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Analysis of Environmental Clearance Compliances of Residential Construction Projects

Mahadev Hatmode[1], Hemant Salunkhe[2]
[1]*PG Student, Department of Civil Engineering, D. Y. Patil Institute of Engineering & Technology, Pune, India*
[2]*Professor, Department of Civil Engineering, D. Y. Patil Institute of Engineering & Technology, Pune, India*

***Abstract*: The construction scenario in today's world is rapidly moving with a good pace in the developing countries. The construction industry is the second largest industry in India. In India around 35 cities having population more than a one million. As population of country increases the construction work also increases. The increase in the construction work is directly affected on surrounding environment. For evaluating the impact of construction on environment we use environmental impact assessment techniques. Environmental Impact Assessment (EIA) is a tool used to identify the environmental, social and economic impacts of a project prior to decision making. Environmental impact assessment of major project works is important parts in the environmental clearance certification process. Environmental clearance is a process is carried out before execution of work. The various activities of construction in India have been pursued without giving much attention on environmental related issues. This has been resulted in pressure on its finite natural resources, besides creating impacts on human health and living organisms. Unsustainable and Unplanned urban development has led to severe environmental pressures. Green cover, ground water resources have been forced to give way to the rapidly developing urban centers. Due to it the environmental clearance certification process is mandatory for major projects. But due to the lack of management and the knowledge of clearance process many of the construction projects have time and cost overruns on account of delay in grant of environmental clearance. This paper is an attempt to study and analyze the environmental clearance process and the compliances occurs in the process. The results of this study are useful for construction managers and other participants in construction industry to become aware of construction processes impacts on the environment, the environmental clearance process and also the compliances occur while process of the getting environmental clearance.**

***Keywords*: Certification, Clearance, Construction, Economic Environmental, Impacts, Pollution, compliances.**

1. Introduction

Industrial activities and projects like construction projects, power plants, mining, highways required different permissions, approvals, consents before starting actual operation. Several of these are required under environmental laws. One such approval is called environmental clearance.

A. Environmental clearance process

For 39 different types of project the environmental clearance is must. Environmental clearance process covers the different aspects like screening, scoping and evaluation of the upcoming projects. The main purpose of the environmental clearance is to measure or evaluate impact of the planned project on the environment and people and to try to minimize the same. Depending upon the scale of the project the projects are divided into different category.

1) Environmental clearance process consists of following steps

The first step of environmental clearance process is assessing the proposed project and the activities placed under which category. If the project is falls in A category required a environmental clearance from the central government through the Ministry of Environmental Forest and Climate Changes (MoEFCC). The EIA reports are mandatory for these type of category projects. If the project falls under B category, the project goes to state government for clearance and it will obtain clearance from State Environmental Impact Assessment Authorities (SEIAA). The B category further categories into two categories B1 and B2 projects. B1 projects required EIA reports but B2 projects does not require preparation of EIA reports. Depending upon the scale of project, type of project, potential impacts on environment the categories of projects taking placed.

Table 1
Category Chart

Project or Activity	Threshold limit	Category
Building and construction projects.	Built up area more than 20,000 sq. mtr and less than 1.5 lakh sq. mtr	B2
Townships and area development projects.	Covering an area more than 1.5 lakh sq.mtr.	B1

Once the EIA report is ready, they are investor approaches to the State Pollution Control Board (SPCB). Quantity and quality of effluents evaluates and assesses by the state pollution control board. It should be according to the permissible standards. If the SPCB is satisfied that the proposed unit will meet all the prescribed effluent and emissions standards, it issues consent to establish (popularly known as NOC), which is valid for 15 years.

For certain developmental projects The public hearing is a mandatory step in the process of environmental clearance. The process of public hearing is conducted before to the issue of NOC from SPCB. In public hearing committee the District Collector is the chairperson. Projects proponent that submits an application for environmental clearance certification process with the Ministry of Environment and forest (MoEF) if it falls under Project A category and the projects proponent that submits an application for environmental clearance with state government if it falls under project B category. The application form is submitted with EIA report, EMP, details of public hearing and NOC granted by the state regulators.

Environmental appraisal: Appraisal is nothing but the detailed scrutiny of project file by the Expert Appraisal Committee (EAC) or by State Level Expert Appraisal Committee (SEAC) of the application and other documents for grant of environmental clearance. Issues of clearance or rejection letter: Depending upon the Environmental appraisal the clearance or rejection of the project carried out. SPCB or MoEFCC takes the decision regarding concern file.

B. Need of environmental clearance

To safeguard the environment from adverse effects of developmental construction activities, has issued some mandatory regulations. As per the notification S.O. 1533 E dated 14th September, 2006, Environmental Impact Study (EIA) is mandatory for any construction projects with built-up area of more than 1,50,000 m2. Only clearance has been called for from concerned authorities (SEAC) through the EIA Proposal consisting of Form 1, Form 1A and Conceptual Plan. The study would facilitate PP to obtain Environmental Clearance (EC) from the SEAC. The guidelines outlined here have been prepared to help the proponents in the preparation of documents to be submitted for environmental clearance.

2. Literature review

Title: The Inception and Evolution of EIA and Environmental Clearance Process – Laying Emphasis on Sustainable Development and Construction.

Author: Devarshi Tathagat, Ramesh D. Dod

EIA which stands for environmental impact assessment is a domain which encompasses almost all areas of environmental engineering. EIA and environmental clearance (EC) are two things which MoEF, Govt. Of India has mandated for many categories of project before their commissioning. Buildings with built up area of more than 20000 metre square and townships with area more than 50 Ha or 150000 square metre of built up area comes under it. A thorough report is made for the possible outcomes of the project (i.e..it's impact on surrounding environment). If the impact is within the limits as specified by MoEF and SEAC, it is sent for approval otherwise client is suggested to take corrective steps. Scope of the topic trespasses the boundaries of greenhouse gas emissions and global warming, water and energy crises, carbon emission and sequestration, environmental pollution of various kind. It was EIA that brought in an element on environment in all projects. It leads to ecofriendly and sustainable construction techniques which paved way for the concept of green building. Today EIA and environmental clearance are the only protectors of environment from the greed's of corporate sector across globe. If applied with stringency it will usher us to an era where any advancement will be absolutely in tune with nature. This technical paper deals with the birth and growth of EIA in the world and in India. It deals with the processes that are involved in carrying out EIA for a project and subsequently providing it with environmental clearance. Also it emphasizes on how EIA led to a general awareness and paved way for the concept of sustainable construction.

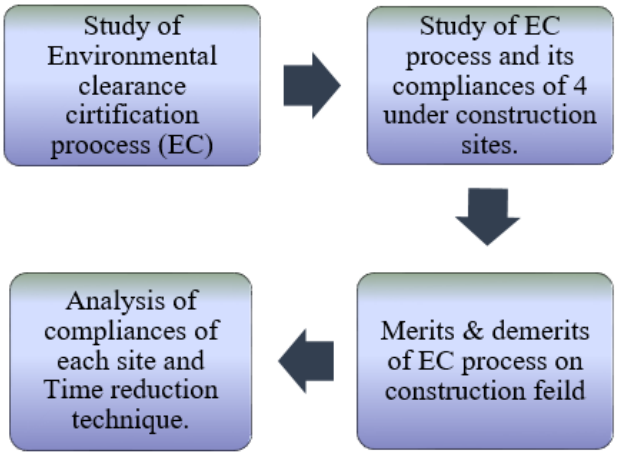

Fig. 1. Methodology

3. Data collection

The focus of our study is gathering the compliances arriving while process of the environmental clearance certification process. We have regularly visited to construction sites and collected the information's. We have gather the information of site. We gather information like type of a project, no of flats or

Table 2
Pelican & ICKON Compliances

Pelican & ICKON Compliances
PP to ensure that the details of waste water from dispensary and clinic to be estimate separately and treat using advance oxidation treatment before connecting to STP.
PP to estimates the quantity of biomedical waste and plan for disposal along with NOC.
PP to submit undertaking that the clinic & dispensary are the member of society.
PP to submit CFO NOC.
PP to submit water supply NOC.
PP to submit details of sewer line connectivity up to final disposal point with NOC.
PP to submit solid and liquid waste management plan considering user of multipurpose hall and population.
PP to submit energy saving calculation along with terrace area calculations.
PP to submit details of CER activities in consultation with the affected people in the project area as per MoEF& CC circular dated 1/05/2018.
PP to provide mandatory RG area on virgin land and submit the drawing with calculations.

shops, area of project, no of stories, documents submitted for the process of environmental clearance process, amount of time consumes for environmental clearance certification of project, no. of and type of compliances occurs while doing the process of environmental clearance.

For this study we have selected the sites and we gather the information according to it. We summarize some site details and its compliances below.

Table 3
Twin Towers Compliances

Twin Towers Compliances
PP to submit Revised CER with exact description of place where activity is to be carried out.
PP to obtain specific NOC from the respective authority for laying down storm water drainage line across 45m road up to final disposal point.
PP to submit cross section across the plot at 7-8 places including UGT, OWC and DG set location showing clear road width.
PP to submit carbon foot print details of the commercial building.
PP to obtain and submit following NOC's : a) CFO NOC, b) Water supply NOC with quantity, c) high tension NOC, d) Drainage NOC.PP to submit separate STP for residential and commercial NOC area.
PP to submit undertaking for sustainable water supply.
PP to submit Cross section of the road which is proposed to be developed along with contours.

Table 4
Vardhaman Moonstone Compliances

Vardhaman Moonstone Compliances
During discussion following points emerged: 1 In CER, PP has shown Rs. 31.5 Lakh f for tree plantation. PP to submit details of number of trees, provision for watering them and mechanism to ensure 100 % survival of the trees planted.
PP to submit drawing of internal storm water drain at site connected to municipal corporation line and NOC from the concerned authority.
PP to shift location of UGT ensuring headroom of minimum 1.5 m.
PP to submit phase wise programme considering wind directions for proposed construction with mitigation measures taken to avoid inconvenience to existing /nearby 0ccupants.
PP to submit drainage NOC and CFO NOC.
PP to submit UGT-overhead details.
PP Requested for time to submit the information sought, after deliberations committee asked
PP to submit Following NOCs : 1) Drainage 2) CFO 3) water supply 4) Tree cuttings
PP to submit details of RG area with calculations
PP to comply with the observations and submit information to the committee for further discussion and consideration of SEAC.
PP to submit survival of existing trees and proposed plantation plan.

Table 5
Sonigara presidency Compliances

Sonigara Presidency Compliances
PP To inform that the entire debris of 29000 m3 will be used on site only.
PP to submit revised parking plan for lower level, ground level, upper level.
PP to submit cross section of cutting and filling.
PP to submit plan of existing SWD and municipal sewer line connectivity up to final disposal point with chamber invert level details.
PP to design storm water drain from public to private road considering the run off of adjacent plot.
PP to submit CFO NOC and E waste NOC.
PP to submit list of existing trees and undertaking for retaining the same.
PP to submit details of CER activities in consultation with affected with in the project area as per MoEF.

4. Data analysis

Table 6
% Compliances Pelican & ICKON

S. No.	Compliance Type	No. of Compliances	% of Compliance
1	CER	1	9.09%
2	Parking Details	0	0.00%
3	Water management	1	9.09%
4	Solid waste management	4	36.36%
5	Rain Water harvesting	0	0.00%
6	Storm water drainage	0	0.00%
7	Landscape details	0	0.00%
8	Fire and safety measures	0	0.00%
9	Energy Conservation	1	9.09%
10	Documents, NOC's, Undertakings	4	36.36%
11	Drawings/Plans/maps	0	0.00%

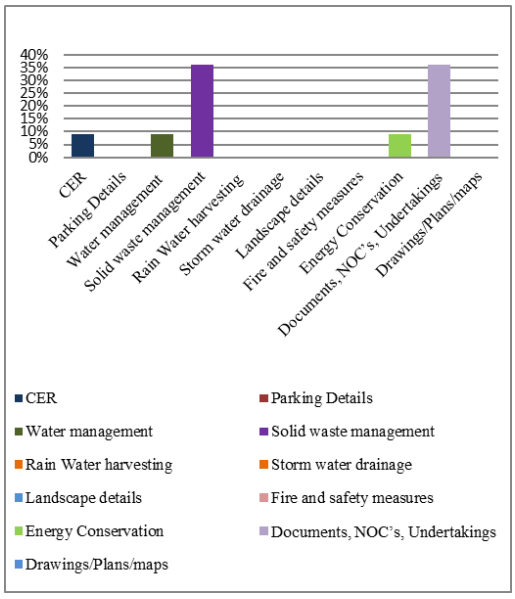

Fig. 1. % Compliances Pelican & ICKON

Table 7
% Compliances Twin Towers

S. No.	Compliance Type	No. of Compliances	% of compliance
1	CER	1	12.50%
2	Parking Details	0	0.00%
3	Water management	0	0.00%
4	Solid waste management	0	0.00%
5	Rain Water harvesting	0	0.00%
6	Storm water drainage	1	12.50%
7	Landscape details	0	0.00%
8	Fire and safety measures	0	0.00%
9	Energy Conservation	0	0.00%
10	Documents, NOC's, Undertakings	3	37.50%
11	Drawings/Plans/maps	3	37.50%

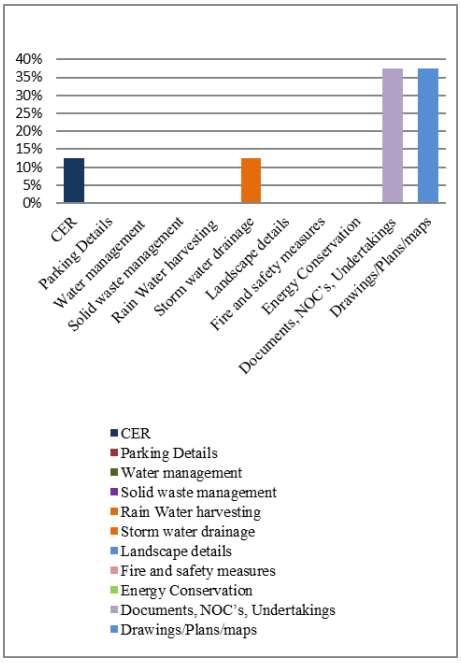

Fig. 2. % Compliances Twin Towers

Table 8
% Compliances Vardhaman Moonstonse

S. No.	Compliance Type	No. of Compliances	% of compliance
1	CER	1	14.29%
2	Parking Details	0	0.00%
3	Water management	2	28.57%
4	Solid waste management	0	0.00%
5	Rain Water harvesting	0	0.00%
6	Storm water drainage	1	14.29%
7	Landscape details	0	0.00%
8	Fire and safety measures	0	0.00%
9	Energy Conservation	0	0.00%
10	Documents, NOC's, Undertakings	3	42.86%
11	Drawings/Plans/maps	0	0.00%

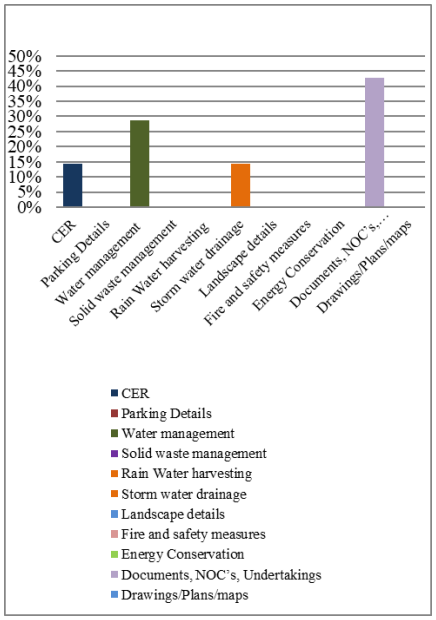

Fig. 3. % Compliances Vardhaman Moonstonse

Table 9
% Compliances Sonigara presidency

S. No.	Compliance Type	No. of Compliances	% of compliance
1	CER	1	10.00%
2	Parking Details	1	10.00%
3	Water management	1	10.00%
4	Solid waste management	1	10.00%
5	Rain Water harvesting	0	0.00%
6	Storm water drainage	1	10.00%
7	Landscape details	0	0.00%
8	Fire and safety measures	0	0.00%
9	Energy Conservation	0	0.00%
10	Documents, NOC's, Undertakings	2	20.00%
11	Drawings/Plans/maps	3	30.00%

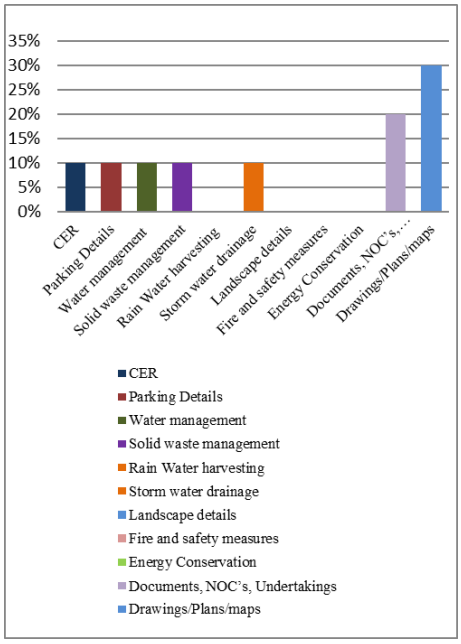

Fig. 4. % Compliances Sonigara presidency

5. Conclusion

Table 10
% All Sites

S. No.	Compliance Type	No. of Compliances	% of compliance
1	CER	4	11.11%
2	Parking Details	1	2.78%
3	Water management	4	11.11%
4	Solid waste management	5	13.89%
5	Rain Water harvesting	0	0.00%
6	Storm water drainage	3	8.33%
7	Landscape details	0	0.00%
8	Fire and safety measures	0	0.00%
9	Energy Conservation	1	2.78%
10	Documents, NOC's, Undertakings	12	33.33%
11	Drawings/Plans/maps	6	16.67%

The study shows the different compliances are occurs from different site. By analyzing the compliances according to category we have concluded that for the rain water harvesting

don’t have any compliances on any site, But for Drawings/plan/maps, Noc, undertakings, documents category have highest compliances. The following table showing the percentage of compliances of all sites according to the compliance category.

References

[1] Samaneh Zolfagharian, Mehdi Nourbakhsh, Javier Irizarry, Aziruddin Ressang, Masoud Gheisari, “Environmental Impacts Assessment On Construction Sites”, Construction Research Congress 2012.

[2] B. Ganesh Kumar Gobinath, N. Prabhakaran, K. Rajeshkumar, “Modified EIA for small and medium projects” – An effective method to make the project eco- friendly, International journal of environmental and science, Volume 1, No.1, pp. 55-65, 2010.

[3] Manual on norms and standards for environmental clearance of large construction projects.

[4] Devarshi Tathagat, Ramesh D. Dod, “The Inception and Evolution of EIA and Environmental Clearance Process – Laying emphasis on Sustainable Development and Construction, International Journal of Engineering Research and Applications, vol. 5, no. 3, pp. 22-28, March 2015.