewood along the trekking corridors of Yuksam–Dzongri area. Study concluded that the projections of trends for the next 10 years suggest a sizable increase in tourist numbers. Though such an increase would create numerous job and income opportunities in the state, implications of the large turnout of tourists on the State's resources, infrastructure, cultural environment and eco-tourism would be significant. Accounting for the increase in population (local as well as floating) it mentions that high-density, high-preference urban tourist areas such as Gangtok - an urban hill station, would receive the brunt of such impacts. Study showed the impacts of tourism in terms of monetization of rural pockets/economy in terms of changing agricultural traditions reflected in declining

trends of livestock population, production of food grains, and apparent switch towards cash crops. Apart from the gradual drift from tradition, replenishing food grain supplies and livestock products from the outside would result in leakage and increase in the cost of living in the popular tourist pockets. On high note, the study shows great concern on tourism and its sustainability in the state and highlighted that suitable management options are, therefore, needed for sustainable tourism and balanced environment.

In 2019, a special expert committee constituted by Himachal Pradesh Pollution Control Board (where GBPNIHESD was also a member) submitted a report on carrying capacity assessment study of Manali (in district Kullu) and Macleodganj (in district Dharamshala) of Himachal Pradesh to Hon'ble National Green Tribunal (NGT). On receiving directives from Hon'ble NGT committee undertook the task of assessing of carrying capacity of ecological sensitive and geologically fragile areas, particularly Manali and McLeodganj in terms of tourist inflows with reference to vehicular traffic and parking space; road infrastructure; general scarcity of under-ground water; availability of drinking water; overall impact on the air quality; overall impact on the Bio-diversity of the area; earthquakes, disasters, structures stability, seismicity, land bearing capacity of soil, underlying rock, proneness of landslide, and structural flaws in existing structures; transport and mobility and indiscriminate constructions and regularization, etc. Committee assessed the carrying capacity of Air, Water Solid Waste environment; however, presented methodology for air environment only because of the fact that water and solid waste environment shows appropriate measures and are in controlled conditions. Study also highlighted limitations of environmental carrying capacity and specifically noted that assessment and quantification of environmental carrying capacity is a complex task as it requires one to delve into the interlinks between multiple factors like- population growth, intensities of activities, resource availability, environmental impacts, technological developments and other socio-economic factors. After careful investigation of air, water, solid waste, biodiversity environment and related aspects of the area committee recommended to enforce a complete ban on construction activities in Manali Municipal Council and McLeodganj except the construction of residential

houses for their own uses/purpose and government buildings. The construction of other types should only be permitted unless and until adequate provisions for solid waste management and water supply are put in place. While carrying out this study, committee specifically mentioned constraints and takeaway points, notably among them is "The carrying capacity concept is not intended to be used singularly, but should complement other management tools such as environmental impact assessments, land-use policies, tourism strategies and development plans".

Very recently in August 2019, directives were received from Hon'ble National Green Tribunal's (NGT) Principal Bench, New Delhi regarding Kasauli in Himachal Pradesh to Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India to frame a set of guidelines with respect to carrying capacity assessment of hill stations and Eco-Sensitive Zones in the country notified by the MoEFCC. The Ministry entrusted the responsibility to the GBPNIHESD for framing Guidelines and Tempelate for assessing Carrying Capacity of Hill Stations and notified Eco-Sensitive Zones (ESZ). This report also captured the peceptions of wider stakeholders consultaions in 4 States of Indian Himalayan Region(IHR) namely Uttrakhand, Himachal Pradesh, Sikkim and Arunachal Pradesh and made preliminary observations on common concerns of different regions. The report also suggested the general steps and common parameters for assessing carrying capacity of hill stations, and underlined the need for intensive and wider stakeholder/ expert group consultation in different geographies so that the area specificities in a broader canvas of national scenarios of carrying capacity can be accounted.

2.7.6 National Institution for Transforming India(NITI) Aayog

As a part of the Policy Lead Framework for Actions on Sustainable Development of Mountains of the Indian Himalayan Region; NITI Aayog Working Group did a comprehensive analysis on Sustainable Tourism Actions in the Indian Himalayan Region based on secondary data from public domain of Government of India and that of all IHR states. The report found clear indication at policy and practice levels that all

mountain states are very much on the spot when it comes to documenting, understanding and planning for sustainable tourism. Report also found and documented the key best practices in some leading mountain States such as Himachal Pradesh, Sikkim and Uttarakhand. According to report there are ongoing public and private initiatives and schemes that have lots of potential for being upscaled and outscaled. On the other side, while mentioning the recent strong directives Hon'ble NGT to some mountain states (e.g. Rohtang Pass,Himachal Pradesh , Vaishno Devi,J&K) report showed great concern on ground reality. All are related to mass tourism/pilgrimage that is grossly harming IHR. Working group is of the thought that India is marketing the natural and cultural glory of the Himalayas on a very low premium and therefore need to plan development in IHR as like the plains of India. Based on the observation, the report suggested primary set of actions on short, medium and long term categorization and organized as per sustainability criteria and few complementary domains. These actions are further sets guiding principles of economic connect, social inclusiveness, environmental sustainability, visitor's fulfillments and monitoring and evaluation criteria. Hence, if the list of actions suggested above would be incorporated in the current tourism development concepts and implemented, there is a likelihood of balancing conservation and development of IHR landscapes and wellbeing of people here. Based on the analysis and policy and practice gaps, report concluded that in the next 5 years, we must also assess the opportunities and challenges that are rising fast due to economic growth related investments and partnerships that are planned or happening in the neighbourhood of 6 border countries.

2.7.7 Ministry of Tourism(MoT)

Ministry of Tourism, Government of India drafted criteria and indicators applicable to accommodation sector and tour operator. To address the challenges of tourism industry report suggested constructive measures (social awareness, stakeholder involvement and financial assistance) for creation of awareness and making requisite facilities available. Sustainable Tourism Criteria for India (STCI) and indicators for hotels, tour operators have been finalized in the report and on similar way criteria and indicators for

rural tourism and home-stay are being evolved. As tourism is a multi-sectoral activity, report highlighted the necessity of active convergence in the resources of various sectors involved in promotion of tourism at central and state level for achieving the optimum results. While presenting sustainable tourism scenario and action steps, the key concern kept in mind by the committee were carrying capacity, anthropogenic character, local community participation, MoEFCC guidelines, sanitation, water harvesting, lessons from successes and failures at national and international level, institutional certification and polluter pays principle. The report also presented comprehensive list of STCI principles and corresponding potential indicators for its monitoring and evaluation. Committee is also of the thought that these STCI can be amended in the future in view of changing condition in consultation with the tourism industry stakeholders.

2.8 In view of the studies as referred above, it is clearly seen that carrying capacity of particular location is determined using various parameters such as environmental components and existing natural resources, infrastructure and Urban services, socio-economical aspects, etc. Therefore, a site-specific indigenous framework to assess the carrying capacity of the environment is needed considering all the dependent factors associated with the respective environment. The developed framework will be helpful in determining threshold carrying capacity for each environment allowing the policy makers in decision making to permit any of new development or to restore the exhausted environment (NEERI). It is also concluded from the above studies that the carrying capacity for any given area is not fixed. It can be extended to a certain level by improved technology, but mostly it is changed for the worse by pressures which accompany a population increase. However, environmental quality can be improved through infrastructural augmentation, use of technology, planned development, supply substitutions, capacity building, and better community organizations, policy environment & natural resource management.

In view of the above, framing guidelines for carrying capacity estimation of heterogeneous areas in diverse settings of countries' landscape requires sufficient time and resources to develop a broad understanding on multi-facet issues (genesis, environment, social, infrastructure, etc.), their interactions and ongoing processes, and administrative regimes and key players. Further, it also requires capturing views of different stakeholders and interest groups. The present Guidelines only captures the environmental, economic, social and other parameters to facilitate the planners while developing the plan of any area based on their requirement and objectives.

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Chapter - 3

3. Review of Methodologies

3.1 Methodologies used by different groups/ establishments

With the main aim to improvement in human quality of life, World Conservation Strategy (1980) stated that conservation includes both protection and the rational use of natural resources with the one main aim to increase the present & future welfare of human well beings. Human impact on any ecosystem can be reviewed by assessing the carrying capacity of that particular system. According to Food and Agriculture Organisation (FAO), - Carrying capacity is the amount of a given activity that can be accommodated within the environmental capacity of a defined area. For example, aquaculture: usually considered to be the maximum quantity of fish that any particular water body can support over a long period without negative effects to the fish and to the environment. Sustainability of any particular system is possible only when the demand level of the population lies within the carrying capacity of the ecosystem. The carrying capacity of any ecosystem varies very widely which is mainly due to wide variations in population size, population compositions, population growth rates, change in resource demand and consumption patterns, and the availability of resources. There are different governmental, non-governmental and educational bodies at National and International levels, who have already formulated the actions/approaches/methodologies, to use the resource consumption in a more sustainable and stabilized way so that resources would be more available to future populations, while keeping the following considerations:

- The resources are limited; hence, the carrying capacity of the ecosystem is also limited
- Population stabilization is essential to eliminate the excessive and wasteful use of resources without compromising the quality of life, can be achieved by shared responsibilities between stakeholders.
- An integrated approach is utmost need of the hour to meet the inevitable rise in the human needs in terms of increased and sustainable agricultural production for food security as well as nutritional security, energy conservation & its security and other renewable resources.

In the above context, this part will review the guidelines/methodologies, used by different agencies viz. MoHUA, Government of India; MoEF&CC, Government of India, NEERI, IIT Guwahati, GBPNIHESD, NITI Aayog etc. to assess the carrying capacity.

3.1.1 Ministry of Housing and Urban Affairs

MoHUA is the nodal authority for formulating planned development for cities and towns and has developed the Urban & Regional Development Plans Formulation and Implementation (URDPFI) Guidelines in the year 2015 and according to it, the carrying capacity of an area can be defined as the maximum number of population that can be supported by the environment of that area through optimum utilization of the available resources. The pattern and extent of resource usage serves to be the primary factor that affects the carrying capacity. This indeed depends highly on the:

- Socio-economic status of the people
- Use of technology

If technology is used in a positive manner, then the carrying capacity is measured to increase manifold.

Planners usually define carrying capacity as the ability of the natural or artificial system that can absorb the population growth or physical development without considerable degradation or damage (Schneider et al., 1978).

The evaluation of urban carrying capacity is a complex process as it is determined from basic needs such as food requirements, various kinds of resources consumed and the many kinds of wastes generated, different kinds of landuse conversions leading to ecological imbalance and the great variability in technology, institutions and lifestyles created. MoHUA reported 6 types of carrying capacities that can be evaluated -

- Infrastructure capacity level,
- Institutional capacity level,
- Perceptual carrying capacity,
- Environmental capacity level,
- Sustainable capacity level and
- Bio-centric capacity level.

Among these six types, the profound ones are infrastructure capacity level, environmental capacity level, and sustainable capacity level, which are more relevant to urban planning.

Table-3.1: Levels of evaluating carrying capacity for the urban areas

Level of Evaluation	Infrastructure Capacity Level	Environment Capacity Level	Sustainable Capacity Level
Definition	"The degree of human activity that facilities and services within an area can support without causing serious degradation of or damage to the maintenance of quality of life"	"The degree of human activity that environment and ecosystems within an area can support without causing serious degradation or damage to the quality of life"	"Sustainable carrying capacity is the number of a species that can be supported in a particular area indefinitely, given that area's endowment of water, food, and other necessities"
Concept	At this capacity level, the major factor of evaluation is the **infrastructure development.**	This level basically reflects the **present state of the environment** with respect to productivity.	The **basic resource flow through the urban area to its ultimate sink** is evaluated. These are long term-based factors.
Indicator	Here the **intensity and pattern of resource usage** is estimated for the development of infrastructure like, water supply system, sewage system, transportation system, waste disposal system, etc.	The **state of productivity of the environment** e.g. agricultural productivity by evaluating the past data or the availability of clean air & water, low pollution.	Indicators of particular resource: **how long it will be available.** If a resource is getting scarce then efficient steps could be taken to sustain it for long term.

(Source: Urban carrying capacity: concept and calculation; IIT Guwahati)

***Assessment of Carrying Capacity for Urban and Regional planning*:**

Planning based on carrying capacity deals with the management of human activities, supportive resources and assimilative capacities of the environment and general process of carrying capacity (Fig. 3.1). Carrying Capacity analysis tool is useful to rationalize fixation of Floor Area Ratio(FAR) including increase in given FAR.

Table 3.2 Two major determining factors should be considered for Floor Area Ratio(FAR) assessment

Components	Factors	Remarks
V/C	V= volume, C= capacity	V/C: optimum level is 0.8; it can be relaxed upto 0.9. Above 0.9 is dysfunctional and 1.0 is not desirable.
LPCD	Litres per capita per day of piped water supply	The planned LPCD should be as per the minimum norms is 135 lpcd. However, the density is is to be capped as per the threshold.

(Source: URDFI Guidelines,2015)

Components of carrying capacity assessment in urban & regional areas:

The flowchart (Fig. 3.1) shows the components used for carrying capacity assessment of Urban & Regional areas. Carrying capacity of the urban environment depends on the assimilative capacity of physical environment and supportive capacity that offered the supporting infrastructure & services. Assimilative capacity is the capacity of the environment to absorb/recycle matter, energy or other components, which come into the environment either by human interventions or by environment itself, for sustenance of environmental quality. *Physical Environmental* component include the air, water, land/soil, biological and acoustic environment. Where as, *Supportive Capacity* means the capacity of environemnt to support the lives of people and other living organisms. It generally includes land & water resources, infrastructure (transport & communication), socio-economic services, resources or utilities available within the boundaries of the study area.

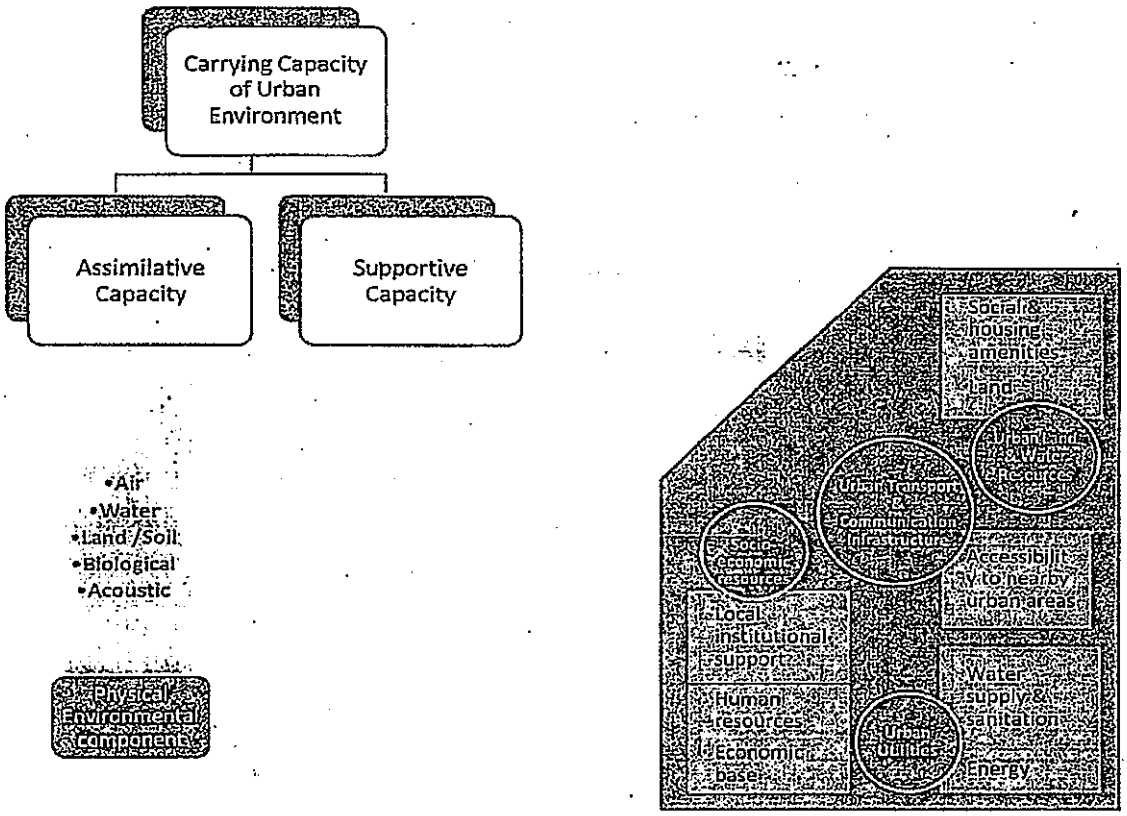

Fig. 3.1 Interaction of Components of carrying capacity assessment

The step-by-step protocol for mapping of carrying capacity study and planning for an urban/regional area is depicted in Fig. 3.2. The delineation of the identified boundaries of the study area must be delineated on the basis of certain geographical settings. The identification of indicators for certain sectors must represent the objective for carrying capacity study. The indicators selection must be done on the basis of established benchmarks from various national/international organizations for sustainable/vulnerable sectors and all the estimation would be done with reference to population. Subsequently, indicators would be undergone weighing and prioritization for comparison of them for inter/intra sectoral carrying capacity assessment. The results based on the assessment of carrying capacity of that particular region would be helpful in carrying out the regional or urban planning in terms of sustainability for future populations without costing the present human quality of life.

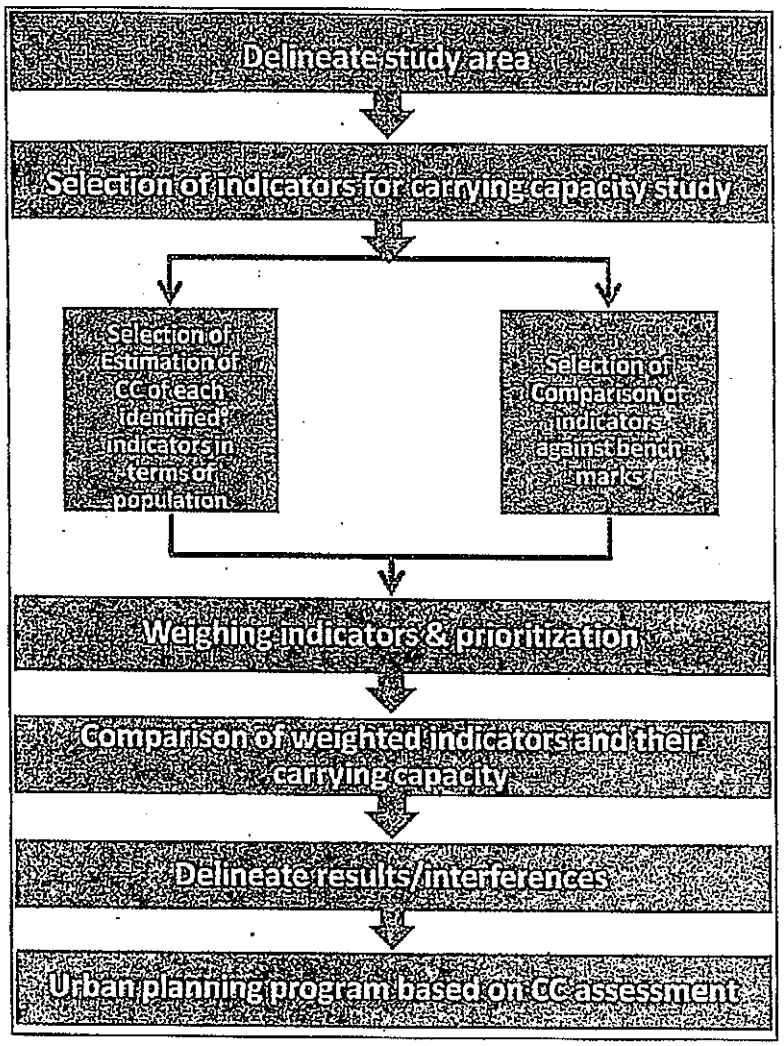

Fig. 3.2 Step-wise urban & regional planning protocol developed by NIUA & further modified by URDPFI

3.1.2 MOEF&CC (Draft Policy for Eco-tourism in Forest and Wildlife Area)

The MoEF&CC has developed a "Draft Policy for eco-tourism in forest and wildlife areas" in the protected regions with the objective of adopting nature tourism that ensures ecological integrity, promotes biodiversity richness and heritage values of India's wilderness. This policy emphasizes on engaging partnership with stakeholders, local communities in eco-tourism activities. The policy envisages preparation on eco-tourism plan, creation of eco-tourism zone, community participation including tribals and

other forest dwellers, assessment of carrying capacity, mechanism for revenue sharing and establishment of local, state and national level committees. MOEF&CC drafted a broad framework for implementation of the eco-tourism policy by following strategies:

Strategy 1: Identification of Potential eco-tourism sites in the protected areas

Strategy 2: Assessment of carrying capacity of visitors and vehicles those may be allowed to enter inside the identified area will be assessed and ceiling on number of visitors/vehicles those may be allowed to enter the area at any given time, will be fixed. Carrying capacity assessment would define:

- → Number of persons visiting the Protected Area (PA)at different points of time
- → Number of vehicles/other transport means etc. entering the protected area
- → Infrastructure
- → Duration of the visits
- → Duration of exposure of the PA to eco-tourism activities

The models followed for preparing carrying capacity are detailed in table 3.3.

Strategy 3: Capacity building of field functionaries will be imparted trough specialized green skill building training on eco-tourism activities. This will ensure their livelihood by helping them to act as nature/tourist guides, natural science interpreters, patrol partners for protection work, entrepreneurs for small scale homestay based hospitality industry etc.

Strategy 4: Sharing of revenue benefits between stakeholders viz. local communities, group responsible for maintaining of eco-tourism facilities, eco-development committee/village level forest management committee and State Government etc.

Strategy 5: A dynamic monitoring mechanism should prevail to cover the number of tourists visiting and their influx pattern, their level of satisfaction, involvement of local people, scope of improvement etc.

Strategy 6: Education and interpretation plan is needed to sensitize the visitors on significance of conservation and their required behavior towards the protected/pristine area.

Strategy 7: Collaboration and coordination amongst District/State Administration.

Strategy 8: Institutional mechanism for implementation of the policy and this can be achieved by establishing Eco-Tourism Development Board.

Table 3.3 The proposed model used for estimation of Carrying Capacity

Models	*Mathematical Expressions*	*Factors/components involved*	*Remarks*
Physical carrying capacity (PCC)	PCC = A × V/a × R_f	Where, A = available area for public use V/a = one visitor/m^2 R_f = rotation factor (number of visits per day); $\frac{Opening\ period}{Average\ time\ of\ one\ visit}$	the "maximum number of visitors that can physically fit into a defined space, over a particular time"
Real Carrying Capacity (RCC)	RCC = PCC – Cf1 –Cf2 – Cfn	Where, Cf = corrective factor Cf are site specific and can be expressed as $Cf = \frac{Ml}{Mt} \times 100$ Where, Cf = corrective factor Ml = limiting magnitude of the variable Mt = total magnitude of the variable	the maximum permissible number of visits to a site, once the "reductive factors" (corrective) derived from the particular characteristics of the site have been applied to PCC. These reductive factors are based on the biophysical, environmental, ecological, social and management variables
Effective Permissible	ECC = MC × RCC	Where, MC = Management	the max number of the visitors that a site can

Carrying Capacity		capacity RCC = real carrying capacity	sustain, given the management capacity (MC) available. MC is defined as the sum of conditions that protected area administration requires if it is to carry out its function at optimum level.

3.1.3 NEERI (Environmental Carrying Capacity)

NEERI has devised methodology to assess the environmental carrying capacity (ECC) of particular location using various parameters such as environmental components & existing natural resources, infrastructure & urban services, socio-economical aspects, etc. A site-specific indigenous framework to assess the carrying capacity of the environment has to be developed considering all the dependent factors associated with the respective environment.

The carrying capacity of a region can be represented as follows:

$$Carrying\ Capacity = f\{N, ES, EI, I, P, In, S\}$$

Where,

N = Natural Resources

ES = Ecosystem and Ecosystem services

EI = Environmental impacts;

I = Infrastructure and urban services;

P = Public perception,

In = Institution setting;

S = Society supporting capacity

This above conventional model for carrying capacity assessment need site specific indicators and the relative point of reference in terms of spatial and temporal scales to tune up it to benchmark for further advancement and interventions.

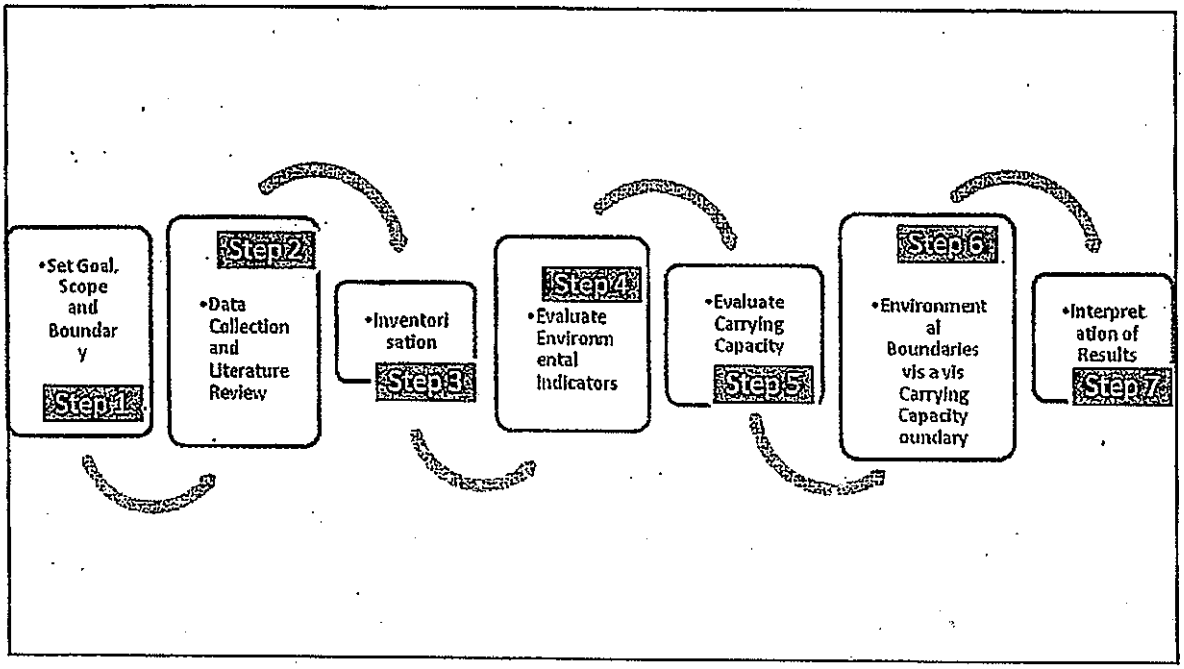

Fig. 3.3 Schematic framework for assessment of Environment Carrying Capacity (ECC)

The schematic representation of framework for assessment of environment carrying capacity (Fig. 3.3) enlisted seven steps for any region and described in following paragraphs.

Step 1: Goal, Scope and Boundary – It defines that for each kind of carrying capacity study would require certain baseline parameters due to its own dynamic behavior and hence key aspects should be defined first. Aim of the study and scope comprising of system boundary (representing area and key aspects of the study region), functional unit and environmental indicators should be defined.

Step 2: Data Collection and Literature Review – To choose certain parameters or indicators to be taken under study requires baseline information concerning the system which might be obtained through field inspection, survey, literature review etc.

Step 3: Inventory and Data Analysis – Inventorization of the collected data should be carried out for systematic accounting of major resource, material, activity and waste flows involved within the studied region's system boundary.

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Step 4: Environmental Indicators – The selected indicators must be specified concerning the environmental aspects, which will represent the carrying capacity, to be evaluated.

Step 5: Carrying Capacity - Carrying capacity of the region concerning different environmental aspects will be evaluated based on the indicators chosen and the available data.

Step 6: Environmental Boundaries and Carrying Capacity - Environmental indicators providing status of present environmental condition should be compared with the carrying capacity of the region.

Step 7: Interpretation – The results of the carrying capacity will generate the information in reference to the limitations to be discussed, and based on that the conclusion and recommendations are to be drawn. Urban Land Carrying Capacity(ULCC) of the region can be helpful in determining or estimating the site-specific per capita open/green spaces. Using the above steps carrying capacity of a region can be evaluated. Further, it should be noted that carrying capacity of similar regions may follow similar approach and definition of system boundary. For example, a landlocked city having similar traits like high population density, occupation, religious sentiments etc. may use a common framework to evaluate carrying capacity. However, care should be taken to not to oversee any significant aspects governing the carrying capacity of the region.

Data collection is one of the key aspects in evaluation of carrying capacity after defining the system boundary and setting the environmental indicators. A generic template with relevant data points are highlighted in the table below.

Table3.4: Input data required to estimate the carrying capacity of the environment

Aspect related to the environmental carrying	Sample Data Requirement

capacity	
Urban land carrying capacity	Total urban area (m^2) for which carrying capacity to be estimated
	Total population covering the area
	Framework stating the areas that fall under open/green spaces and Optimum green space requirement
	Total urban area (m^2) for which carrying capacity to be estimated
	Satellite image of the study area to retrieve total area (m^2) covered by open and green spaces
Air environment	Meteorological data of the study area containing wind speed, direction, temperature, cloud cover, precipitation, humidity
	Land-use land cover data of the study area.
	Emission sources (Mobile, stationary, (area
	Pollutant discharge rate (*g*/sec), For stationary source: Exist velocity (m/sec), flowrate (m^3/sec), exist temperature (Deg C), stack diameter (m). To determine recirculation, ventilation and stagnation of the study area, India specific critical transport indices has to be developed

Water environment	**Based on Streeter-Phelps Equation** DO of surface water, BOD of Surface water, re-oxygenation constant, de-oxygenation constant, Velocity of surface water body, temperature, total stretch of water body, DO of sewage flowing into water body, BOD of sewage flowing into water body, flowrate of sewage, CPCB permissible limit for DO based on best designated use **Based on Zhe Equation for rivers** Concentration of pollutant 'K' downstream and upstream, pollutant degradation coefficient, length of river, velocity of flow in river, flow rate of river. **Based on Zhe Equation for lakes** Target pollution concentration, Actual concentration of pollutant in lake, volume of the lake, Quantity of water drawn from lake, Pollution degradation coefficient.
Solid waste environmental carrying capacity	Total waste generation (tons/day) in the study area, Quantity of waste recycled, Quantity of waste landfilled, Quantity of waste reused, quantity of waste composted, quantity of waste incinerated, total capacity of landfill (tons), Total capacity consumed (tons)

Above data points may be used as a starting point for analysis of carrying capacity of a region. Site-specific indicators may be included in above data points to evaluate tailored carrying capacity of the region. Subsequent sections indicate simplified approaches which can be used to evaluate carrying capacity of a region considering each aspect of environment stating from land use, air, water and solid waste.

<u>Urban Land Carrying Capacity (ULCC)</u>

There exist various studies that were previously carried out for different countries scenarios including India. According to the World Health Organisation (WHO), every city is recommended to provide a minimum of 9 square meters of urban green space for each person provided that it should be accessible, safe and functional. WHO also suggests that an ideal amount of urban green space can be generously provided as much as 50 square meters per person.

Areas to be considered under open & green spaces differ based on policies set by World Health organization(WHO), US, EPA, European Commission, etc. India specific policies in considering areas under open & green spaces have to be developed. Optimum area per capita must be reworked based on Indian scenarios rather than relying on WHO recommended values. Strategies in tracing the site specific open/ green spaces can be fulfilled by retrieving satellite images followed by ground truth. Data related to the population can be retrieved from census data. One of the example of Delhi's city is shown below:

New Delhi being the capital of India is known for its green space. The city signifies more towards greening and stringent policy towards tree cutting. As per Forest Department, city accounts for 300 Sq. Km of green space, accounting 20% of total city area (1483 Sq. Km), resulting in available green space of 22 Sq. Km per capita for the year 2009 as shown in table.

Table 3.5: Open & Green spaces in Delhi

Sl. No	Year	Classes	Percentage of area (%)	Area (Sq. Kms)
1	2009	Green space	20	300

Total population in Delhi (as per census 2011) was 16,349,831.

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WHO (2012) has recommended minimum 9m^2 of green space per individual with ideal urban green space (UGS) being 50 m^2 per capita as a concern regarding better human health leading towards sustainability.

Green space area per capita for Delhi region as in Table 3.6 was evaluated with certain assumptions.

A) There is a conservative assumption that there is no considerable change in green space area since 2009.

B) Population for the year 2019 was taken into account.

Table: 3.6 Open & green space per capita available in Delhi

Sl. No.	**Classes**	**Area (Sq. m)**	**Population in** Delhi **(millions)**	**Available UGS per capita**
1	Green Space	300	18.6	16.1

Available green space area per capita was found to be 16.1m^2 per capita which satisfies the minimum requirement as per WHO, but is far from the actual requirement of 50m^2 per capita.

In general, lack of green spaces leads to higher air temperatures and more ground level air pollutants, with fewer trees and plants to clean the air and provide oxygen. Increased green spaces are associated with cooler air temperature and reduced heat island effect. Greater residential green space can lower personal exposure to $PM_{2.5}$ at household level. Tree size and tree density can have an effect of pollution mitigation. Studies have results that residence close to greenery has significant health benefits. Cities that maintain well-connected, green spaces are observed to have healthier and productive

citizens. Studies suggest that green spaces reduce common health conditions including cardiovascular disease, diabetes, and cancer.

Air Environment:

Carrying capacity of the air environment can be determined by a robust Source-Receptor (SR) modelling study. Various SR models such as AERMOD & CALPUFF can be used in finding the threshold carrying capacity for air environment. Emission data from stationary, mobile, area sources along with site specific meteorological data simulate pollutant concentration at the located receptors. CPCB prescribed limit for each pollutant (PM, SO_x, NO_x, etc.) is referred to determine the optimum concentration (ug/m^3) with respect to site specific discharge rate (g/sec). Discharge rate corresponding to the optimum concentration of pollutant 'k' is considered as the threshold carrying capacity of the pollutant 'k' in the air environment. However, the model turns cumbersome when simulating for a larger area. The uncertainty of model depends upon the accuracy of user-inputted data such as ground-level meteorological data, upper air data, land use classification, emission discharge rate, etc.

Alternatively, the concept of stagnation, recirculation and ventilation can be used as an integral part of wind run (S) and recirculation factor (R) to determine the carrying ca environment. Meteorological data covering wind speed and direction is used for assessment.

The empirical formulae to determine S&R are referred from [Allwine and Whiteman, 1994).

The conditions to determine carrying capacity are as follows.

- $S \leq Sc$: Site is prone to stagnation
- $R \geq Rc$: Site is prone to recirculation,
- and if $S \geq Scv$ and $R \leq Rcv$: site is prone to ventilation

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[Allwine and Whiteman, 1994] proposed daily Critical transport indices as Sc = 170 km, Rc = 0.4, Scv = 250 km, and Rcv = 0.2.

Most of the research use the study carried out by Allwine and Whiteman to compare the above-mentioned conditions. However, these standards are with respect to foreign study and can experience larger uncertainty when implemented in Indian scenario. Hence, India specific study must be carried out to determine the Critical transport indices (Sc,Rc,Scv and Rcv).

Alternatively, a simpler model may also be followed using box model; however, accuracy and reliability of such a simpler model is questionable. Here we are discussing the atmospheric assimilative capacity using simple Box Model. A simple box model based on mass balance and assuming that all pollutants in the box are uniformly mixed is used for preliminary estimates for step 2 in Figure 3.3 above. It is a simple model and has several limitations; however, for the purpose of demonstrating the framework and preliminary analysis, the model may provide broad estimates of carrying capacity. Mathematically, the model can be described as below:

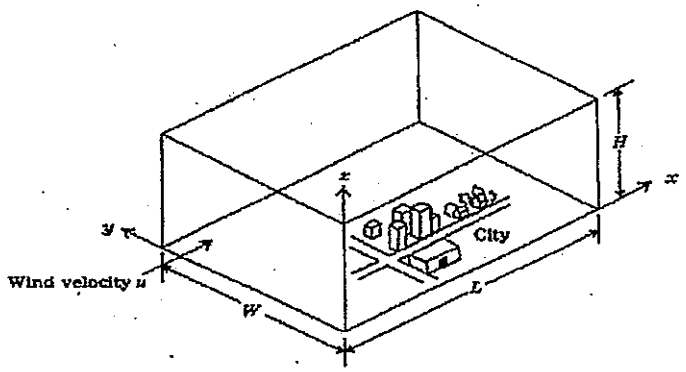

Figure: Schematic of box model (De Nevers, 1995)

Mathematically,

$$V\frac{dc}{dt} = qC_{in} - qC_{out} + S - K_{dd}\,CLW - K_{cr}\,C_{out}V \qquad (1)$$

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- where, q = volumetric flow rate (m^3/sec)
- C_{in} = influent concentration of a pollutant (g/m^3)
- C_{out} = effluent concentration of a pollutant (g/m^3)
- K_{dd} = dry deposition velocity (m /sec)
- K_{cr} = First order chemical reaction constant (1/sec)
- S = source emission rate(g/sec)
- K_{dd}.C.L.W = the amount of pollutants removed by dry deposition (g/sec)
- K_{cr}.C.V = the amount of pollutants converted by chemical reaction (g/sec)
- u = wind speed (m/sec)

In equation, V=L×W×H volume of City m^3 (L: length (m), W; Width (m), H; height (m))

The model is further simplified with the following assumptions:

- Steady state condition (i.e. concentration is time invariant); dc/dt = 0
- Pollutant does not give any deposition in the box; $k_{dd} = 0$
- Pollutant does not undergo any chemical transformation: $K_{cr} = 0$

One can estimate the carrying capacity, Q_{cc} as per the following equation:

$$Q_{cc} = (C\text{-}Co)\times u.W.H \qquad (2)$$

In this calculation, Area (A) of system boundary, Width (W) of the System boundary, mixing height (H) (average for winter and summer) within the system boundary, Wind Speed (s) within the system boundary is required. Background concentration (C_0) into the system boundary is also required.

Water Environment:

Carrying capacity of water environment (Surface water bodies) can be determined using Streeter Phelps (S-P) equation (1) [Streeters & Phelps, 1925]. The concept of dissolved oxygen (DO) deficit determined using the S-P equation estimates the carrying capacity of water environment. DO is the basic driver which decides the suitability of the surface

water body. Certain input parameters such as DO of surface water, BOD of Surface water, re-oxygenation constant, de-oxygenation constant, Velocity of surface water body, temperature, total stretch of water body, Dissolved Oxygen(DO) of sewage flowing into water body, Biological Oxygen Demand(BOD) of sewage flowing into water body, flowrate of sewage. Carrying capacity of the water body is determined with reference to Central Pollution Control Board(CPCB) prescribed standard for DO as per the best-designated use.

$$D = \frac{k_1 L_a}{k_2 - k_1}(e^{-k_1 t} - e^{-k_2 t}) + D_a e^{-k_2 t} \quad \text{---- (1)}$$

Calculation model for the pollutant carrying capacity of the river [Zhe et al.]

$$W_R = \left[C_s - C_0 \exp\left(\frac{-KL}{u}\right)\right] \times \exp\left(\frac{KL}{2u}\right) \times Q \quad \text{-----(2)}$$

W_R represents the river's pollutant carrying capacity, g/s; Cs represents the water quality target concentration at the downstream cross-section of the river, mg/L; C0 represents the actual water quality concentration at the upstream cross-section of the river, mg/L; K represents the pollutant degradation coefficient, d^{-1} ; L represents the length of river, m; u represents the average flow velocity at the river's cross-section, m/s; Q represents the designed flow at the river's cross-section, m^3/s.

Calculation model for the pollutant carrying capacity of the lake

Considering the fact that Lakes are of small size with equilibrium of multi-year average inflowing water and outflowing water, it is desirable to adopt the uniform mixture model to calculate the pollutant carrying capacity in this research. Based on the material balance equation, the pollutant carrying capacity of Lake can be expressed as (3)

$$W_L = (C_s - C_0) V + KC_s V + C_s q_{out} \quad \text{------(3)}$$

In this equation, W_L represents the pollutant carrying capacity of the lake, t/annum; Cs represents the water quality target concentration, mg/L; C_0 represents the actual water quality concentration, mg/l; V represents the average storage capacity of the lake in dry seasons, m3 ; q_{out} represents multi-year outflowing water of the lake in dry seasons, m^3 /annum; K represents the pollutant degradation coefficient, d^{-1}.

In both the cases (river & lake) threshold pollutant carrying capacity is estimated with reference to the permissible limit set by CPCB.

Solid waste environmental carrying capacity:

Solid Waste Environment Carrying Capacity (SWECC) was first assessed using the following simple expression (4)

$$SWECC = \frac{SWM_{EF}\,(tons) + RC\,(tons)}{SWG\,(tons)} \quad \text{.....(4)}$$

where;

SWECC = Solid Waste Environment Carrying Capacity.

SWM_{EF} = Solid Waste Managed Environment-Friendly. Includes all SWM options (Recycling + Re-using + Reprocessing + Sanitary Land-filling + incineration in compliance with emission norms, etc.). Collection of waste is the foremost requirement before wastes are sent for land-filling, recycling, incineration, etc.

RC = Remaining Capacity of the landfill.

SWG = Solid Waste Generated in tons

Using above approaches, carrying capacity of a region can be assessed. One similar lines other important factors like sewage management, indoor air quality can also be included, urban built up, tourist management etc. can also be included. Depending upon

the level of data availability, complexities can be built into the model to get refined outputs.

3.1.4 NEERI

The Ministry of Environment, Forest and Climate Change sponsored a study entitled 'Carrying Capacity Based Development Planning of Doon Valley' in the year, 1996, to NEERI, which has provided a detailed methodology for undertaking carrying capacity study. The methodology provided in the report may be applicable to any carrying capacity study. Some of the important features of the report are taken and reproduced below:

While recognising societal dependence on many ecological resources and functions for its survival and well being, carrying capacity is ultimately determined by the single vital resource or function in least supply. Working within the limits of carrying capacity does not, however, preclude some unavoidable environmental damage in the course of development.

The concept of carrying capacity implies that improvement in the quality of life is possible only when the pattern and levels of production-consumption activities are compatible with the capacities of natural environment as well as societal preferences. The carrying capacity based planning process thus involves the integration of societal expectations and ecological capabilities by minimizing differentials between realised and desired supply/demand patterns, infrastructure/congestion patterns, resource availability/resource use patterns, and assimilative capacity/residual patterns.

Given certain flow of resources the carrying capacity based planning process uses various modeling and analytical techniques to estimate changes in carrying capacity indicators, and makes trade-offs like changes in technology and pricing pattern, changes in environmental system structures, changes in socially acceptable capacity levels, and control of exogenous forcing functions.

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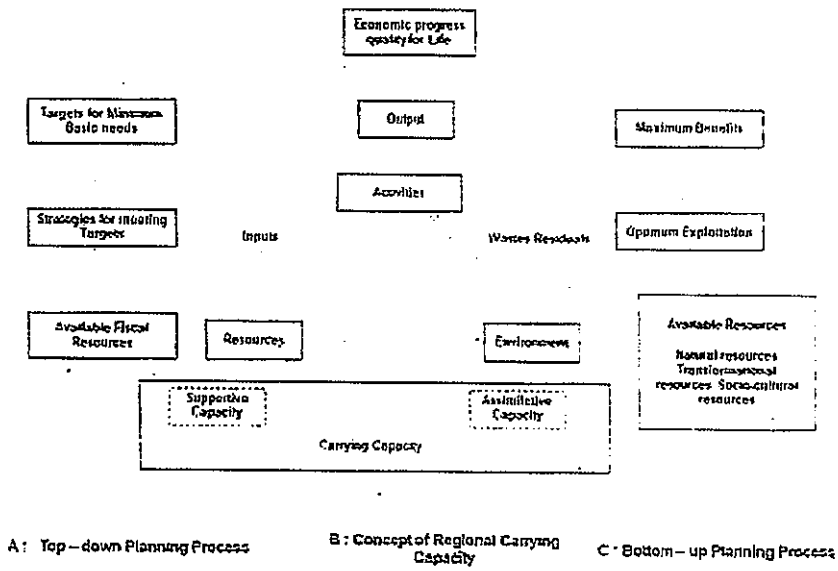

Elements of Carrying Capacity

The carrying capacity of the region should invariably involve two dimensions, namely assimilative capacity dimensions (i.e. air, noise, water, land and socio-economic components of the environment) and supportive capacity dimensions(resources endowment encompassing land, water, energy, mineral, biological, human and infrastructural resources).

Assimilative Capacity Dimensions

Human health and welfare, food security, industrial development and the ecosystem on which they depend are all at risk, unless the resources are managed more effectively during the present decade and beyond, than they have been in the past. The well being of people at present and future demands immediate and effective action. Concerted action is needed to reverse the present trend of inequitable resource consumption, and overwhelming shortages and environmental degradation. A proper management plan is essential for judicious utilisation of resources for sustainable development.

The socio-cultural roots of present environmental crisis lie in the paradigms of scientific materialism and economic determinism which fail to recognize the physical limit

imposed by ecological system on economic activity. The economies must expand within ecosystems which have limited regenerative capacities. Contrary to neoclassical theory of continuous material growth, economic activities directly determine the potential for development through over exploitation of natural resources and indirectly compromise future production through discharge of residuals. There is a limit to the capability of ecological systems in accepting the residuals without discernible changes in the quality of recipient bodies.

Air Environment

Assimilative capacity of air environment is the maximum amount of pollution load that can be discharged without violating the best designated use of the air resource in the planning region. The phenomena governing the assimilative capacity of air environment include dilution, dispersion, phase transformation, deposition and absorption.

Noise Environment

The assimilative capacity of the acoustic environment is the maximum amount of noise load that can be discharged into the environment without causing nuisance for the designated use of land units. The phenomena governing assimilative capacity for noise includes propagation of sound through ambient air, and its absorption, scattering and divergence. There is a decrease in sound pressure levels with distance from the source due to atmosphere effects or interaction with the objects in the transmission path. The air absorption is significant at longer distances and at higher frequencies. The consideration of air absorption in reducing noise levels in the environment is accorded low priority.

Barriers located in the transmission path cause a significant noise reduction. The barriers consist of solid walls, earthberms and other solid nonporous objects interrupting direct path or line of sight between the source and the receiver.

Water Environment

Assimilative capacity of water bodies is defined as the maximum amount of pollutant load that can be discharged without impairing water quality for their designated best usage.

The basic phenomenon governing the assimilative capacity of water sources is the self purification capacity.

Estimation of assimilative capacity of water environment involves:

- Delineation of watersheds based on topography of the area
- Identification of receiving bodies of water
- Identification of present and designated usages for various stretches of water body
- Preparation of inventory of point and non-point sources of water pollution
- Collection of hydrological data in critical seasons
- Estimation of assimilative capacity in critical season vis-a-vis the designated best usage of identified stretches
- Establishment of upper limits of pollution load in critical stretches.

Land Environment

Assimilative capacity of the land environment is expressed as the upper limit of extraneous constituents which can be accumulated in the soil matrix without impairing its productivity for best designated usage.

Land assimilative capacity of plain terrain and cropped land depends on the cation exchange capacity of soil; presence of carbonates, oxides and hydroxides; organic matter content; hydraulic conductivity of soil, physiological nature of plant species, and nutrients, and pollutant removal potential of different crops.

Estimation of land assimilative capacity involves following considerations:

- Compounds that degrade or require plant uptake for assimilation in the plant-soil system, e.g. oils or specific organics

- Compounds that are relatively immobile and non degradable, and thus accumulate in soils to critical levels, e.g. heavy metals
- Mobile and non degradable compounds which must be assimilated over land areas so that the contiguous surface water and groundwater bodies are not affected/altered to a degree that would require further treatment.

In case of forest land large part of biomass accumulates over soil surface as leaf litter. This brings several absorbed and absorbed pollutants back to the rhizosphere. Moreover, the leaf litter augment the organic matter content in soil which results in high absorption capacity.

In hilly terrain, slope and soil erosion play an important role in the assimilative capacity of soil. Therefore, estimation of assimilative capacity of eroded and hilly terrain soils involves:

- Estimation of eroded soil assimilative capacity
- Assessment of erosion potential

Disposal of sewage sludges; municipal and industrial waste waters on land have been practiced in India since ages, which helps in promoting the concept of waste recycle by taking advantage of physical, chemical and biological processes; reuse of useful components in the waste for bio-mass production; replenishment of natural resources; and recharge of ground water. Hence, the variability in the assimilative capacity of soils, the choice of biomass to be grown; and environmental conditions of the sites are the essential parameters in the design of an environmentally compatible waste management system. Thus the land environment assimilative capacity estimation involves:

- Preparation of inventory of municipal and industrial liquid and solid wastes
- Preparation of inventory of waste disposal sites
- Identification of degraded/waste lands, and productive lands presently in use for waste disposal

- Estimation of assimilative capacity of soils for liquid and solid wastes through soil-waste interaction
- Establishment of the upper limits of pollution load in critical pockets.

Biological Environment

Assimilative capacity of biological environment is the capacity of plants to absorb or absorb pollutants without plant damage. It is dependent on plant- specific and pollution-specific parameters. There are significant variations in pollution assimilation capacity of different plants. The phenomenon for assimilation of waste generated from anthropogenic activities remains same in the hilly as well as plain terrains.

Supportive Capacity

The supportive capacity of a region is the capacity of the ecosystems to provide resources for various anthropogenic activities in the defined planning region without impairing bio productivity and ecological integrity. The resources base of a region could be categorised into ecological and economic resources; transformational resources; infrastructural and distributive resources; and socio-cultural resources.

Pragmatic utilisation of these resources warrants establishment of functional relationships between the resources and their usages. The resources should also be assessed for renewability, mobility, and quality.

Thus, estimation of supportive capacity involves:

- Assessment of present and future levels of consumption *vis-a-vis* requirements for the salient resources.
- Assessment of potential for resource enhancement and management through technological, organisational and managerial interventions

The steps involved in estimation of supportive capacity of resources are:

- Assessment of current land use in agriculture, mining, forestry, industry, human settlements, and wastelands sectors

- Assessment of current agricultural practices vis-a-vis agroclimatic conditions
- Assessment of scope for improvement in agricultural productivity through technological interventions
- Assessment of land under mining vis-a-vis location of mineral resources
- Assessment of maximum amount of minerals that can be extracted without significantly affecting environmental quality with due considerations to technological interventions
- Assessment of competing demands on land for mining, industry, agriculture, forestry, and human settlements
- Assessment of available surface and groundwater sources in terms of quality and quantity.
- Assessment of recharge potential
- Assessment of present water use and estimation of water demand for residential, industrial, commercial and irrigation needs along with the water conservation potential
- Assessment of present potential of commercial and non-commercial energy sources including renewable
- Evaluation of energy potential vis-a-vis exploitation of commercial non-commercial sources of energy including conservation potential
- Assessment of capital requirement for exploitation of commercial and non-commercial sources

Resource Classification

Category	Components
Ecological and economic resources	Air, water, land, sunlight, space, green plants, non-green plants, animals, biodiversity, and CO_2 sinks; inputs for production processes, viz. raw materials, mineral resources, capital human

	resources and organisational resources.
Transformational resources	Processes for extraction, beneficiation and conversion of ecological and economic resources into productive goods and services with minimal residuals.
Infrastructure and distributive resources	Transportation, water supply, waste water, communication, and energy systems.
Socio-cultural resources	Educational & cultural facilities; health services; security services; infrastructure resources; scenic and recreational areas.

The carrying capacity of an ecosystem is greatly influenced by the availability of resources and the manner in which they are utilised. The availability of resources at any particular time is the result of the interactions amongst the physical occurrence of the resource, and the quantum of requirement, as also the technological, managerial and economic means of their exploitation. Estimation of future requirements of resources for the production of goods and services necessitates assessment of:

- Quantum and quality of the total stock of resources
- Combination of economic, technological and organisational capabilities that determine present production of goods and services
- Level of production under different economic conditions where the resource unit price increases due to its scarcity

- Level of production under different economic, technological and organisational scenarios

Quality of Life Considerations

Quality of life (QOL) in a given area is a function of the "objective conditions" and "subjective attitudes" of the population involving a defined "area" of concern.

The "objective conditions" are defined as numerically measurable artifacts of a physical event, sociological event or economic event. Objective conditions may be defined by numbers which stand for a given quantity of a variable of interest so long as it is independent of subjective opinion.

The "subjective attitudes" are primarily concerned with affective and cognitive dimensions and are specifically concerned with how aspects of cognition vary as objective conditions vary.

Quality of life estimation is based on the concept of a five level hierarchy of human values (Maslow, 1954). According to this concept, human experience is need organised, and the human needs are arranged in hierarchy such that when the lower level needs are satisfied, the higher level needs emerge and come into play. Maslow argues that human beings can have a proper quality of life only when each level of human needs has been properly satisfied. These levels are identified as:

- Physiological needs, e.g. food, shelter, clothing
- Security needs, e.g. protection of life, assurance of a continuing income
- Social needs, e.g. acceptance by other people
- Ego needs, e.g. achievement of independence
- Self fulfilment needs, e.g. job satisfaction

Based on this, QOL estimation differ in the nature of priority and ranking with reference to the topographic and demographic nature of the area viz; urban, rural, plains and hills. The attributes vary as:

- For the urban centres sanitation, water supply, environmental pollution and social security have been weighted higher than the rural areas. This has a reference to tourism and strain on infrastructure
- For the rural areas income and employment, health and education facilities, fuel availability (due to deforestation and unavailability of other fuel sources), transportation and communication have been weighted higher than the urban centres.
- For the Hills income and employment (Tourism is seasonal and agriculture is very difficult due to hilly terrain causing landslides, soil erosion, lack of irrigation facilities and modern equipment), food availability, transportation and communication, health and education facilities, fuel availability (due to deforestation and also non availability of LPG) have been weighted higher than the plains.

3.1.5 IIT Guwahati (Urban Areas)

IIT Guwahati proposed a concept and principles for assessment of urban carrying capacity, emphasizing the ultimate objective of developing a sustainable hazard free urban area. It proposes a new method of computing carrying capacity by analyzing adverse impact of population growth on the urban environment.

The carrying capacity estimation serves to be one of the most crucial answers to the question of sustainable development and thus to the very survival of humankind, yet an irony remains. Carrying capacity is very difficult to estimate or calculate. Arrow *et.al.* (1995) commented that carrying capacity is not static but is based on the complex relation of preferences, application of technology and patterns of production & consumption. They are also contingent on the state of interactions of the biotic and abiotic environment.

IIT Guwahati has come up with a new method especially suitable for eco-sensitive urban areas. The method was first developed for calculating carrying capacity of hilly

urban area that will ensure hazard free sustainable urban development. However, the concept can be applied to any urban area. Here, the basic concept of ecological footprint is first used to decide a trial sustainable carrying capacity of a watershed or cluster of watersheds covering the urban area or expected urban area under consideration. Watershed boundary covering extent of potential urban expansion or the urban planning area is considered here as system boundary and interaction with bioregion can indirectly be included through concept of regional planning. Following this, a trial carrying capacity is first determined by allocating population and infrastructures iteratively, so that the infrastructures provided remain sufficient to cover the virtual footprint of the allocated population. Feedback of the urban watershed is then analyzed through model study after virtual accommodation of this trial carrying capacity in the model. Feedback can be assessed in terms of several case-specific performance criteria to ensure that the area remain hazard free. In case of inadequacy, technological intervention is first tried to make it adequate. After ensuring that state of the art technological intervention is also insufficient to meet the set performance criteria, the trial carrying capacity is adjusted iteratively to arrive at an acceptable carrying capacity by reducing FAR, which also indirectly determines the actual and logical FAR for the urban area. For example, performance criteria can be accepted limiting values for sediment yield and water yield from the urban watershed so that flooding at downstream can be eliminated. Putting these limits as constraints one can arrive at the acceptable carrying capacity iteratively by analyzing feedback of the urban watershed in terms of these performance criteria. As the method finally accommodates a sustainable population iteratively through trial allocation and feedback analysis, the method is named as "Sustainable Accommodation through Feedback Evaluation (SAFE)".

Framework for calculation of carrying capacity using method of "Sustainable Accommodation through Feedback Evaluation (SAFE)"

To elaborate the steps involved in calculation of carrying capacity by the proposed "SAFE" method, step by step procedure is presented below with example of development of a hilly urban watershed.

Step 1: Delineation of the urban watershed: In this step the hilly watersheds covering the potential urban area are delineated from Digital Elevation Model(DEM) or marked from the city master plan following natural drainage network.

Step 2: Demarcation of the developable & non-developable area: The hills consist of both developable areas & areas having less scope for development, i.e. non developable areas. In this step, the non-developable areas of the delineated hilly region are demarcated using latest geospatial tools. The non-developable areas mainly consist of land with high slope, reserved forest areas, water bodies, stream lines, drainage channels, springs, depressions, etc. Thus the usable areas with respect to various developmental activities can be marked out.

So, $A_U = A_D + A_{ND}$ ..... (i)

Therefore, $A_D = A_U - A_{ND}$ ..... (ii)

Here,

A_U = total hilly urban area,

A_D = net developable area and

A_{ND} = net non developable area.

Step 3: Determination of area required for different infrastructure and facilities: The standard space requirement index of the UDPFI guidelines of the then Ministry of Urban Development, Government of India can also be used as a guideline for calculating the required space for various infrastructure developments.

So, $A_D = A_{IF} + A_R$ ..... (iii)

Here,

A_{IF} = area for infrastructure development and

A_R = area for residential requirements.

Step 4: Calculation of the available residential area: The net residential area available for settlement development can be calculated using the following equation:

From (i) & (iii)

$$A_U = A_{ND} + A_{IF} + A_R$$

Therefore, $A_R = A_U - (A_{ND} + A_{IF})$

Step 5: Socio economic survey of the urban region & calculation of the floor area requirement of the people: A thorough demographic and socio economic survey of the hilly urban area should be done to estimate an average floor area requirement per head of the people dwelling there. In this regard the national floor area standard values (the then MoUD, GOI) can be consulted to get an understanding of the same. The floor area requirement of the people will greatly vary with respect to economy and lifestyle of the people living there.

Step 6: Determination of the Floor Area Ratio: Floor Area Ratio is defined as:

$$FAR = A_f / A_P$$

Where,

FAR = Floor Area Ratio,

A_f = total floor area and

A_P = area of the plot.

Step 7: Calculation of carrying capacity: Based on the overall study, the carrying capacity of the area with respect to urban development can be calculated using the following equation:

$$CC = A_U - (A_{ND} + A_{IF}) \times FAR/S$$

Here,

S is the Floor area requirement per head.

Step 8: Check for adequacy of drainage system, sewerage system, water quality etc. which were not explicitly considered during carrying capacity calculation. If inadequate, following two options need to be tried in sequence:

i. Apply possible Ecological Management Practice to bring sediment yield, peak discharge, sewerage volume and water quality within permissible limit
ii. Re-evaluate the carrying capacity by reducing FAR

3.1.5 GBPNIHESD (Hill Areas)

3.1.5.1 Evaluation of Carrying capacity – Manali & Macleodganj (A case study)

The concept of carrying capacity (CC) is off late making inroads into almost all fields of studies like ecological CC, environmental CC. physical CC, tourism CC and many more. Any generic methodology or common framework for CC assessment is hard to come by as different studies under different study-conditions adopt wide variety of frameworks (*UNEP, 2003*) ranging from simple user perception surveys to complex frameworks. Aiming to assess sustainability of general environment covering air, water and solid waste domains, adopted here is a broad framework inclusive of quantitative and qualitative assessments backed up by literature review, site inspections and surveys and deliberations with local authorities (Fig. 3.4). The study has been carried out through two dimensions:

Assimilative Capacity Dimension

Assimilative capacity refers to the ability of the environment or a portion of the environment (such as a stream, lake, air mass, or soil layer) to carry waste material without adverse effects on the environment or on users of its resources. Assimilative capacity includes Air Environment, Water Environment, Land/Soil Environment, Biological Environment and Acoustic Environment.

Supportive Capacity Dimension

Supportive capacity determines the developmental potential of a region and economic progress and quality of life. Supportive capacity includes Urban Land and Shelter Resource, Urban Social, Physical and Communication Infrastructure, Urban Utilities and Human and Institutional Resource. The aspects have been assessed based on

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comparison with existing norms and standards arriving on adequacy/ deficiency, above or below standards. This has been followed by recommendations relating to assessment.

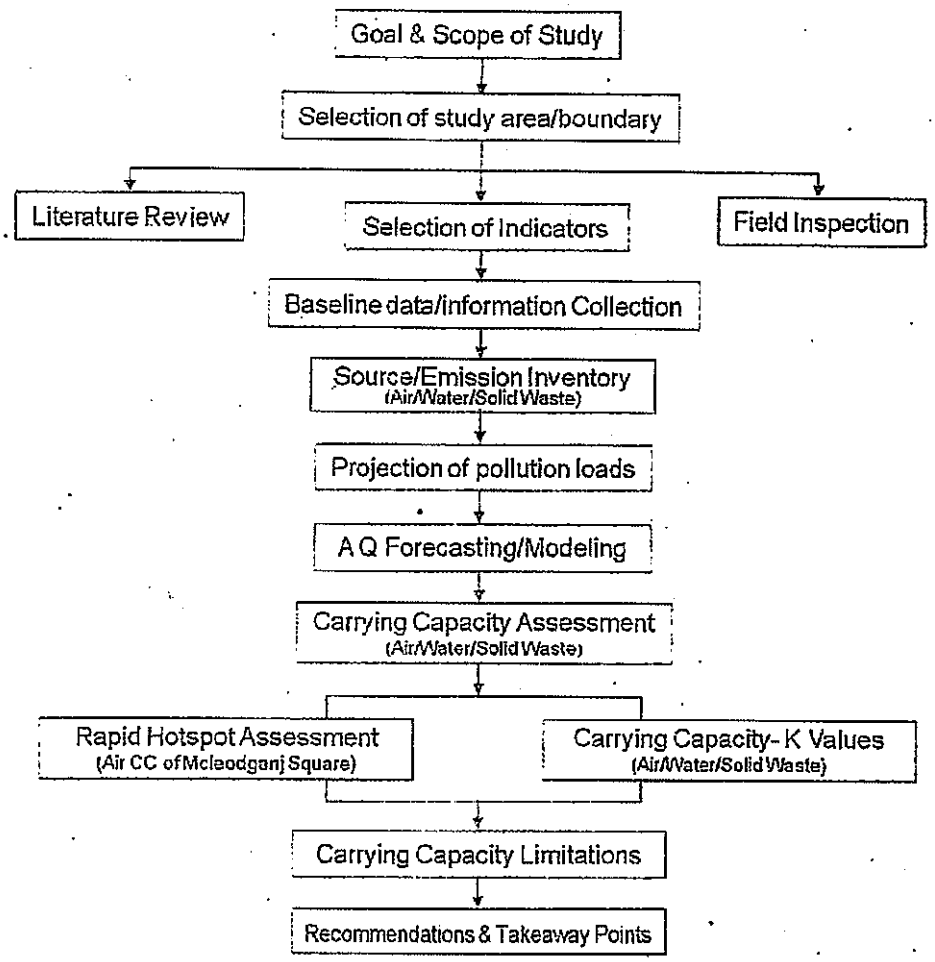

Fig. 3.4 An overall broad *Framework developed for Carrying Capacity Assessment*

3.1.5.2 Environmental sustainability and Tourism: Implication of trend synergies – Sikkim

The natural environment of Sikkim and its rich cultural diversity provides congenial conditions for the growth of the tourism. The analysis of tourist influx suggests favorable trends in terms for growth of tourism in the state. However, development of tourism would also bring some negative implications. Hence, the Eco-tourism and its sustainability in the state would face a incubation time and suitable management options are therefore needed. The fig. 3.5 shows the thematic broad conceptual model used for developing trend synergies with reference to environmental sustainability and tourism in Sikkim. The broad framework developed at GBPNIHESD used to study the impacts of tourism in various future scenarios with a hypothesis that with increasing per capita income and more disposable income, improved infrastructural facilities, better mobility, increasing desire amongst urban people to explore and experience new areas etc. the tourism in Sikkim is destined to grow in future. Joshi and Dhyani (2009) apprehended that tourism growth could also lead to habitat destruction, resource depletion and changes in subsistence agricultural economy of the state. The decreasing livestock population and food crops, and increase in the area of production of cash crops can be seen as a consequence of monetization of village economy which can be attributed to tourism. In some of the rural areas, diversion of agricultural land for tourism purpose is common.

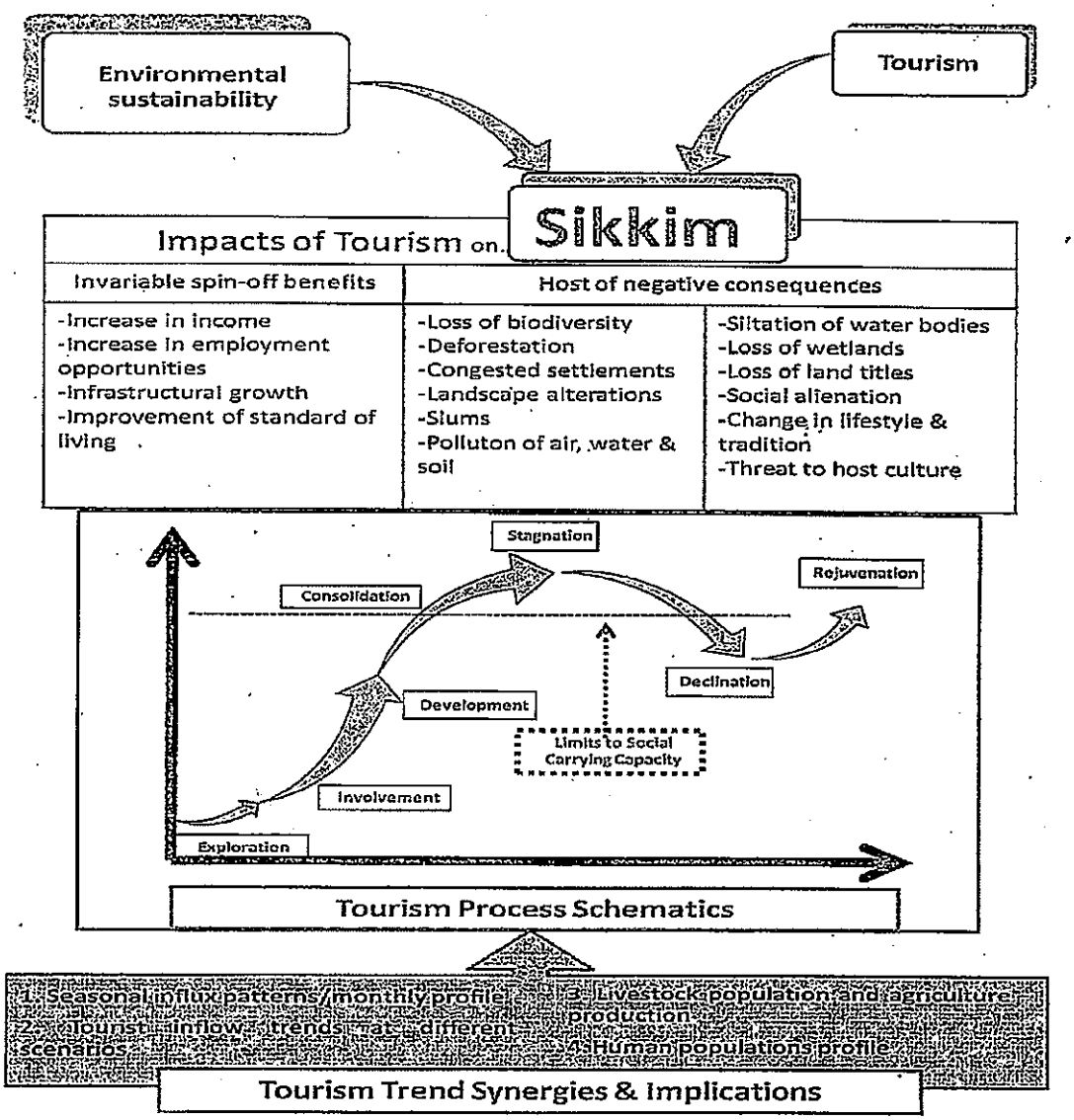

Fig. 3.5 Framework to study implications of trend synergies on environmental sustainability & tourism (Modified from Butler, 1980; and Joshi and Dhyani, 2009)

3.1.5.3 Stakeholder consultation at Uttarakhand, Himanchal Pradesh, Arunanchal Pradesh and Sikkim by GBPNIHESD

The consultation meetings were conducted to capture preliminary perceptions and concerns of different stakeholders and interest groups iri different locations of

Himalayan States from north-west to far eastern region of the country mainly at 4 states namely, Uttarakahand, Himanchal Pradesh, Arunanchal Pradesh and Sikkim by G. B. Pant National Institute of Himalayan Environment and Sustainable Development (GBPNIHESD). This exercise was done in a very comprehensive mode however, it requires more deliberations (as also demanded by participants in almost all the meetings) and in diverse geographical settings of the country, other than the Himalaya. Data templates for assessing carrying capacity of Hill stations were shared in these meetings, for a wide spectrum of participants who attended these important discussions. Participation included People's representatives as Member of Legislative Assembly and Municipal Councilors, District Magistrate having HQs in a hill stations and Officials of Municipality of Hill towns, Vice-Chancellors and Professors of Hill Universities, Subject Matter Experts, Representatives from Non-Governmental Organizations, Activists on saving the environment of hill towns, Members of Civil Society and representatives of business groups, Officials of line agencies responsible for maintaining civic amenities and infrastructure, and Scientists. A conceptual framework developed by GBPNIHESD for these kind of studies are well illustrated in Fig. 3.6.

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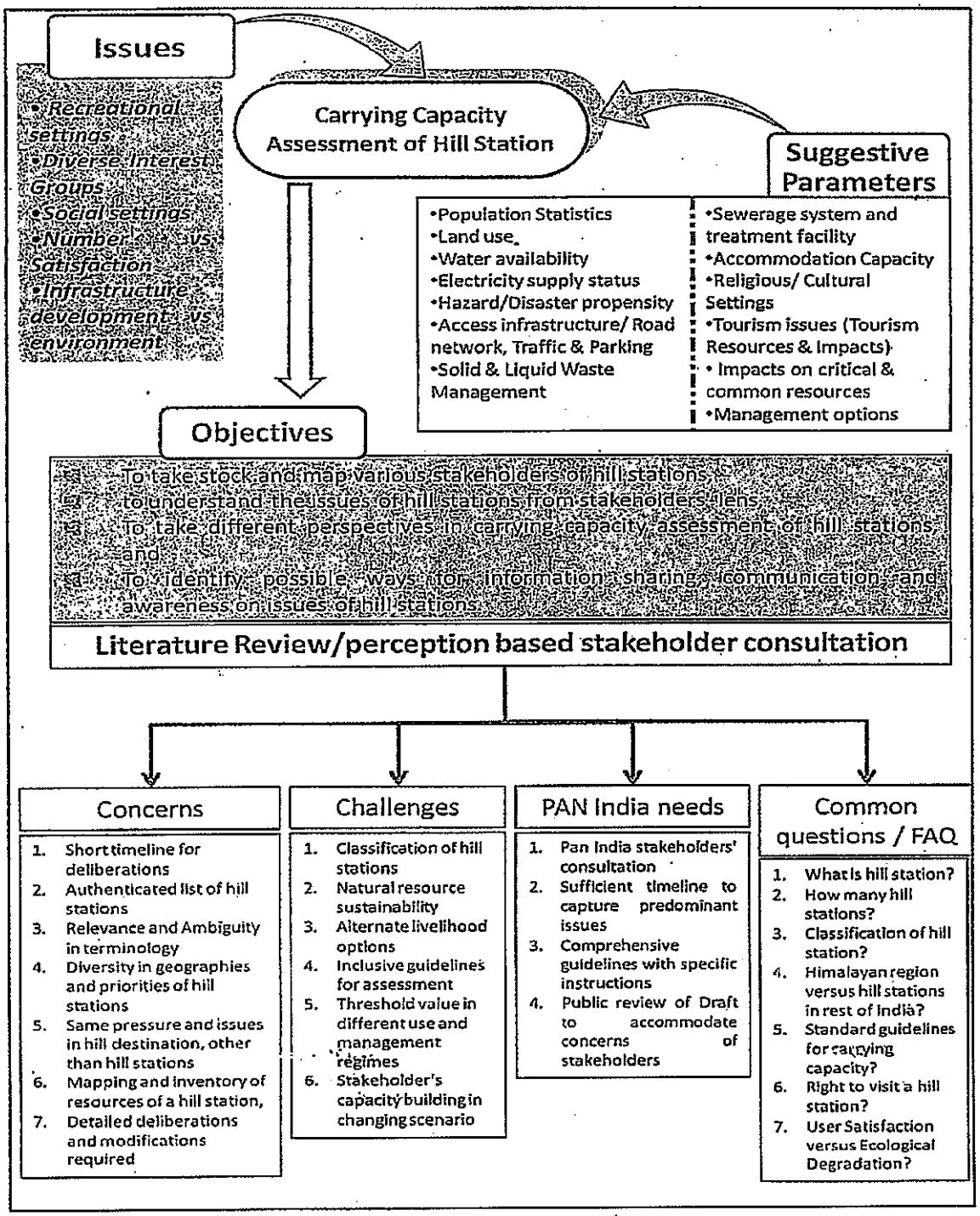

Fig. 3.6 Stakeholder consultation for carrying capacity assessment

3.1.6 NITI Aayog (Sustainable Tourism in Indian Himalayan region)

NITI Aayog in 2017 constituted five Working Groups along with lead institutions as conveners of the Groups for sustainable development in mountains of Indian Himalyan Region(IHR) to prepare a report each, on thematic areas. One of the thematic areas was "Sustainable Tourism in IHR". NITI Aayog in association with some key National Institutions and International Centre for Integrated Mountain Development(ICIMOD), set up an Action Agenda for Himalayas "Sustainable Development of Mountains of IHR), in which "Sustainable Tourism in IHR" was selected as one of the key themes. Based on the deliberation, the Working Group concluded that there are relevant policies and best practices in place. Similarly, each mountain state in IHR has tourism development plans, and problems regarding negative social and environmental impacts are widely known. The Working Group agreed to suggest a conceptual framework that allows further consolidation of knowledge on existing policy gaps, planning and implementation deficits, and challenges due to the impending climate change so that IHR can benefit from set of actions and recommendations contributing to make sustainable tourism in the region a reality. Based on the consultation it was agreed to design a draft framework analyzing the existing tourism policies and plans and other support policies. It must result in key outcomes as actions so that policy gaps, strategic master plans and climate change issues are addressed.

Methodological Approach followed by NITI Aayog

The key action points outlined to form the basis of above methodological framework were:

- Review current tourism and key cross-cutting policies and plans of IHR
- Identify gaps and best initiatives (policy and practice) related to sustainable tourism
- Convene state level dialogues (multi-sector and multi-stakeholder)
- Explore/promote/update integrated sustainable tourism policies in key states

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- Identify policy, financial and institutional incentives that will support sustainable tourism development
- Develop a regulatory framework for minimizing impacts and monitoring mechanism at state and regional level.

Following the above Action Points, the Working Group on "Sustainable Tourism in IHR" held its first meeting where deliberation of Working Group concluded that each mountain state in IHR has tourism development plans as well as, in some cases, ecotourism policies and plans. Both best practices (private and state-promoted), and problems regarding negative social and environmental impacts are prevalent in the region. The working group agreed to suggest a conceptual framework that allows further consolidation of existing policy gaps, planning and implementation deficits, and factors in the impending challenges of climate change so that IHR can benefit from set of actions and recommendations that make sustainable tourism a priority. Elaborated below is the draft framework to reach the above actions and recommendations (Fig. 3.7).

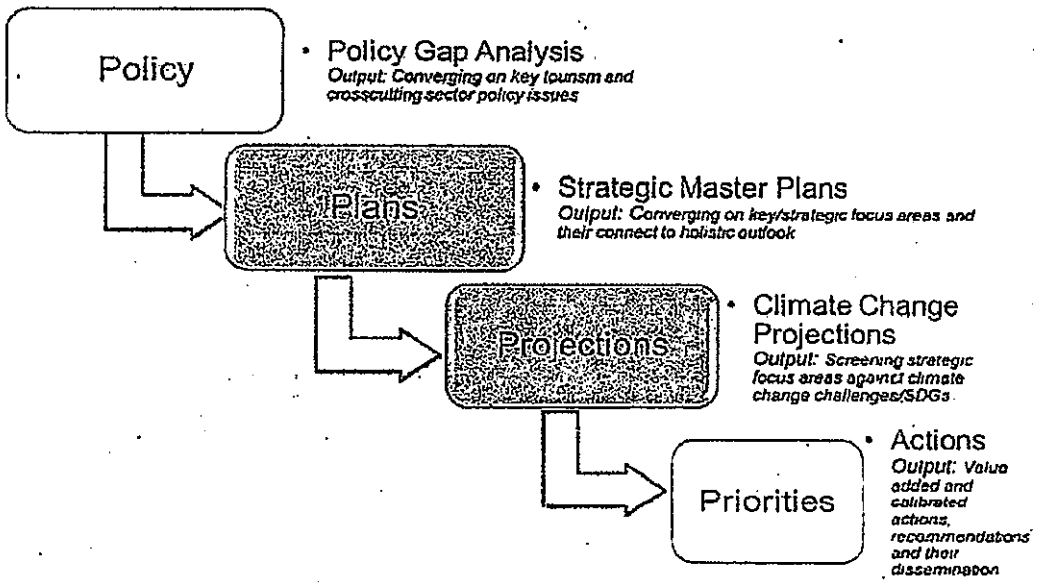

Fig. 3.7 Conceptual framework based on 4P's model developed by NITI Aayog

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Framework for Analysis and Actions proposed by NITI Aayog

a. Policy Gap Analysis:

This involved a cross-cutting analysis of selected IHR state tourism policies, and other closely connected policies (forest, environment, industrial, infrastructure development) for converging on key deficits such as contradictory cross-sectoral policy statement as well as unsustainable actions and incentives. It also looked into key policy instruments that have yielded positive/negative impacts. Apart from this, it looked into forward and backward linkages in selected tourism value chains in terms of how new policy recommendations may influence these.

b. Plans:

Analysis of key tourism and other conservation and development oriented master plans to scope on strategic areas of focus that currently are defining intervention areas, investments and impacts. Here analytical focus was also on the Governance of Tourism value chain and institutional deficits (e.g. in services sector's capacity to deliver sustainable tourism, equitable benefit sharing) and monitoring mechanisms that allow holistic implementation of plans. Focus was also on selected best practices analysis learning from what is up- and out-scalable.

c. Projections:

Given the country's commitment to Sustainable Development Goals(SDGs) and climate change agreements, current policy and plan deficits as well as dividends were screened against the current and projected changes in socio-demography and climate, and the expected impacts (e.g. on water security, hydropower, carrying capacity of destinations, health and hygiene). The projections also take into account long term impacts on the ecological security of the region. This analysis was crucial as apart from sector governance and institutional capacities, climate change projections will facilitate key corrective actions and recommendations.

d. Priorities:

This element of framework for analysis and actions used the above analysis of first three framework elements as per the accessible and available information from web sources and propose IHR oriented recommendations to address above-mentioned Key Action points (e.g. regulatory framework for minimising negative impacts, monitoring mechanism and collaborative framework to harness emerging opportunities) and recommendations for policy, practice and future research. The priorities were crafted based on further consideration of existing conclusions and recommendations made by numerous government and other non-government documents aiming promotion of sustainable tourism in IHR.

However, while analyzing and interpreting the policies and practices of IHR, conclusions were drawn in a generic way by NITI Aayog and not necessarily described according to framework elements above.

3.1.7 Tourism

In India, the tourism sector is based on its unique endowments of biodiversity, forests, rivers, and its rich culture and heritage. The challenges in this sector lie in successfully preserving these in their original form, and making them accessible to domestic and international travelers, together with safeguarding the economic interest and heritage of local communities. The importance of Sustainable Tourism worldwide has increased significantly due to the impact of increased human activity on climate. Nevertheless, it is necessary that the negative impact of the Tourism industry is not enlarged unrealistically. Full advantage can then be drawn from the potential of tourism for inclusive growth, with livelihood support to the poor, most disadvantaged, women and youth.

Accordingly, Ministry of Tourism, Government of India, convened a National Workshop on Sustainable Tourism Criteria for India, in July 2010. Based on the recommendations of this National Workshop on Sustainable Tourism Criteria for India, a sub-committee chaired by the Joint Secretary (Tourism), Government of India, and comprising expert

stakeholders was constituted in 2010 for defining Sustainable Tourism Criteria for India (STCI) and indicators.

The key concerns kept in mind by the Committee were:

(i) Carrying capacity.

(ii) Anthropogenic character, applying to all major human impacts on the environment.

(iii) Local community participation, engagement and, benefit.

(iv) Ministry of Environment & Forests, Government of India guidelines.

(v) Bio-degradable toilets.

(vi) Water harvesting.

(vii) Lessons from successes and failures, national & international.

(viii) Institutional certification and viewpoints: International Organization for Standardization (ISO), Bureau of Indian Standards (BIS), Bureau of Energy Efficiency (BEE), Leadership in Energy and Environmental Design(LEED) etc.

(ix) Polluter Pays Principle.

3.2 The assessment of carrying capacity of any ecosystem is an intricately related tool which would be very helpful in attaining sustainability of socio-cultural attributes, resources, ecosystem services and quality of life in a longer way. The accuracy in the assessment would not only help in the further evolution, growth and development of the implemented/studied region but also help in the longevity and sustenance of the resources and services for the welfare of mankind as well as the ecosystem. This section highlighted methodologies/approaches/protocols/schemes, which had been evolved during past research activities performed by various national and international independent intuitions. Third party can use these approaches with science-based suitable site specific modification for assessing carrying capacity of respective area of interest.

The process of defining and implementing Tourism Carrying Capacity needs a broader process of planning for sustainable tourism, which are parallel and complementary

processes, can provide a general framework which could guide the local community, planners and decision makers. This framework consists of principles, goals, objectives and policy measures in regard to tourist development in an area on the basis of the area's distinctive characteristics/features respecting local capacities to sustain tourism. Setting capacity limits for sustaining tourism activity in a place involves a vision about local development and decisions about managing tourism. These should be carried in the context of democratic community strategic planning, which requires participation of all major actors and the community at large. Consultation with relevant stakeholders is a key issue at all stages. The whole process is dynamic and cyclical. An assessment and implementation of TCC model (Figure 3.8 & 3.9) is developed for European destinations by University of Aegean, Greece which needs to be considered for suitability as a process within a planning process for tourism development in Indian context.

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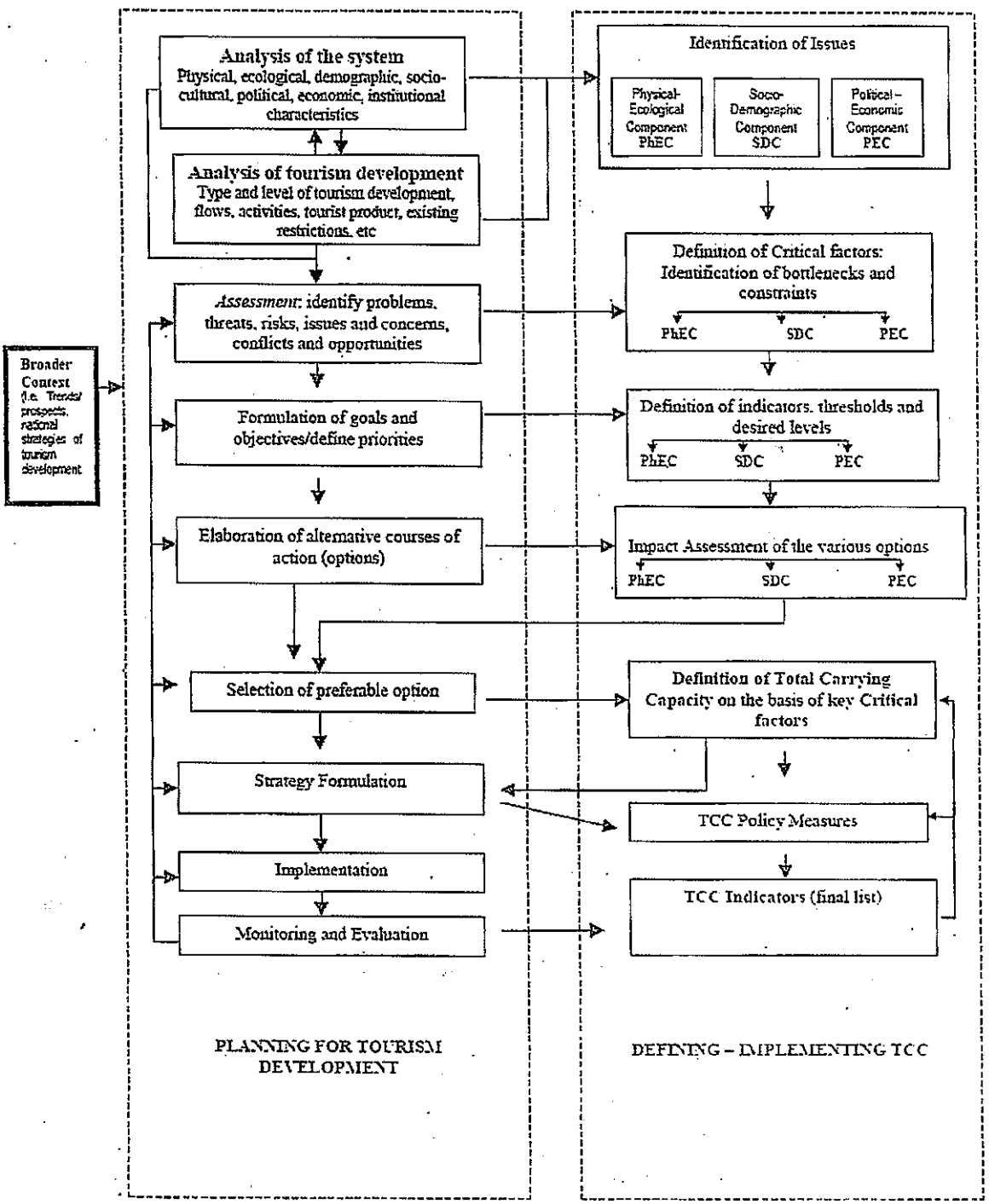
Broader Context (i.e. Trends/ prospects, national strategies of tourism development
Analysis of the system
Physical, ecological, demographic, socio-cultural, political, economic, institutional characteristics
Analysis of tourism development
Type and level of tourism development, flows, activities, tourist product, existing restrictions, etc
Assessment: identify problems, threats, risks, issues and concerns, conflicts and opportunities
Formulation of goals and objectives/define priorities
Elaboration of alternative courses of action (options)
Selection of preferable option
Strategy Formulation
Implementation
Monitoring and Evaluation
PLANNING FOR TOURISM DEVELOPMENT
Identification of Issues
Physical-Ecological Component PhEC
Socio-Demographic Component SDC
Political – Economic Component PEC
Definition of Critical factors: Identification of bottlenecks and constraints
PhEC
SDC
PEC
Definition of indicators, thresholds and desired levels
PhEC
SDC
PEC
Impact Assessment of the various options
PhEC
SDC
PEC
Definition of Total Carrying Capacity on the basis of key Critical factors
TCC Policy Measures
TCC Indicators (final list)
DEFINING – IMPLEMENTING TCC

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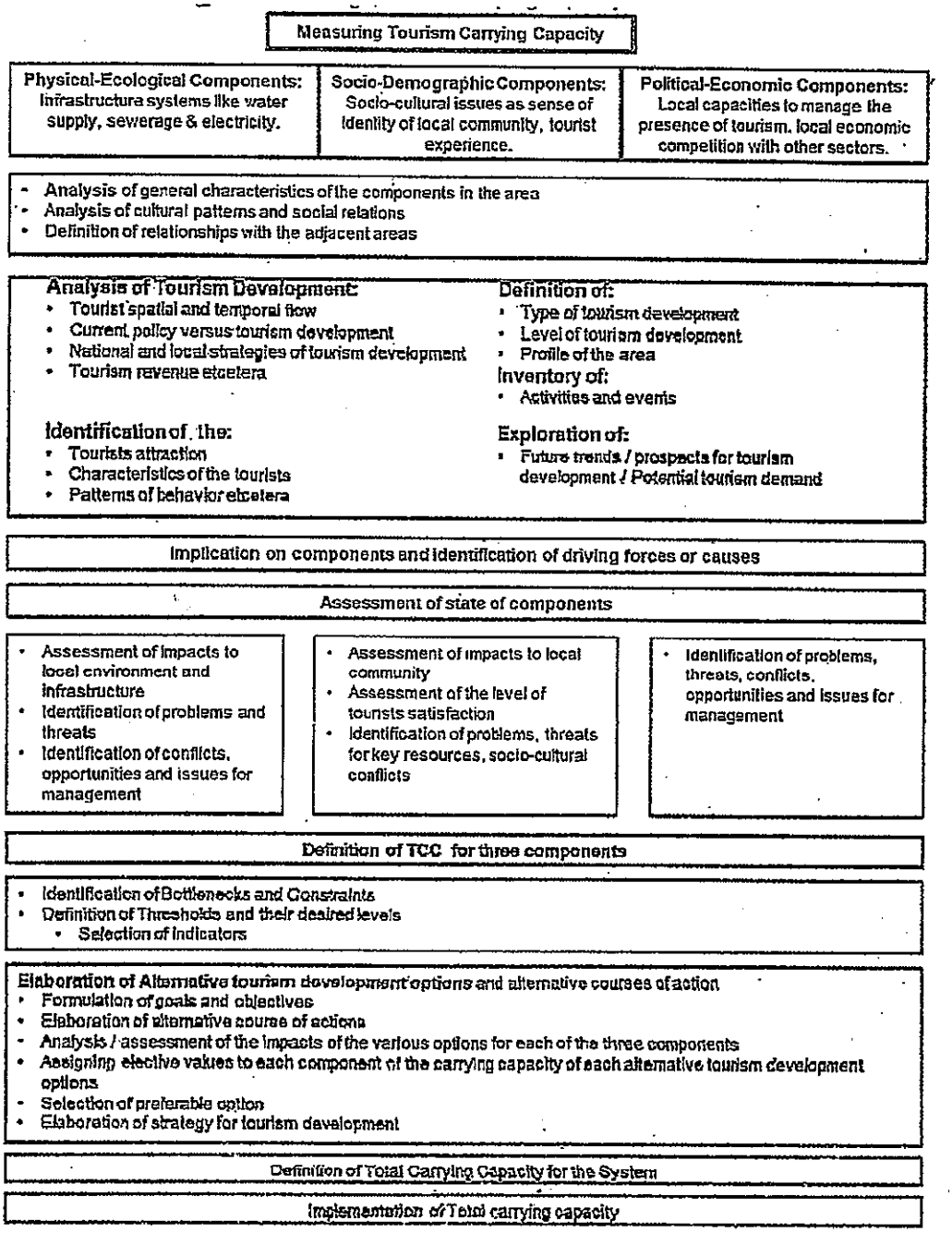
Fig. 3.8 Conceptual algorithm for tourism development by assessing and implementing tourism carrying capacity



Chapter - 4

4. Capturing Perceptions of Stakeholders in Hill Stations

Under the influence of developmental activities (infrastructure), population growth (residential and floating), growing economy (consumerism, destination marketing, private vehicles), natural processes (landslide, erosion, long range transportation of air pollutants, etc.) original landscapes of the various hill towns and processes therein have been transformed. In order to address the concerns, four public consultations were conducted:

Hill Stations- Consultation Meetings

- 29 July 2019: Uttarakhand - Nainital
- 2 August 2019: Himachal Pradesh - Mohal, Kullu
- 2 August 2019: Sikkim - Gangtok
- 8 August 2019: Arunachal Pradesh - Itanagar

Participation included People's representatives as Member of Legislative Assembly and Municipal Councilors, District Magistrate having HQs in a hill station and Officials of Municipality of Hill towns, Vice-Chancellors and Professors of Hill Universities, Subject Matter Experts, Representatives from Non-Governmental Organizations, Activists on saving the environment of hill towns, Members of Civil Society and representatives of business groups, Officials of line agencies responsible for maintaining civic amenities and infrastructure, and Scientists. Details of list of participants and photographs are enclosed' **(Annexure-III and IV).**

Primarily, each consultative meeting revolved around the common objectives - (i) to take stock and map various stakeholders of hill stations, (ii) to understand the issues of hill stations from stakeholders' lens, (iii) to take different perspectives in carrying capacity assessment of hill stations, and (iv) to identify possible ways for information sharing, communication and awareness on issues of hill stations. To set the common

stage an outline of proposed report and a draft template on attributes to be captured for assessment of carrying capacity of a hill station, were presented before the participants.

4.1. Different Regions but Common Concerns:

Discussions in the meetings were largely oriented on the local or state issues with respect to a hill station located in that state but few concerns were common in all the four geographies, particularly on timeline, more deliberations at different places, ambiguity on concept of hill station and terminology, methods, etc. Some of the important outcomes of consultation included:

- Topic is very appropriate in present context of population and economic growth but time for deliberations is short and more preparatory phase is required to analyze things in different perspectives of various stakeholders and interest groups.
- A major voice was on the term, *'Hill station'*, which gives a *'colonial expression'* and has lost its significance in the present form of hill tourism, regionally as well as globally. This term needs to be replaced with appropriate word, e.g., '*Hill Town/Destination*'.
- To remove ambiguity in terminology, need for framing a definition of 'carrying capacity' was emphasized which may be applicable, broadly, to hill station/town/ destination of Himalayan region. This required to make exercises and results comparable while adopting learning lessons from other parts of the mountains.
- Authenticated list of hill stations across country (for different states) is required for planning, management, and carrying capacity estimation. Carrying capacity assessment of hill stations was considered vital, and requires immediate but dedicated efforts.
- In recent times, tourist influx is significantly escalating in many mountain destinations (other than the hill towns) where infrastructure is not adequate. Such places are witnessing unplanned growth. Landscape and surrounding environment of such destinations is facing similar pressures as a hill station.

Separate assessments guidelines are required to assess carrying capacity of such destinations so fragile environment is conserved.

- Different hill stations of country, particularly in North-Eastern part of India, have different characteristics, predominant issues and priorities. Therefore, more number of stakeholder consultations should be carried out to capture the predominant issues of hill stations in India and finalize the guidelines for carrying capacity assessment.
- Detailed mapping of resources and assets of a hill stations is mandatory before estimation, and an inventory and network of relevant organizations needs to be framed.
- Guiding principle in carrying capacity assessment is uniform, i.e., to *'save the ecology of hill station'*, however, *'parameters for assessment'* must be changed as per specific need, issues and challenges of a hill station.

4.2. Small Uniqueness in Larger Perspective:

Deliberations at these four consultations were confined to hill stations of Himalayan region. Thus many recommendations/suggestions may appear more relevant specific to these mountains. For example, due to massive elevational gradient in these mountains (human habitation from foothills to above 3000m AMSL altitude) a suggestion came up to categorize hill stations (of Himalayan region) altitudinally as low, medium and high altitude hill stations. This classification may appear appropriate in Himalayan geography where Leh (Ladakh) is situated at an altitude of ~3500m, most of prominent hill stations are around 2000 m (Shimla, Nainital, Darjeeling) and close to this altitude (Gangtok, Mussoorie, Kasuli, Shillong), and many hill stations are located below this altitude. This classification appears appropriate for Himalayan ranges where geology (Siwalik, Lesser Himalaya, Greater Himalaya, and Trans-Himalaya) and climate (sub-tropical, temperate, and tundra type) are dominant on the landscape and differ along altitude. However, hill stations in other geographies are more or less at same elevation but have different attributes (Ooty and Kodaikanal both around 2000m altitude located in Western Ghats; Mount Abu, Sputara, Panchamarihi, Panchagani, and Mahablashewar are above 1000m in different parts of India). Thus, need was felt that detailed inventory of hill

stations across India should be properly made available to the team developing guidelines for carrying capacity assessment. Exercise in developing such updated national inventory must be done after a nationally acceptable definition of hill station.

While deliberating on the issues of hill stations, it was realized intensively that each hill stations have its own natural resources and dependent variety of livelihood options, constraints and local issues; but the key elements that play important role in its sustenance are its unique geology, topography and natural settings. Stakeholders' view during consultation cautioned that the local livelihood should not be ignored in this whole process, as the hill economy is much dependent on its natural resources and surrounding environment. To this, some participants even strongly argued and underlined that carrying capacity assessment must acknowledge hill station's contribution to State's GDP.

Major issues and challenges expressed by the participants of consultation meetings were growing population including visitors, unplanned and un-managed infrastructure tourism activities, solid waste, water and air pollution, and declining green cover. Major concern was lack of foresight in managing natural resources and during situation of extreme climatic events (cloud burst, dry spell, heavy rainfall, etc.) in mountains.

While elaborating on above challenges and describing damaged ecology of hill stations, participants felt that existing rules and regulations are extensive to provide preventing measures but governance and effective implementation of rules is the major issue.

Problems of solid waste generation and its management have emerged as real challenge in hills. The examples were illustrated, during consultation meeting, for famous Manali and Shimla hill stations in Himachal Pradesh. Application of Dozier of Shimla to Manali hill station, participants effectively made their case of commonality and difference between these two stations. In Shimla, tourism activities run across entire year, but in Manali it runs only for few months; so the Dozier made for Shimla cannot or

should not apply to Manali. Likewise, it was also emphasized that "Nainital" (town) has its own rights to remain as a town to preserve its cultural identity and scenery from economic point of view. Therefore, participants insisted that time and space should be taken into account while assessing carrying capacity of particular hill station. Other major challenges according to participants are lack of temporal and spatial inventories of available natural resources, resource use pattern, livelihood options, climate, socio-economics and documentation of traditional knowledge in the hill stations. The point was also highlighted that Nainital town has already exceeded its carrying capacity, and this fact is also mentioned in Nainital Development Authority report of year 2012. Environmental/ geological fragility were major concerns in the town, and must be considered in infrastructure planning. In this context, over construction and construction in vulnerable pockets was condemned by participants, and need for better enforcement and public cooperation for cause of environmental sustainability was underlined.

During discussions on procedures and probable structure of carrying capacity estimation, participants urged that estimation of carrying capacity should be based on inter-dependent relationship between different parameters/entity and respective threshold values, instead of single parameter. The interest group and their needs/approaches (conservation *vs* economics and/or local *vs* tourist) need to be addressed in such estimations. To this, the need was highlighted to develop network of Institutions with different skills/capacities to be used for assessing carrying capacity of hill stations. Participants also felt that, there is a need to develop or find out alternatives to the manage peak demand during tourist season in hill stations. (e.g., alternate sources of natural resources, alternative modes of transportation, additional visiting places to divert tourists, other options for livelihoods, etc.). This further creates a need for awareness programmes and capacity building of stakeholders for sustenance of hill stations. Considering the vast scope of subject matter of carrying capacity, its related serious concerns environmental and livelihoods of local people, stakeholders unanimously felt that there is a need to have more intense discussions on the matter. Therefore, more stakeholder consultations are required with subject matter experts (i) to

capture the predominant issues of hill stations across India, and (ii) to finalize guidelines for carrying capacity assessment.

However, the present exercise was successful in capturing preliminary views, the knowledge base was limited to paint the variety of stakeholder's views on Pan-India basis, and common ignorance was also realized on this topic of carrying capacity assessment of a hill station. Despite of such limitations, a draft template of guidelines to assess carrying capacity of hill stations and some parameters to do that were also discussed in these four consultative meetings, and many concerns and suggestions were received.

Some of the concern are - absence of demarcation of barren lands within hill stations which can be further used beyond threshold values for ecological regeneration or for alternate livelihood options; lack of information of surrounding/adjoining area of hill stations for proximity analysis of resource degradation and absence of section of livelihood options in carrying capacity assessment. Further, presented guidelines and templates lack ingredients to address the seasonal and yearly scenarios of carrying capacity assessment for a hill station. Suggestive modification was that the calculation of carrying capacity may be based on peak season basis instead of per day basis and the unit of collection of data may be different for different groups (e. g. monthly data of tourist, annual data of students etc.). Further, going through templates, different stakeholder suggested add-on sections for comprehensive assessment of available resources and thereby assessing carrying capacity of hill stations. Among the add-on, addition of details of Land use/land cover (LULC) of hill stations (forest, agriculture/horticulture, barren, settlements, water etc.) was proposed. In available infrastructures section and analysis of gaps sections, suggestions were to include exhaustive list of items like - Types of households, Total bed capacity of hotels/home-stays, Available rainwater harvesting structures, number of Electricity connections and their type, number of water supply connections and their type; Airports, Ropeways, Foot-paths (in km), ATMs, Banks, Seating benches, Parks, Waste collection points,

Waste disposal points, Fire stations, Police stations, Site seeing points/locations, Petrol pumps, Waste recycling plants (water and solid waste), Agriculture markets (*mandis*), Public toilets, Green area, Eco-sensitive zones/protected zones, Hydropower etc.

Suggestions also came-up to include average number of days of stay of visitors (seasonally and yearly), number of labor (outside) in section of additional inflow of people. The participants and stakeholders who were more concerned to agriculture, horticulture and allied activities, also suggested including the impacts on agriculture and horticulture in section of impacts of additional inflows. While commenting the chronology of guidelines templates, the section of forest was suggested to be placed before final carrying capacity. While interacting among themselves and knowing the capacity and work domain of own departments, different stakeholders suggested add-ons of different departments in the last templates of information collection from various departments which included - District Disaster Management Authority (DDMA), Pollution Control Board (PCB), Wildlife department, Education department, Lead Development Manager, Irrigation and Public Health (IPH), Hydropower agencies, Agriculture department, Horticulture department, Fisheries department, Animal Husbandry department, Central Ground Water Board (CGWB), Central Water Commission (CWC), and District Rural Development Agency (DRDA). The names of the departments may vary across the hill stations of India, but the department can be identified and suitably enlisted based on their work domain and role in assessing carrying capacity of hill stations.

Based on participants inputs, it was conclude that there is a need to (i) balance economic, social, and environmental interests, (ii) need conflicting stakeholder interests in a sustainable perspective for optimal/efficient management, (iii) ensure pro-active role of society on important environmental concerns, show self-discipline and responsible attitude in resolving conflicts, and compliance of rules/ regulations and municipal by-laws, and (iv) strengthen guidelines of assessing carrying capacity to capture country's diversity, specific attributes of a hill station, and formulation of effective management

plan so the real aim of sustainable development in harmony with ecological sustainability is achieved.

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Chapter - 5

5. Assessing Carrying Capacity

The Carrying capacity problems encountered in various types of environments/ sectors i.e. Urban, Rural, Industrial Area, Tourism/ Eco-tourism, Wildlife Sanctuaries, Industrial areas etc. provide a good background for identification of indicators and choice of relevant set of parameters. The selection of parameters also depends on the goal/ purpose of assessment i.e. developmental planning, impact management, type of policy formulation/ interventions, formulation of municipal codes (laws/ bylaws), stipulated benefits/ goals, the critical resources, the local culture, the trade-off threats, pollution problem, traffic management, disaster propensity, conservation/management, resource provisions, etc. It can also be evaluated in light of some broad categories such as physical, social, economic, ecological aspects/factors. Though there are some common parameters which are applicable in most of contexts of human carrying capacity assessments, yet selection of parameters also depends upon envisaged goals and the specificities of the sectors/ activities being assessed. There are no clear cut methods for assessment; the use of methods depends upon the analytical acumen and knowledge of analytical tools of investigators (ideally a multi-disciplinary team). It may vary from complicated modeling tools (software) to simple threshold/ acceptable benchmark / standards based comparisons. The setting of such standards/ thresholds which are very important for assessment of breach of carrying capacity (CC overshoots/ limits) needs to be done in Indian context. The carrying capacity (CC) limit setting & standardization requires expert's weightings/consultations.

5.1. Identification and classification of indicated parameters

5.1.1 Natural environment

Micro-climate

Springs /rivers/water bodies

Geological settings

Slope

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Forest areas

Scenic/Natural hotspots

5.1.2 Physio-chemical environment

Land use/ Land cover

Water quality (surface and ground water)

Drainage/ Watershed

Air quality and emissions

Waste Management

Effluent and discharge methods

5.1.3 Biological environment

Biodiversity (micro-organisms, flora and fauna)

Protected Areas / reserve forests

biosphere reserves

Breeding sites

Any specialized habitats (Endangered species)

5.1.4 Social environment

Human population (Density and diversity)- Permanent and floating

Livestock population

Infrastructure (Housing and road network)

Water availability

Educational Institutions

Migration

Health facilities and Health environment status

Agricultural/horticultural/floricultural activities

Public utilities

5.1.5 Cultural environment

Tourism

Pilgrimage

Natural and manmade/heritage and historical sites

Archaeologically important sites

Heritage sites

Traditional methods of life / cultural details
(Especially tribe's ad their life style)

5.1.6 Energy environment

Electricity (domestic and commercial)

Fuel (domestic and commercial)

Renewable energy

Cooking (fuelwood, coal, LPG, crop residue, etc.)

5.1.7 Economic environment

Commercial activities

Industrial development

Hotels and resorts

Transport

Employment

Health tourism

Agricultural/horticultural/floricultural activities.

5.1.8 Natural Hazards

Land slides

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Forest fire

Earthquake

Floods

Seasonal/climate changes in micro level

Spreading of any disease in wild animals/ plants

5.1.9 Others

Industrial disasters

Traffic congestion

Parking facilities

5.2 The Carrying capacity calculations are sensitive to change in host of parameters viz. geological, geographic, technology, socio, economic, political, cultural, infrastructure etc. Carrying capacity of any location can, therefore, only be determined at any point in time and is *inter alia* based on various factors such as:

5.2.1. **Geographical Attributes:** Coastal areas, hill areas, gradient, rocky terrains, deserts & barren land, river basins, etc.:

These are near permanent factors. Carrying capacity in such areas shall vary based on the type of location and associated attributes viz. temperature, biodiversity, flora & fauna, availability of natural water & water flows, fertility of soil etc. The thresholds in each of such areas would be different. Though other factors including planning, technology or man-made interventions may influence the carrying capacity, however normally the variation shall be of the order of baseline thresholds relevant to that type of area. These interventions may call for huge investments and could therefore be extremely resource intensive, e.g. initiative like Indira Gandhi Canal running through Rajasthan, etc. that has changed the profile of the landscape and therefore the carrying capacity of the area involved;

5.2.2. Geological Attributes: Seismic zones, Flood prone areas, Land Degradation etc.;

These are long term factors. The sensitivity of any change in carrying capacity per unit time is less. However, whenever there is change in these factors, the corresponding change in the Carrying capacity may be significant. Eg. It would take a long time to restore a degraded land. However, once the land is restored, the carrying capacity on such land improves significantly; Similarly, if as a result of inconsistent civic construction, the area becomes prone to floods and other natural disasters, the carrying capacity shall drastically reduce. Further, restoration of such area by correcting the factors would take long time. Till such time the capacity shall remain reduced.

5.2.3. Infrastructural Attributes: Civic infrastructure including Solid Waste Management, Sewage treatment, Drainage, Potable water availability, Roads etc.:

Carrying capacity of the area is significantly sensitive to the extent of civic infrastructure available for the relevant area. Any increase or enhancement in such infrastructure has immediate and direct impact on the carrying capacity. A systematic, organized development that promises consistency in approach and supplements various components that improve services helps in enhancing the carrying capacity. However, this is subject to limitations due to other factors. Eg. In case the drainage capacity or sewage treatment capacity or road connectivity or road capacity/accessibility in an area is expanded, the carrying capacity shall increase. However, the carrying capacity shall continue to be also limited by the geological, geographical factors as well as influenced by other socio, economic and cultural factors

5.2.4. Socio- cultural or Behavioral attributes: These factors are essentially behavioral attributes that may influence the carrying capacity of a place. This factor may also, to some extent, include maintaining aesthetics of a place. This is because of people's preferences as regards building architecture, usage of the area (residential or office spaces or recreational or business or industrial or combination of any of such usages), extent of ownership of vehicles (involving associated parking spaces), preferences for type of markets/market complexes, extant infrastructure and land

ownerships, extant master plans defining green cover, recreation facilities, preferred mode of transport, access of that area with other national international places etc. Such attributes shall impact the carrying capacity as and when any of behaviour/ preferences change due to socio, economic or cultural changes. Eg. Recent trend to convert bunglows with appurtenant land into multi-storeyed apartment complexes or preference of people to opt for multi-storeyed complexes instead of owning land or an independent house. This change in preference/ behavioural attribute has altered the carrying capacity in that area.

5.2.5. Transport congestions: Though with increasing vehicular traffic in recent times this has emerged as a limiting factor, however this aspect becomes critical and more relevant in areas where the geographical terrains impose restrictions on traffic movement eg. Hilly terrains, busy market places etc. Further with preference for private vehicles there are more vehicles in road with relatively lesser number of people as compared to potential number of commuters travelling through public transport. Therefore, number of vehicles on roads at times becomes the limiting factor to determine the carrying capacity instead of the number of people on the roads at that point in time. The number of vehicles would also depend on the size of the vehicle. Eg. A sedan carrying a family of four persons shall occupy larger space on road than a smaller vehicle. Further, in respect of Traffic issues reported in popular hill stations, the carrying capacity for transport of human population shall increase with putting in place robust & efficient public transport system.

5.2.6. Pollution levels in the area: This attribute is a function of extant industrial setup, various practices involving agriculture, industry, civic management and public at large that have impact on air, water and land degradation. More the pollution, less shall be the carrying capacity. The requirement of Environment Clearances for big projects attempts to address the issue to some extent. Further, while setting up of industries helps boost economy and prompts growth and development in an area, it may have impact on the overall carrying capacity of that area if planning of the projects ignores pollution.

5.2.7. Climate Change issues: Studies have brought out climate change concerns including global warming, rising of sea levels, melting of glaciers etc. With every other factor remaining constant, the carrying capacity may be impacted on account climate change issues. The need for ground water recharge, afforestation, planting more trees, new and renewable energy etc. has therefore been emphasized. The initiatives would have positive impact on the overall environment and enhance carrying capacity of the region as such.

5.3 Development of the template for assessing the carrying capacity

5.3.1 The draft template prepared by the Ministry was circulated to *G.B. Pant* National *Institute of Himalayan* Environment & Sustainable Development, Almora, Uttarakhand, MOHA, Town & Country Planner, Town & Country Planning Organisation (*TCPO*), New Delhi and *School of Planning and Architecture*, New Delhi, New Delhi. Based on the comments received on the template, a meeting was held held on 25thNovember, 2019 in the Ministry of Environment, Forest and Climate Change, wherein the officials from the above organisations were present. During the meeting all components/parameters of draft template assessing Carrying Capacity of Town/Hill Station were discussed. Accordingly, the structure of the template is as under:

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Template for Assessing Carrying Capacity
Section –A

1..Details of Hill Station/City/Town

Name of Hill Station/City/ Town					
Location with coordinates	State	District		Tehsil	
Physical Profile of the Town including MSL	MSL (meter)				
	Annual Average Rain Fall (cm)				
	Recorded Maximum Rainfall in a day	Rain		Date	
	General Air Quality				
	Average Temp (degree C)	Max		Min	
	Highest and Lowest Temp Recorded(C)				
	Major Rivers				
	Sea Beaches				
	Water Bodies				
	Hills/Mountains				
	Wildlife Sanctuary				
Connectivity Details					
	Road Connectivity				
	Entry and exit Points				
	Nearest Airport				
	Nearest Rail Stations				
	Bus Stands				
	Taxi Stands				
	Others Modes				

Significance of the Place (Tourist, Cultural, Economic, Educational and Medical)		
	Tourist Spots	
	Temples/Pilgrims	
	Nature Viewing points	
	Forests	
	Resorts	
	Industry	
	Trade Centre	
	Offices	
	Educational Centre	
	Health Care Centre	
	Others	
Brief on Demographic and socio-economic profile of the people		

2. Existing Carrying Capacity (as on _____date) if any

Population	No of People	
	Population Density	
Infrastructure	Residential Buildings	
	Commercial Buildings	
	Industries	
Vehicles	Commercial (freight)	
	Passenger Vehicles (bus, car two wheelers etc and others)	

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3 Existing Land Use Pattern (with year)

Landuse Category	Area (Sq. Km.)	Percentage to total area (%)
Residential		
Commercial		
Industrial		
Public and Semi Public		
Mixed use		
Recreational		
Transportation and Communication		
Water bodies		
Agriculture		
Forests		
Others/ Vacant etc.		
Total		

4. Existing Forest Cover (with year)

Details	Area (Sq.Km.)	Percentage to total area
Forest cover of the area		
Forest cover increased		
Forest cover decreased		

5. Existing Population and Civic Amenities

Existing Area and Population of the Town	Present Figure (as on date)	Past Decadal Growth Rate (%)	Future Projection 10 years
Area of Hill Station/ Town (sq Km)			
Population			
Population Density (person/sq km)			

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No of Households			
Average household Size			
Total Road Network (km)			
Metal Road(km)			
State Highway (km)			
National High Way (km)			
Electricity Connected Household (%)			
Water supply connected Household (%)			
Sewer Connected Household (%)			
Solid Waste Collection Coverage (%)			
LPG Connected Household (%)			
Health Care Facility (number)			
Total Public Toilets			

6. Existing Vehicles

Existing Vehicles in the Town	Present Figure (as on date)	Past Decadal Growth Rate (%)	Future Projection 10 years
Two Wheelers			
Private Car			
Auto (three Wheelers)			
Buses			
Goods carriers			
Tractors			
Heavy Commercial Vehicles			
Others			
Total			
Usual Vehicle Density (vehicle/km)			
Vehicle/ 100 person			
Petrol Pumps (numbers)			

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7. Existing Parking Facility

Existing Parking in the Town	Present Figure (as on date)	Past Decadal Growth Rate (%)	Future Projection 10 years
Designated parking of Town			
Other Parking			
Vehicles accommodated in Offices			
Vehicles parked with Households			
Parking capacity of the town			

8. Available Mode of Connectivity

Modes of Transportation	Total Unit/Day	Total No of Passengers can come /leave /day	Past Decadal Growth Rate (%)	Projection Next 10 years
Air Services				
Bus Services				
Train Services				
Shuttle Services				
Personal Car				
Hired Taxi				

9. Exiting Local Transport system

Type of Local Transport	Operating Stands	Total Units Operating	Passengers served	Past Decadal Growth Rate (%)
Rickshaw				
Taxi				
Auto Rickshaw				

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City Buses				
E-rickshaw				
Metro Services				
Local Transport facility				

10. Distribution of Industrial, Commercial and Educational Institutions

Industrial and Commercial Centers in the town	Units	Past Decadal Growth Rate (%)	Projection Next 10 years
Large Industrial Units			
Small Industrial Units			
Tiny Units (handmade units)			
Offices			
Shops			
Markets			
Schools			
Colleges			
Universities			
Other Technical Institutions			

11. Existing Health Care Facility

Hospital/Health Centers in Town	Units	OPD Serving capacity	In House Capacity (Beds)	Past Decadal Growth Rate (%)
Primary Health centers (PHC)				
Hospitals.				
Nursing Homes				
Dispensaries				
Total				
Average population served by the facilty				

12. Hotel and Lodging facility available

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Type	Total Units Operating	Past Decadal Growth Rate (%)	Total Beds available for night stay	Average Demand
Hotels /Lodges (beds)				
Tourist Hostels/ Guest Houses (beds				
Home stay(beds)				
Dharamshala (Beds)				
Total				

13. Existing facility available for Food

Type	Total Units Operating	Past Decadal Growth Rate (%)	Population Served foods	Projection Next 10 years
No of Eateries/ catering services				
Food stalls				
Canteens				
Students Hostels				
Total				

14. Type of fuels used and demands

Different types of fuels used	Used for	Average Per day Consumption (Kg/Litre)	Past Decadal Growth Rate (%)	Future Projection 10 years
Diesel	Generators			
	Pumps			
	Vehicles			
Total				
Petrol	Vehicles			
CNG	Vehicles			
LPG/PNG	Cooking			
Kerosene	Cooking /Lighting			

Fuel Wood	Cooking/ Heating/Industry			
Agri waste	Cooking /Heating			
Coal	Cooking/Heating/Industry			
Others				

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15. Details of Electricity supply

Type of connections	Presently available	Consumption (units/day)	Projected Growth at Decadal rate (%)	Future Projection for 10 Years
Total Electricity supply load (KW)				
Total Electricity Connections				
Domestic				
Industrial				
Commercial				
Institutional				
Other sources of Electricity				
Average Domestic electricity consumption/head/day (units)				
Existing Demand of water per head (units)				

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16. Details of water supply of

Type of Supply	Presently available	Consumption (KLD)	Projected Growth at Decadal rate (%)	Future Projection for 10 Years
Sources of Water Supply Surface/ Tube wells				
Existing Water supply in Town (KLD)				
No of Water Supply Connections				
Domestic				
Industrial				
Commercial				
Institutional				
Average water supply per head (LPCD)				
Existing Demand of water per head (LPCD)				
Other Sources of water				
How other sources of water is supporting the daily need of the Town (%)				

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17. Details of Waste Management

Details	Present Status	Projected Growth at Decadal rate (%)	Future Projection for 10 Years
Sewage generated (KLD)			
Sewage generated per head/day (litre)			
Sewage managed (%)			
Sewage treated and disposed(KLD)			
Sewage disposed untreated (KLD)			
Total Solid Waste Generation (TPD)			
Solid waste generated per head / day (kg)*			
Waste Collection Efficiency (%)			
waste Collected and managed (TPD)			
Quantity of waste scattered without management (TPD)			
Bio-medical Waste Generation (TPD)**			
Bio-medical Waste Collection efficiency (%)			
Biomedical waste scattered in the town (TPD)			
Available Hazardous waste management facility (if any)			
(*) considering Market, Institutional wastes (**) Approximately 15% of total waste			

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Section-B

1.Estimation of Population Influx

Average on Daily Basis	Present Inflow Average/day	Projected Growth at Decadal rate (%)	Future Projection for 10 Years
Tourists			
Pilgrims			
Students			
Business persons			
Factory Workers			
Office workers			
Paitents			
Others			
Total			

2. Estimation of daytime and Night Time influx

Average on Daily Basis	Present Inflow/Influx Average /day	Projected Growth at Decadal rate (%)	Future Projection for 10 Years
Total			
Leaving at day Time			
Staying in Night			
Percentage of total population stay in night (%)			

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3. Estimation of Population Influx in Month Wise Pattern

Average on Daily Basis	Present Influx/ Inflow Average/day	Projected Growth at Decadal rate (%)	Future Projection for 10 Years
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

4. Estimation of Vehicles

Type	Present Influx/Inflow Average/day	Projected Growth at Decadal rate (%)	Future Projection for 10 Years
Two Wheelers			
Cars			
Taxi			
Buses			
Good Vehicles			
Ambulances			
Fire Tenders			
Tractors			
Others			

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5. Estimation of daytime and Night Time Inflow of Vehicles

Type	Present Inflow Average/day	Projected Growth at Decadal rate (%)	Future Projection for 10 Years
Total			
Entering and leaving in day Time			
Parked in Night			
Percentage of total vehicles Stay in Town (%)			

6. Capturing Special Events and Maximum gathering

Events	Duration of the Events		Maximum Gathering of Population per day	Maximum gathering of Vehicles
	From	To		
Annual Mela/Fare				
Especial Pooja				
Spritual event				
Summer Holiday				
Winter Holiday				

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Section C

Analyzing Possible Impacts for Additional Influx /Inflow of Population and Traffics

Parameters	Impacts	Future Projection for 10 Years
Air Pollution		
Water pollution		
Solid Waste		
Sewage/ Liquid Waste		
Forests		
Biodiversity		
Wildlife		
Heritage		
Water Supply		
Electricity Supply		
Fuels Supply		
Availability of Hotel Rooms		
Availability of Foods Eateries		
Congestion of Traffic		
Parking Facility of Vehicles		
Local Transport		
Health care Facility		
Public Conveyance		
Trade and Commerce		
Local Employment		

Section-D

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1. Gap Analysis

Gaps for Supporting Additional Inflows	Existing Facility	Requirements due to inflow (on Average)	Existing Gaps	Future Projection for 10 Years
Eateries (catering capacity)				
Hotel/Home Stay for Night stay (total beds)				
Hospitals/Health centers (OPD)				
Hospitals/Health centers (beds)				
Water Supply Domestic (KLD)				
Electricity Supply Domestic (units/Day)				
Parking (capacity)				
Local Transport(capacity person/day)				
Solid Waste Generated (TPD)				
Waste management capacity (TPD)				
Sewage generated (KLD)				
Sewage management Capacity (KLD)				
Public Toilets				
Petrol Pumps				

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2. Carrying Capacity Estimation

Carrying capacity (On a per day basis)	Optimal	Maximum	Future Projection for 10 Years
Population could be Population Could be Accommodated for Day Stay			
Population Could be Accommodated for Night stay			
Vehicles may be allowed in day time			
Vehicles may be allowed for night stay			

As described above, the carrying capacity being a dynamic and location specific, accordingly the template may be used as a guiding document for assessment.

Based on the requirement, the State Government in consultation with all concerned authorities/stakeholders in the State may redefine the parameters of the template keeping in view the aspiration and needs of locals. **A location-wise dossier may be prepared by all the States/ UTs and the concerned Department may use that information for assessing the location specific carrying capacity.**

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NEERI, NAGPUR

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ANNEXURE-2

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No. 11/14/2018-ESZ
Government of India
Ministry of Environment, Forest and Climate Change
(ESZ-Division)

Indira Paryavaran Bhawan,
Jorbagh Road, Aliganj,
New Delhi- 110003

Dated: 30th January, 2020

To,

As per list enclosed

Subject: Guidelines for Assessing Carrying Capacity of Hill Stations including cities and Eco-Sensitive Zones-reg.

Sir,

The Hon'ble National Green Tribunal, Principal Bench, New Delhi in O.A. No. 462 of 2018 [earlier O.A. No. 11/2018 (SZ)] filed by Shri D. V. Girish Vs. UoI & Ors. directed Ministry of Environment, Forest and Climate Change to frame a set of Guidelines w.r.t. carrying capacity assessment of Hill Stations including Cities and Eco Sensitive Zones.

2. A copy of Guidelines for Assessing Carrying Capacity of Hill Stations including cities and Eco-Sensitive Zones is prepared and hereby enclosed for necessary action at your end.

Yours faithfully,

Encls: -As above

J. Bose

(Dr. Subrata Bose)
Director/Scientist'F'
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O/C

Issued
30/1/20

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27. The Principal Secretary, Muncipal Admiistration & Water Supply Department (MA&WS), Municipal Administration & Water Supply Dept., Government of Tamil Nadu, Secretariat, Fort St. George, Chennai - 600 009, Tamil Nadu.

28. The Principal Secretary, Municipal Administration & Urban Development (MA&UD) Department, MA&UD Department, Telangana State Secretariat, NTR Marg, Public Gardens, Central Secretariat, Khairatabad, Hyderabad, Telangana 500004.

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31. The Principal Secretary, Directorate of Urban Development (DUD), 43/6 Mata Mandir Road, Dharampur, Dehradun, Uttarakhand-248001.

32. The Principal Secretary, Department of Municipal Affairs (DMA), Nagarayan, Sector-I, Block-DF-8, Bidhan Nagar, Kolkata-700064, West Bengal.