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A
DISSERTATION

On

Environmental Impact Assessment (EIA) PROCESS –"A Case Study Of M/s Seksaria Sugar Mill Sitapur (U.P.)"

Submitted to Department of Environmental Science Post Graduate College , Ghazipur (U.P)

A Thesis submitted in Partial Fulfillment of the requirements for The Degree Master Environmental Science

By

Miss. Beena Ambika
(M.Sc ,IV Semester, Environmental Science)

(March – May 2017)

This Thesis Submitted Under The Supervision Of

Dr. Pramod Kumar Mishra
(Head Of Department)
&
CO Guide - Dr. Divya Mishra

M/s Prakriti Consultants Services
(An Approved Laboratory from MoEF,U.P.PCB and B.P.C.B)
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CERTIFICATE

I have pleasure in forwarding the dissertation of ***Miss. Beena Ambika*** entitled ***"EIA PROCESS - A CASE STUDY OF SEKSARIA SUGER MILL SITAPUR (U.P.)".*** Submitted for the fulfillment of the requirement for the degree of Master of Science in Environmental Science of V.B.S.P.U., Jaunpur.

I certify that , the dissertation work has been carried out under my supervision and that it is candidates own original work and that the candidate has worked for the proscribed period.

Principle Supervisor
Pramod Kumar Mishra

Head of Department

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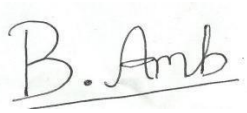
DECLARATION

I ***Miss. Beena Ambika hereby declare that " EIA PROCESS - A CASE STUDY OF M/s SEKSARIA SUGER MILL SITAPUR (U.P)"*** *a dissertation report is my own work & is carried out under the supervision of* ***Dr. Pramod Kumar Mishra,*** *Head of Department, Environmental Sciences, P.G. College, Ghazipur for the partial fulfillment for the degree of Master of Science in Environmental Sciences of* ***V.B.S.P. U., Jaunpur.***



Miss. Beena Ambika
(M.Sc (Env. Science) in IV semester)

ACKNOWLEDGEMENTS

I Miss. **Beena Ambika** feel that success depends on motivation, inspiration, dedication, hard work and above all the blessing of the parents.

I feel an immense pleasure and happiness to express my extreme, highly indebted to my supervisor ***Dr.Pramod Kumar Mishra*** Head of Department of Environmental Science P.G. College Ghazipur who gave me an opportunity to do complete dissertation work. With deep sense of obligation from the core of my heart, I express my deep indebtedness and gratefulness to **Dr .Divya Mishra** for the encouragement and providing necessary facilities to complete this work.

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Miss Beena Ambika

EIA PROCESS -A CASE STUDY OF M/s SEKSARIA SUGER MILL SITAPUR (U.P.)

ABSTRACT

M/s Seksaria Biswan Sugar Factory Limited (SBSFL) of Environmental Impact Assessment (EIA). SBSFL can broadly be defined as a study of the effects of a proposed project, plan or program on the environment. Framework, concepts, processes and principles of EIA and associated studies. "***Environmental pollution has a great impact on men and society."***

The report is prepared for environmental protection and to get Environmental Clearance for the proposed expansion of M/S Seksaria Biswan Sugar Factory Ltd.(SBSFL) 32 MW Cogeneration & Expansion cum Modernization of Existing Sugar plant 7500 to 8500 TCD P.O. Biswan , Dist – Sitapur, Uttar Pradesh – 261201. The proposed industry is listed under EIA Notification amended 2006 of Ministry of Environment and Forests (MoEF), Government of India. As per this notification, the industry is under of Schedule 1(d) Thermal power plant, Schedule 5(j) for Sugar Processing and existing distillery **5(g)** Category 'A'. As per the notification, prior clearance from MoEF is mandatory before establishment or expansion of this industry. EIA studies have to be conducted and report is to be prepared for submission to the authorities along with the prescribed application forms to secure environmental clearance for the proposed project. Hence, the present report is prepared for submission to MoEF, New Delhi.

CONTENT

INTRODUCTION

Environmental Impact Assessment (EIA) is a process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made. These studies integrate the environmental concerns of developmental activities in to the process of decision-making.

EIA has emerged as one of the successful policy innovations of the 20th Century to ensure sustained development. Today, EIA is formalized as a regulatory tool in more than 100countries for effectively integration of environmental concerns in the economic development process. EIA systematically examines both beneficial and adverse consequences of the project and ensures that these effects are take into account during project design . It help to identify possible environmental effect of the proposed project proposed measures to mitigate adverse effect and products whether there will be significant adverse environmental effect even after the mitigation is implemented . By considering the environmental effect of the project and there mitigation early in the project planning cycle environmental assessment has many benefit at protection of environment optimum utilization of resources and saving of time and cost of the project . Properly conducted EIA also lessens conflicts by promoting community participation , informing decision makers and helping lay the base for

environmentally sound projects benefit of integrating EIA have been observed in all stages of a project from exploration and planning through construction ,operation decommissioning and beyond site closure.

EVOLUTION OF EIA

EIA as a mandatory regulatory procedure originated in the early 1970s with the implementation of the national environment Policy Act (NEPA) 1969 in the US . A large part of the initial development look place in a flow high income countries, like Canada, Australia and Newzealand(1973-1974). There were some developing countries as well as which introduced EIA relatively early Columbia (1974) Philippines (1978).

EVOLUTION & HISTORY OF EIA

DEVELOPMENT OF EIA

Pre-1970 :- Project review based on the technical / engineering and economic analysis. Limited consideration given to environmental consequences.

Early / mid:- EIA introduced by NEPA in 1970 in U.S. Basic principle Guidelines, procedures including public participation requirement instituted.

Standard methodologies for impact analysis developed (e.g. matrix, checklist and network) Canada, Australia and New Zealand became the first

countries to follow NEAP IN 1973-74. Unlike Australia which legislated EIA . Canada and Newzealand established administrative procedures.

Major public inquires help shape the process's development.

Late 1970 the early 1980s :- Industrial and developing countries introduced formal EIA requirements (France, 1976 Philippines 1977) , began to use the process informally or experimentally. Use of EIA by developing countries Strategic Environment Assessment (SEA) risk analysis included in EA processes. Greater emphasis on ecological modeling prediction and evaluation methods. Provision for public involvement, coordination of EA with land use planning process.

Mid 1980s to end of decade: -In Europe EC Directive on EIA established basic principle and procedural requirements for all member states. Increasing efforts to address cumulative effects. World Bank and other leading international aid agencies establish EA requirements. Spread of EIA process in Aisa.

1990S :- Requirement to consider trans boundary effects under espoo convention. Increased use of GIS and other information technologies.Sustainability principal and global issues receive increased

attention. India also adopted the EIA formally. Formulation of EA legislation by many developing countries.

HISTORY OF EIA IN INDIA

The India experience with Environmental Impact Assessment began over 20 years back. It started in 1976-77 when the planning commission asked the Department of science and Technology to examine the river – valley projects from an environmental angle. This was subsequently extended to cover those projects, required the approval of the public Investment Board. Till 1994, environmental clearance from the Central G overnment was an administrative decision and tacked legislative support.

On 27 January 1994, the Union Ministry of Environment and Forests (UMEF),Government of India , Under the Environmental (protection) Act 1986, promulgated an EIA notification making Environmental Clearance (EC) mandatory for expansion or modernization of any activity or for setting up new projects listed in schedule 1 of the notification. Since then there have been 12 amendments made in the EIA notification of 1994.

The MoEF recently notified new EIA legislation in September 2006. The notification makes it mandatory for various projects such as mining , thermal power plants, river valley, infrastructure (road, highway, ports, harbours and airports) and industries including very small electroplating or foundry units to get environment clearance However, unlike they EIA Notification of 1994,the new legislation has put the only of clearing projects on the state government depending on the size/capacity of the project.

Certain activities permissible under the coastal Regulation Zone Act 1991 also require similar clearance. Additionally, donor agencies operating in India like the World Bank and the ADB have a different set of requirements for giving environmental clearance to projects that are funded by them.

Need of EIA

Every anthropogenic activity has some impact on the environment. More often it is harmful to the environment than benign. However, mankind as it is developed today cannot live without taking up these activities for his food, security and other needs. Consequently, there is a need to harmonize developmental activities with the environmental concerns. EIA is one of the tools available with the planners to achieve the above-mentioned goal. It is desirable to ensure that the development options under consideration are sustainable. In doing so, environmental consequences must be characterized early in the project cycle and accounted for in the project design.

The objective of EIA is to foresee the potential environmental problems that would arise out of a proposed development and address them in the project's planning and design stage. The EIA process should then allow for the communication of this information to:-

(a) The project proponent;

(b) The regulatory agencies; and,

(c) All stakeholders and interest groups.

EIA integrates the environmental concerns in the developmental activities right at the time of initiating for preparing the feasibility report. In doing so, it can enable the integration of environmental concerns and mitigation measures in project development. EIA can often prevent future liabilities or expensive alterations in project design. Our study of EIA is a sugar Factory

The Seksaria Biswan Sugar Factory Limited in which we understand the process of EIA in a well mannered way. Here we describe the process of EIA in the Industry.

Environmental Clearance (EC) Process for New Projects:

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: Screening is done to see whether a project requires environmental clearance as per the statutory notifications. Screening Criteria are based upon: 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.

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 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 5 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).

(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.

(d) All Building /Construction projects/Area Development projects and Townships (item 8).

(e) All Category 'B2' projects and activities.

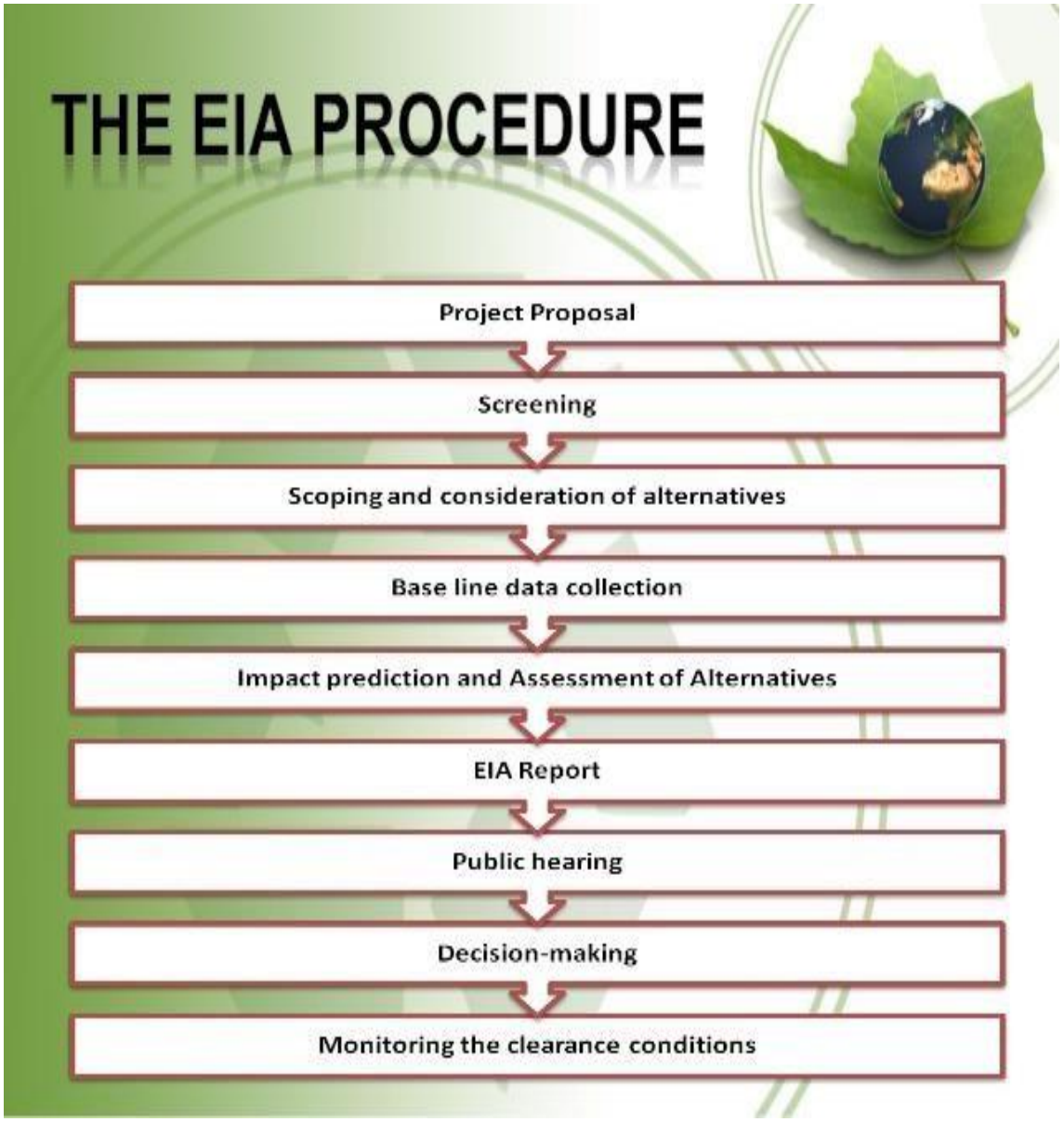
(f) All projects or activities concerning national defence and security or involving other strategic considerations as determined by the Central Government. (ii) The Public Consultation shall ordinarily have two components comprising of:- (a) a public hearing at the site or in its close proximity- district 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 6 directly to the regulatory authority concerned as above, the regulatory 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

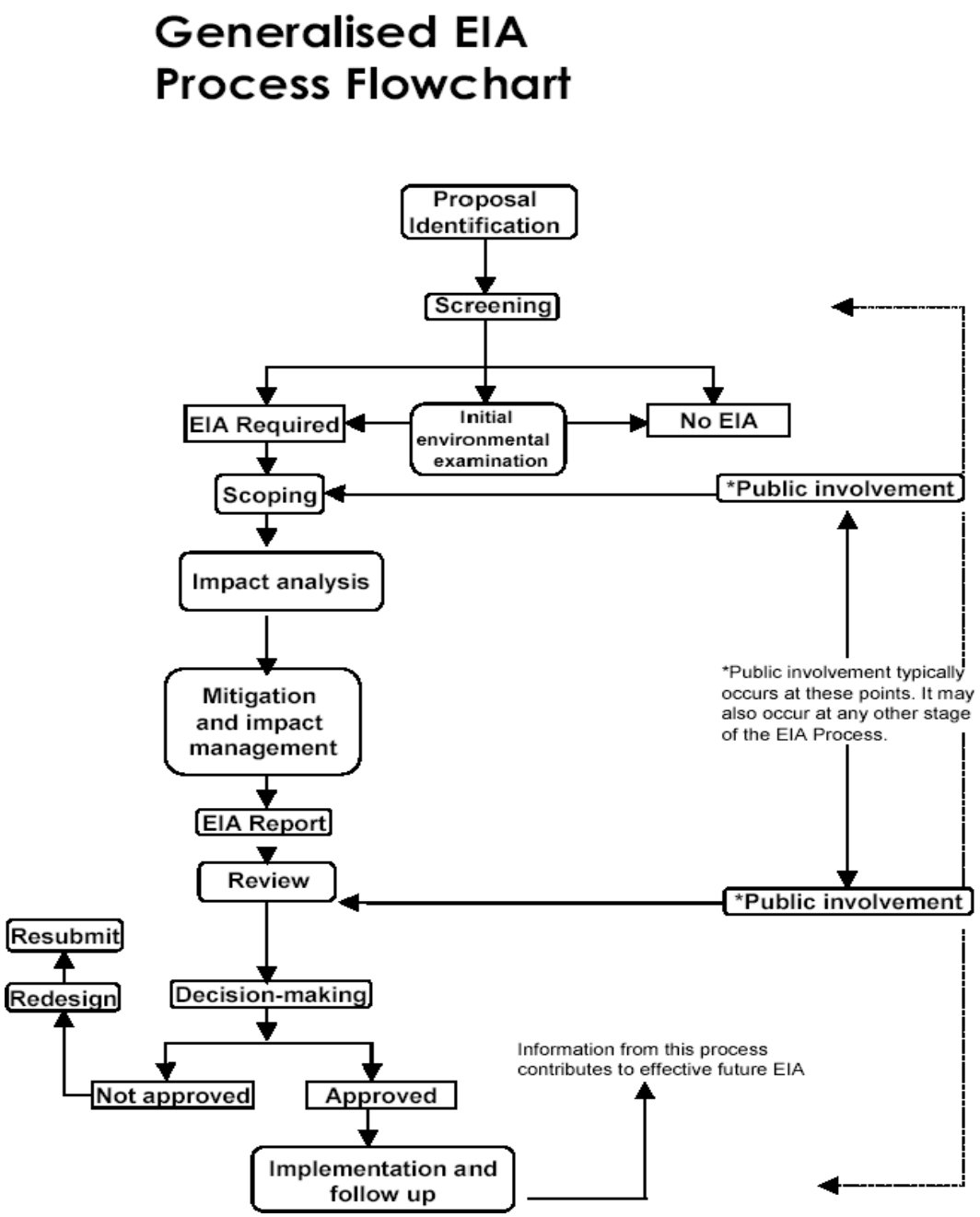
that owing to the local situation, it is not possible to conduct the public hearing in a manner which will enable the views of the concerned local persons to be freely expressed, it shall report the facts in detail to the concerned regulatory authority, which may, after due consideration of the report 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) 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 7 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 EIA PROCEDURE
Project Proposal
Screening
Scoping and consideration of alternatives
Base line data collection
Impact prediction and Assessment of Alternatives
EIA Report
Public hearing
Decision-making
Monitoring the clearance conditions


Generalised EIA
Process Flowchart
Proposal Identification
Screening
EIA Required
Initial environmental examination
No EIA
Scoping
*Public involvement
Impact analysis
Mitigation and impact management
*Public involvement typically occurs at these points. It may also occur at any other stage of the EIA Process.
EIA Report
Review
*Public involvement
Resubmit
Redesign
Decision-making
Information from this process contributes to effective future EIA
Not approved
Approved
Implementation and follow up

INTRODUCTION:

The Seksaria Biswan Sugar Factory Limited (TSBSFL) Factory and Distillery units are situated at Biswan, District. Sitapur, in the eastern part of Uttar Pradesh. It is about 75-80 Kms. North-West from Lucknow, capital of U.P. and about 45 Kms. from Dist. Sitapur. Biswan is located at 27.5°N 81.0°E. The Seksaria Biswan Sugar Factory Ltd. was incorporated on 21.01.1939 as a Private Limited. The Company became a deemed Public Limited Company in the year 1975 by virtue of Sec. 43A of the Companies Act,1956 and then again converted into a Private Limited Company on 29.08.2001. The Registered Office of the Company is situated at Seksaria Chambers, 5th Floor, 139,Nagindas Master Road, Fort, Mumbai-400 001.

Biswan Sugar Factory

The Seksaria Sugar Factory, a private limited company composed of members of The Seksaria family, located in Biswan town. It was established in 1939. The Factory is produce sugar, 32 MW Cogeneration & Expansion cum Modernization of Existing sugar plant from 7500 to 8500 TCD.

Seksaria Biswan Sugar Factory Limited (SBSFL) of Base Line Data Collection for Environmental Impact Assessment (EIA). SBSFL can broadly be defined as a study of the effects of a proposed project, plan or program on the environment. Framework, concepts, processes and principles of EIA and associated studies. *Environmental pollution has a great impact on men*

and society. The report is prepared for environmental protection and to get Environmental Clearance for the proposed expansion of M/s Seksaria Biswan Sugar Factory Ltd. (SBSFL) 32 MW Cogeneration & Expansion cum Modernization of Existing Sugar plant 7500 to 8500 TCD P.O. Biswan , Dist – Sitapur, Uttar Pradesh – 261201. The proposed industry is listed under EIA Notification amended 2006 of Ministry of Environment and Forests (MoEF), Government of India. As per this notification, the industry is under of Schedule 1(d) Thermal power plant, Schedule 5(j) for Sugar Processing and existing distillery 5(g) Category 'A'. As per the notification, prior clearance from MoEF is mandatory before establishment or expansion of this industry. EIA studies have to be conducted and report is to be prepared for submission to the authorities along with the prescribed application forms to secure environmental clearance for the proposed project. Hence, the present report is prepared for submission to MoEF, New Delhi.

AIM OF OBJECTIVE

To look after EIA of SEKSARIA Sugar Industry, Sitapur (UP).

- The knowledge of EIA Notification.
- The study of EIA Process.
- Public Hearing proceeding
- Over view of EIA process.

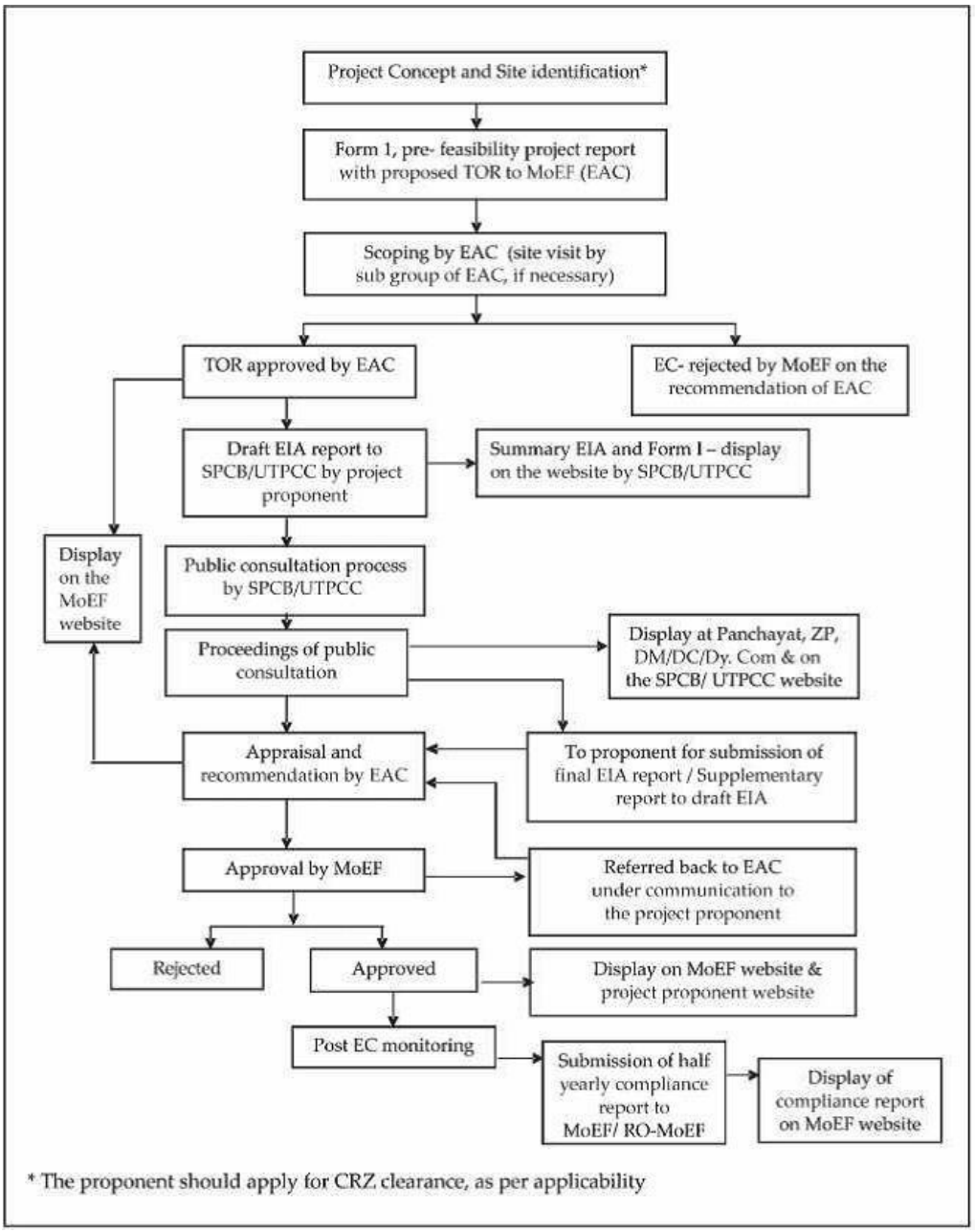
Need for Environmental Clearance

The proposed unit is categorized under 1 (d) Thermal Power Plants & 5(j) (Sugar Industry) Category–B of EIA Notification dated Sep 14th, 2006 and subsequent amendment on dated December 1st 2009 ,April 4th 2011 & June 25th,2014 S.O 1599(E).

The Seksaria Biswan Sugar Factory Limited (TSBSFL) has proposed to 32 MW Cogeneration Plant & expansion cum Modernization of sugar production capacity of sugar plant from 7500 TCD to 8500 TCD. According to Government Order No-111 SC/18-2-2013-34/12 dated 28/01/2013 it is mandatory to establish cogeneration plant with in 2 years after the production.

This Environmental Impact Assessment (EIA) / Environment Management Plan (EMP) report has been prepared in line with the Terms of References (TOR) issued by SEAC, Uttar Pradesh. Form-1, Pre feasibility report for Sugar, Cogen power plant was submitted on dated 04.08.2016 for consideration of SEAC. The proposal was considered by the SEAC in its 293th Meeting held on 4 October, 2016. The Terms of Reference (TOR) for preparation of EIA/EMP were based on the minutes of 293rd SEAC Meeting dated 04/10/2016.

ENVIRONMENTAL CLEARANCE PROCESS



Industrial process based classification of sugar

Sugarcane is brought to the factory, weighed and sent to the milling plant.

Juice is extracted in the milling plant and then heated and treated by double

sulphitation process in most of the factories in India. In this double sulphitation process, juice is heated to 75oC and treated with lime and sulphur dioxide (SO2). The juice is adjusted to neutral pH and passed to the heat exchanger to raise its temperature to the boiling point. It is then sent for clarification where juice is clarified and then sent to the multiple effect evaporator and the sediment from the clarifier is sent to the vacuum filters or pressure filters. The concentrated syrup from the evaporator is again bleached by passing SO2 through and the pH of the syrup drops down to about 5.4. It is then sent to the vacuum pan, where the thickened syrup is boiled 3-4 times as per purity in order to extract the sucrose content on the crystals. After this, the commercial sugar and molasses are separated in the centrifuges.

The various types of sugar include raw sugar, centrifugal sugar, white refined sugar, and non-centrifugal sugar.

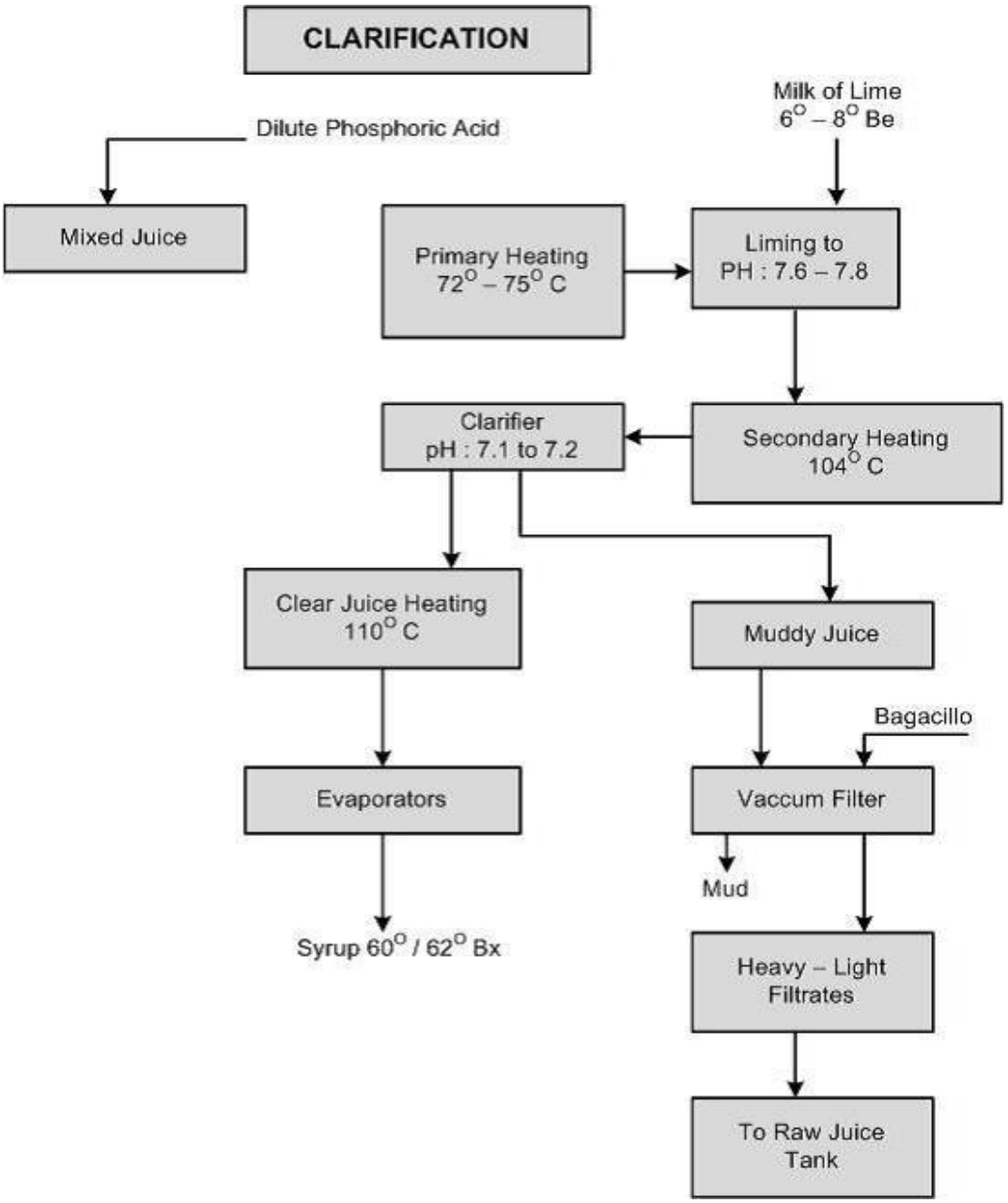
Raw Sugar:- It is brown sugar, which includes molasses and various impurities at this stage before it is crystallized. Raw sugars are produced in the processing of cane juice but only as intermediates *en route* to white sugar. Raw sugar is sometimes prepared as jaggery rather than as a crystalline powder: in this technique, sugar and molasses are poured together into molds and allowed to dry.

Centrifugal sugar:- This is raw sugar which has been crystallized and most of the molasses spun off by the use of a centrifuge.

White sugar:- In developed countries, most white sugar is sugar that has undergone one further refining process. There are various degrees of refining and the consequent purity and consistency of sugar crystals. Most of the mill sugar produced and consumed in India is plantation white, which means sugar that has undergone a first stage of refining at the mill but, is less refined than the refined white sugar consumed in developed countries.

Non-centrifugal sugar:- This sugar is *gur*, which includes the molasses. It is produced by primitive artisanal processes and mostly consumed in rural areas. In Northwestern India, mainly in UP, there is also very substantial production of *khandsari*, which is a type of sugar produced by small scale country mills with the use of a centrifuge. *Gur*is not a close substitute for sugar, and is mainly consumed by low income rural people as a food stuff rather than as a sweetening agent. *Khandsari*, however, is a close substitute. It can contain high proportions of fine crystals and is sometimes difficult to distinguish from plantation white sugar. More than 70 percent (%) of the world's sugar production is based on sugarcane,whereasthe

remaining 30% is based on sugar beet. Typical cane processing facilities may process between 500 to 10,000 tons of cane per day. Beet processing facilities may process between 2,000 tons beet/24 hrs to 15,000 tons beet/24 hrs. It is a trend to use Bagasse for Co-generation whereby after meeting the captive power requirement, excess power is sold to Local Grid. Sugarcane contains 70% water, 14% fiber, 13.3% saccarose (about 10 to 15% sucrose), and 2.7% soluble impurities. Sugar beet has a water content of 75%, and the saccarose concentration is approximately 17 %.



Clarification Process in Raw Sugar Manufacturing

Table: 1.2- Salient Features of the project

S. N	Particular	Existing Industry	Expansion / Modernization	Total Proposed
1	Cane Crushing Capacity	7500 TCD	+1000 TCD	8500 TCD
2	Total Plot Area	191922 SQM	22620 SQM	214542 SQM
3	Total Covered Area	76768 SQM (39.99% of Total Plot)	+7917 SQM , +10.3%	84685 SQM
4	Total Open Area	51799 SQM (26.98%)	+7238SQM,+13.9%	59017 SQM
5	Power Generation	-	+ 32 MW	+32 MW
6	Power Requirement	10MW	+3.380 MW	13.380MW
7	Total Green Area	63334.26	7464.6	70798.86 (33%)
8	Products	Plantation White Sugar	32 MW Cogeneration Plant	White Sugar & 32 MW Bagasse based Cogeneration
9	Boiler	5 Boiler (1.60TPH,2.30TPH x2Nos, 3.40TPH,4.22.5TPH)	1 Boiler 160 TPH	1+1 Boiler= 2 Boiler (160 TPH, 60 TPH)
10	Raw Material	Sugar Cane	No Change	Sugar Cane, Bagasse
11	Storage (Finished)	Sufficient storage area Available	No Change	Existing Go-down to be used
12	Fuel	Bagasse-86.90TPH	No Change	Bagasse-85.34TPH
13	Project Cost	Rs.10551 Lacs	+Rs.21677 Lacs or 216 Crores	Rs.21677 Lacs or 216 Crores
14	Water Requirement	1176 m^3/day	+48 m^3/day	1224 m^3/day
15	Recycled Water	705 m^3/day	+1242.6 m^3/day	1947.6 m^3/day
16	Waste Water Discharge	456 m^3/day	+124 m^3/day	580 m^3/day for

				ETP
17	**ETP Capacity**	2000 m^3/day with online monitoring system	No Change	2000 m^3/day with online monitoring system
18	**ETP Area**	7374SQM	No Change	
19	**No of DG Sets**	Total-03Nos. 1.625KVA,2.380KVA,3.250KVA	No Change	Existing D.G set will be used only in emergency & at starting of plant.
20	**APCD**	All the Five Boilers have Wet Scrubber	ESP	ESP

9.3 Environmental Impact Assessment in the Project

The Environmental Impact Assessment (EIA) is an integral part of the study of the proposed project. The EIA study is intended to ensure that the proposed project is economically feasible, socially acceptable and environmentally sustainable. It primarily includes the description of the baseline condition of the project area, identification of the potential impacts of the proposed project and to ensure suitable measures that will help to avoid or minimize the existing and/or potential negative impacts and would help to incorporate suitable measures to enhance positive environmental benefits, associated with implementation of the proposed project. It is also intended to enhance the positive impacts of the project.

The report covers the Rapid Environmental Impact Assessment (EIA) of the proposed Group Housing as per terms of reference. The EIA has been

included in project preparation to streamline environmental issues in the project design. Environmental considerations are an integral part of project preparation. Initially environmental screening was taken up to identify major environmental issues of the project. This exercise led to scoping the EIA study. The EIA preparation led to the identification of potential environmental hot spots and feasible remedial measures (including avoidance, mitigation and enhancements) which are included in the Environmental Management Plan (EMP).

Baseline Data Generation

List of important physical environmental components and indicators of EBM are given in Table 4.3.

Table 4-3: List of Important Physical Environmental Components and Indicators of EBM

Environmental Component	**Environmental Indicators**
Climatic variables	• Rainfall pattern – mean, mode, seasonality • Temperature patterns • Extreme events • Climate change projections • Prevailing wind – direction, speed, anomalies • Relative humidity • Stability conditions and mixing height,etc.

Topography	• Slope form • Landform and terrain analysis • Specific landform types, etc.
Drainage	• Surface hydrology • Natural drainage pattern and network • Rainfall runoff relationships • Hydrogeology • Groundwater characteristics – springs ,etc.
Soil	• Type and characteristics • Porosity and permeability • Sub-soil permeability • Run – off rate • Infiltration capacity • Effective depth (inches/centimeters) • Inherent fertility • Suitability for method of sewage disposal , etc.
Geology	• Underlying rock type , texture • Surgical material • Geologic structures (faults, shear zones,etc.) • Geologic resources (minerals, etc.)
Water	• Raw water availability • Water quality • Surface water (rivers, lakes, ponds, gullies) – quality, water depths, flooding areas ,etc. • Ground water – water table, local aquifer storage capacity, specific yield, specific retention, water level depths and fluctuations , etc. • Coastal • Floodplains • Wastewater discharges • Waste discharges , etc.

Air	• Ambient • Respirable • Airshed importance • Odour levels ,etc.
Noise	• Identifying sources of noise • Noise due to traffic/ transportation of vehicles • Noise due tom heavy equipment operations • Duration and variations in noise over time , etc.
Coastal dynamics and morphology	• Wave patterns • Currents • Shoreline morphology – near shore , foreshore • Sediment – characteristics and transport , etc.
Biological	• Species composition of flora and fauna • Flora – type,density ,exploitation ,etc. • Fauna –distribution ,abundance, rarity, migratory,species diversity , habitat requirements, habitat resilience,economic significance, commercial value,etc. • Fisheries – migratory species , species with commercial/recreational value , etc.
Landuse	• Landuse pattern ,etc.

1.9.6 Structure of the EIA Report

The is EIA report is presented as per the requirements of the EIA Notification of the Ministry of Environment and Forests (MoEF), Government of India

The Seksaria Biswan Sugar Factory Limited (TSBSFL) has proposed to 32 MW Cogeneration Plant & expansion cum Modernization of Sugar production capacity of sugar plant from 7500 TCD to 8500 TCD. The SeksariaBiswan Sugar Factory Limited (TSBSFL) Factory and Distillery Units are situated at Biswan, District. Sitapur, in the eastern part of Uttar Pradesh. It is about 75-80 Kms. North-West from Lucknow, capital of U.P and about 45 Kms. from Dist. Sitapur.Biswan is located at 27.5°N 81.0°E.

M/s SeksariaBiswan Sugar Factory Limited (TSBSFL) has Air & Water Consent from UPPCB for Existing Plant (7500 TCD). TSBSFL also obtained the NOC for sugar plant expansion from 7500 TCD to 8500 TCD. The project proposals are covered under category 1"d" of EIA Notification, 2006, as amended. The proponent has now applied for Obtaining Environmental Clearance from SEIAA for expansion to 32 MW Cogeneration Plant & expansion cum Modernization of sugar production capacity of sugar plant from 7500 TCD to 8500 TCD based on Bagasse. M/s Seksaria Biswan Sugar Factory Ltd comes under Land use category M1 as Heavy / Medium Industry in Proposed Mahayojna of Biswan 2021**.** Environmental clearance

for 65 KLD distillery unit within the same premises was issued by MoEF through letter no. J-11011/380/2006-IAII (I) Dated 05/01/2007.

The SeksariaBiswan Sugar Factory Limited (TSBSFL) have already developed 11.1866 Acre (45290 sqm) government land as Green Belt as per written order of District Magistrate, Sitapur& S.DM Biswan, Sitapur. Total Plot area is increasing from 191922 sqm to 214542sqm. 160TPH new Boiler and 60T/hr existing Boiler will be used for power generation. Power will be generated with steam with Topping Rankin's Cycle CO-generation Power Project at steam generation capacity of 160 TPH at 125 Bar(a)/545+0- 5Deg. C. Power will be generated with steam with Topping Rankin's Cycle CO-generation Power Project at steam generation capacity of 160 TPH at 125 Bar(a)/545+0- 5Deg. C. Daily Bagasserequirement is of 2048MT. The ash generated by this is about 41 MT/day. Two ash silos will be provided which can store about 4-5 days generation of ash. This ash will be used in Bio-composting & rests are dumped in nearby low lying areas. No effluent will be discharged; all will be treated in existing treatment plant and reuse in various purposes as per Central Pollution Control Board New Guidelines.

The SeksariaBiswan Sugar Factory Limited (TSBSFL) has proposed to expand the sugar production capacity of sugar plant from 7500 TCD to

8500 TCD. With TSBSFL's penchant for high operational efficiency, impeccable housekeeping and high pressure Cogeneration, TSBSFL has decided to increase the capacity of the existing 7200 TCD sugar mill to 8500 TCD. The new complex is to be planned with a new high pressure Cogeneration system based on 125 Bar (a) and 545 Deg.C steam cycle.

The Indian sugar Industry has gained a lot of experience with high pressure Cogeneration in the past decade, with the commissioning of a number of Cogeneration Projects. Many plants are operating successfully, with the cycle parameters of 84 ata and 510 Deg.C. Having looked at the present scenario in bagasse based Cogeneration in the country TSBSFL have decided to implement the highest available Cogeneration cycle at their Unit, based on 125 Bar(a) and 545 Deg.C, steam parameters. Cogeneration, the concept of utilizing the same fuel resource for meeting with the requirements of both thermal and electrical energy, is getting wide acceptance in the process industry. Thus any process industry which employs low pressure steam for the process has the potential to become a virtual power house. With global warming looming and threatening mankind with unforeseeable consequences, the use of renewable energy, which has the positive effect of not adding to the global warming, is being looked at with renewed interest.

TOR OF SUGAR INDUSTRY

TOR for EIA studies in respect of the proposed sugar industry may include, but not limited to the following :-

- Executive summary of the project – giving a prima facie idea of the objectines of the proposal. Use of resources , justification etc. In addition, it should provide a compilation of EIA report, EMF and the post – project monitoring plan in brief.

Project Description

- Justification for selecting the proposed unit size. Land requirement for the project including its optimization, break up of land requirement and its availability.
- Complete process flow diagram describing each unit ,its process and operations in production of sugar, along with material and energy inputs and outputs (material and energy balance).
- Number of working days of the sugar production unit.

- Source of water and its availability. Proof regarding the availability of requisite quantity of water from the competent authority.
- Details of water balance (water intake, use, wastewater generation) taking into account reuse and re-circulation of effluents. Additional water conservation measures, if any, proposed for the project.
- Details of the use of steam from the boiler.

Information on the following in necessary:-

- Sugar cane sourcing, transportation and storage (issues of traffic congestion).
- Water sourcing and use for sugarcane plantation.
- Land use pattern and cropping, if sugarcane plantations are owned by the mill.
- Bagasse quantity generated ,its storage, internal use and external disposal.
- Use of pith.
- Bagasse drying.
- Use of fossil fuels.
- Fire hazards.

DESCRIPTION OF THE ENVIRONMENT:-

Baseline data including different components of environment viz. Air, Noise, Water, Land and Biology and Socio – economic from the study area as per the guidance give in the manual.

- The study area shall be up to a distance of 5km from the boundary of the proposed project site.
- Details of site and information related to environmental setting with a 5 km radius of the project site.
- Land use of study area should include data about the residential / institutional /nearest village /township / locality / housing society , etc. based on the satellite imagery.
    - Information regarding eco – sensitive areas such as National parks / Wildlife sanctuaries / Biosphere reserves within the study area.
    - Information regarding surface hydrology and water regime and impact due to the project ,if any, on the same.
    - Site-specific meteorological data of one season.
    - Ambient Air Quality (AAQ) data (except monsoon) of one complete season along with the monitoring dates. the parameters to be covered shall include SPM , RSPS, SO_2 ,NO_X , (ground level). The location of the monitoring stations should be decided in such

a way that the pre- dominant downwind direction, population zone and sensitive receptors including reserved forests, if any are considered. There should be at least one monitoring station in the upwind direction and one in down – wind direction where maximum GLC is likely to fall.

- Noise level monitoring data from at least five locations withen the study area.
- Details of groundwater quality around the unit and molasses storage area.
- The name of the laboratory recognized by the MoEF/ CPCB/NBA, etc .through which the monitoring/analysis shell be carried out.

Anticipated environmental impacts and mitigation measures:-

- Anticipated environmental impacts that require specific studies for significance are indicated in the impact matrix (Manual may be referred). Tools as given in the Manual may be used for the assessment of environmental impacts.
- Typical measures that could be considered for the mitigation of impacts as given in this manual may be referred.
- Remediation measures adopted to restore the environmental quality if the ground water , soil, crop, air etc. are affected.

- Proposed measures for occupational safety and health of the workers.

Analysis of alternative resources and technologies:-

- Justification for selecting the proposed unit size.
- Comparison of alternate sites considered and the reasons for selecting the proposed site. Conformity of the site with the prescribed guidelines in terms of coastal Regulatory zone (CRZ) river, highways, railways etc.
- Details on improved technologies.

Environmental monitoring program:-

- **A**ppropriate monitoring network has to be designed and proposed for regulatory compliance and to assess the residual impacts.

Environmental management plan:-

- EMP devised to mitigate the adverse impacts of the project should be provided along with item wise cost of its implementation.

Proposed post-project monitoring programme to ensure compliance to the approved Management plan including administrative and technical organizational structure.

Indian Sugar Industry:

The world's largest consumers of sugar are India, China, Brazil, USA, Russia, Mexico, Pakistan, Indonesia, Germany and Egypt. Brazil & India are the largest sugar producing countries followed by China, USA, Thailand, Australia, Mexico, Pakistan, France and Germany.

Global sugar production increased from approximately 125.88 MMT (Million Metric Tons) in 1995-1996 to 149.4 MMT in 2002-2003 and then declined to 143.7 MMT in 2003-2004, whereas consumption increased steadily from 118.1 MMT in 1995-1996 to 142.8 MMT in 2003-2004.

The world consumption is projected to grow to 160.7 MMT in 2010 and 176.1 MMT by 2015.

India is predominantly an agro based economy. Sugarcane plays a very vital role in this agro based economy by providing sugar, the main sweetener used in India. With the growing demand for sugar, the emphasis has been on increasing sugar production.

The Indian sugar industry is the country's second largest agro-processing industry with an annual production capacity of over 18 million tonnes of sugar. About 45 million farmers and their families depend directly on sugar industries. Only 2.5 % of the area is under cultivation of sugar cane of total

cultivated area in India. In India the annual per capita consumption of white crystal sugar and that of non-centrifugal sugar is 15 Kgs per annum and 23 Kgs per annum respectively. The annual overall consumption of the centrifugal and noncentrifugal sugar in the country comes to more than 25 million tonnes. Thus, there is vast untapped potential for growth in the area of sugar production.

REVIEW AND LITERATURE

*Naidu et al. (1998)*17 studied the water quality parameters in 3 north coastal town of Andhra Pradesh and the results indicate that, the water of Mindi Industrial Zone, Old Post Office and Jalaripet of Visakhapatnam, Kothapeta, Vakumpeta and Mayuri, theatre areas of Vizianagaram and Kothapeta and complex areas of Srikakulam towns are polluted either by industrials waste water or by sewage and saline waters.

*Ghose et al. (1999)*18 showed the impact on groundwater quality due to the disposal of iron ore tailing.

*Sharma et al. (2002)*23 reported about the impact of industrial pollution on groundwater quality in Kamleswar area, Nagpur district, Maharashtra

*Chaudhari et al. (2004)*25 studied the quality of groundwater near an industrial area at Jalgaon(Maharashtra) and also studied Water Quality Index which suggests that the water is not suitable for direct consumption.

*Guru Prasad et. al. (2005)*29, collected water samples from different locations in canals of Krishna Delta area of Andhra Pradesh, regularly to check the suitability of water for human use. The parameters like temperature, suspended solids, total solids, electrical conductivity, alkalinity, dissolved oxygen and chlorides are analyzed. For the experimental data mean, standard deviation, variance, and standard error are calculated and the results are discussed. This investigation revealed that the canal serves the purpose of human use.

*Balakrishnan, M. et al. (2008)*41 studied on the Impact of dyeing industrial effluents on the groundwater quality in Kancheepuram (India) and the quality of groundwater in the study area is fair or satisfactory for drinking purposes and good for irrigation purposes The study also revealed that crops cultivated in the dyeing industry and textile waste water locations are very much interfered due to the slow change in soil salinity and sodicity.

*Rajkumar, N. et. al. (2010)*47 worked on the Groundwater Contamination Due to Municipal Solid Waste Disposal – A GIS Based Study in Erode City (Tamil Nadu) and concluded that the groundwater in the study area is mainly alkaline in nature and there is a considerable impact on the groundwater within the study area because of dumping of MSW in non engineered Landfills.

*RatnakantC.Sheth and BasavarajM.Kalshetty (2011)*50 studied on the Water quality assessment of ground water resources around Sugar factory of Jamkhandi town, Bangalkot district, Karnataka and reveal the assessment of ground water quality around sugar factory near Jamkhandi town.

Ferrantino and Ferrier (1995) utilized panel data of 239 sugar mills for the period1980/81 to 1984/85, and analyzed the technical efficiency of Vacuum-Pan Sugar industry of India using the technique of SFA. The study concluded that the smaller sugar factories and firms with access to sweater

cane are more efficient. Further, public-owned firms are found to be less efficient than the private and co-operative sugar firms.

Ferrantino. et al. (1995) examined the effect of organizational form on the efficiency of Indian sugar industry. Using the panel data set for 126 sugar firms, covering the period from 1980/81 to 1984/85, the study observed average TE score of 0.85. The study concluded that the majority of sugar factories were operating close to the *efficient frontier*. The evidence pertaining to the organizational differences among the sugar firms confirms that there exists a slight difference between the efficiency of co-operative, public, and private sugar factories.

Ferrantino and Ferrier (1996), using the dataset of 122 sugar firms covering the period from 1981/82 to 1985/86, made an attempt to measure the levels of technical efficiency and productivity growth in the Indian sugar industry. An average efficiency score of 0.97 has been observed over the study period of five years. The factories with the greatest licensed capacity (i.e., greater than 3000 tonns crushed per day) were on average the most technically and scale efficient among the five size classes analyzed. Further, statistically significant productivity gains have been realized in 1982/83 and 1985/86, while productivity declined in 1984/85 and remained constant in 1983/84.

Murtyet al. (2006), using the survey of polluting industries in India (conducted for 1996/97, 1997/98 and 1998/99), tried to analyze the impact of environmental regulation on productive efficiency and cost of pollution abatement for the sugar industry of India. The average environmental efficiency has been observed to be 0.85, implying the industry has to incur an input cost of 15 percent more to reduce pollution for a given level of production of good output. The results of Malmquist productivity index, used to measures changes in the TFP of firms, found to be sensitive to the environmental constraints i.e., the increase in TFP is almost 200 percent without binding environmental constraints while it increases only by 10 percent with these constraints.

Singh (2006a) utilized data for 65 private sugar mills operating in six major states viz., Uttar Pradesh (U.P.), Bihar, Punjab, Andhra Pradesh, Karnataka, and Tamil Nadu obtained from Prowess database provided by Center for Monitoring Indian Economy (CMIE), to analyze technical and scale efficiencies in the Indian sugar mills. Using the nonparametric DEA technique the study observed that 38 percent and 60 percent of sugar mills have attained the status of globally and locally (efficient under VRS assumption) efficient firms respectively. The prevalence of increasing returns-to-scale (IRS) has been observed in 60 percent of the inefficient sugar mills, signifying the urgent need of increasing the plant size.

Singh (2006b) utilized the technique of DEA to analyze the efficiency of 36 sugar mills of Uttar Pradesh (U.P.) operating during the year 2003/04. The study observed the prevalence of 9 percent inefficiency among the selected sugar firms. It has been also observed that 14 percent of sugar mills attained efficiency score equal to 1 and, thus, identified as globally efficient under the constant returns-to-scale technology. A pressing need for capacity expansion of sugar mills has also been notified because most of the sugar mills are found to be operating in the zone of increasing returns-to-scale. The post-DEA regression analysis reveal that net sugar recovery and plant size encompass a significant and positive effect on overall technical efficiency and scale efficiency of the sugar mills of U.P. Singh (2007) attempted to analyze the performance of sugar mills in U.P. by ownership, size and location using the dataset for 36 sugar firms over the period 1996/97 to 2002/03. Applying the method of DEA, the study concluded that the sample firms operate at a high level of efficiency and the magnitude of inefficiency is only 7 percent. Owing to the differences in ownership, size and location of the mills, the performance of sugar mills diverge significantly. Further, the mills in the western region of UP are found to be more efficient than the central and eastern regions. However, the problem of surplus labour is found to be serious, as 43percent reduction is theoretically possible in the labour input so as the sugar firms in UP can become labour efficient.

Singh*et al.* (2007), seeks to examine economic efficiency of sugar industry in Uttar Pradesh. Using the data for 63 sugar mills of U.P. for the year 2001/02, the study estimated stochastic production frontier and detected an average efficiency to the tune of 73.5 percent in the sugar industry of UP. However, the firm specific inefficiency levels found to be ranging from 8 percent to 55 percent. Further, the private sector sugar factories in the western region of UP attained the maximum average efficiency score of

percent, and thus, found to be belonging to "most efficient category". The evidences regarding the ownership structure reveal that the cooperative sector mills in the eastern region of UP are classified under the category of "least efficient group". To the best of our knowledge, there exists no published study which concentrates on analyzing inter-temporal and inter-state variations in the technical efficiency of Indian sugar industry. The present study is an endeavor in this direction and tries to fill up the existing void in the literature. The present study has two principal objectives: i) the first objective is to analyze the inter-temporal and inter-state variations in technical efficiency of Indian sugar industry; and ii) the second is to identify the factors influencing the technical efficiency in Indian sugar industry using panel data to bit regression analysis.

MATERIALS AND METHODS

In this study, the secondary data has been provided wherever required; the secondary data has been collected from various sources like Books, Journals, Abstract industries report and internet. The following are the sources of information and Method and Materials used in this study. The scope of this study broadly includes:

- To conduct literature review and to collect data relevant to the study area;
- . Establishing the baseline environmental aspects in and around the proposed site;
- Identifying various existing pollution loads due to various activities;
- Predicting incremental levels of pollutants in the study area due to the proposed activities;
- Evaluating the predicted impacts on various environmental attributes in the study area by using scientifically developed and widely accepted environmental impact assessment methodologies;
- To prepare an Environment Management Plan (EMP), outlining the measures for improving the environmental quality in view of future expansion for environmentally sustainable development; and

- Identifying critical environmental attributes that are required to be monitored in the post-project scenario.

(iii) Air Environment

The existing ambient air quality (AAQ) status within the study region has been assessed through a monitoring network of 8 AAQ sampling stations during pre monsoon. The monitoring network has been designed based on the available climatic normal of predominant wind directions and wind speed of the study region for pre monsoon. The baseline ambient air quality status of the study region was monitored for Particulate Matter (PM_{10} & $PM_{2.5}$), and various gaseous pollutants like Sulphur dioxide (SO_2) and Oxides of Nitrogen (NO_2), Hg & O_3. Eight hourly sampling was carried out for PM_{10} & PM $_{2.5}$. All gaseous pollutants were sampled on four hourly bases. RDS (Respirable dust sampler) have been used for monitoring all air pollution parameters. Micro-meteorological data was also recorded on hourly basis using weather station.

National Ambient Air Quality Standards (CPCB, 2009)

Pollutants	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
		Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (Notified by Central Government)	
Sulphur Dioxide (SO_2), µg/m³	Annual * 24 Hours **	50 80	20 80	**-Improved West and Gaeke Method -Ultraviolet Fluorescence**
Nitrogen Dioxide (NO_2), µg/m³	Annual * 24 Hours **	40 80	30 80	**-Jacob & Hochheiser modified (NaOH-NaAsO2) Method -Gas Phase Chemiluminescence**
Particulate Matter (Size less than 10µm) or PM_{10}, µg/m³	Annual * 24 Hours **	60 100	60 100	**-Gravimetric -TEOM -Beta attenuation**
Particulate Matter (Size less than 2.5µm) or $PM_{2.5}$, µg/m³	Annual * 24 Hours **	40 60	40 60	**-Gravimetric -TEOM -Beta attenuation**
Ozone (O_3) µg/m³	8 Hours * 1 Hour **	100 180	100 180	**-UV Photometric -Chemiluminescence -Chemical Method**
Lead (Pb) µg/m³	Annual * 24 Hours **	0.50 1.0	0.50 1.0	**-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper -ED-XRF using Teflon filter**
Ammonia (NH_3), µg/m³	Annual * 24 Hours **	100 400	100 400	**-Chemiluminescence -Indophenol blue method**
Benzene (C_6H_6), µg/m³	Annual *	05	05	**-Gas Chromatography (GC) based continuous analyzer -Adsorption and desorption followed by GC analysis**
Benzo(a) Pyrene (BaP) Particulate phase only, ng/m³	Annual *	01	01	**-Solvent extraction followed by HPLC/GC analysis**
Arsenic (As), ng/m³	Annual *	06	06	**-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper**
Nickel (Ni), ng/m³	**Annual ***	**20**	**20**	**-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper**

** Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.*

*** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.*

***NOTE:** Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigations*

(iv) Noise Environment

Noise Environment may cause an adverse effect on human being and associated environment including land, structures, domestic animals, wild life and natural ecological systems. Hence, noise survey was carried in and around the project site. Equivalent noise levels were measured using a precision noise level meter, at different locations. A total of 8 locations were covered within the 15 Km radial distance.

The Central pollution Control Board has specified ambient noise level for different land use for day and night time. Importance gives to the timing of exposure and areas designed as sensitive. Table gives the noise standards specified by the Central Pollution Control Board.

Table – 3.16 National Ambient Noise Level Standards

Area Code	Category	Limit of Decibels (db A)	
		Day Time	Night Time
A	Industrial	75	70
B	Commercial	65	55
C	Residential	55	45
D	Silence Zone	50	40

Sources: central Pollution Control Board New Delhi

**Day time shall mean from 6.00 a.m. to 10.00 p.m.*

***Night time shall mean from 10.00 p.m. to 6.00 a.m.*

The noise monitoring was conducted at 8 locations within the study area. Normally, for selection of noise mentoring station, sensitivity of sites is also considered. As per the CPCB standards, sensitive locations are covered under Silence zone, which includes an area up to 100 m around premises as hospitals, education institutions and courts. The "A weight" sound level was continuously measured using Noise meter at 5 minutes interval for one day in each survey location as per the CPCB procedures. The parameters monitored are given as below:

- Max Noise Level (L max)
- Min Noise level (L min)
- Maximum hourly Leq Minimum hourly Leq
- Leq value 15 hourly (6am-9pm) at minutes interval
- Leq value 9 hourly (9 p.m. – 6 am) at 5 minutes intervals
- L_{10}
- L_{50}
- L_{90}

The location of ambient noise monitoring station is shown in figure. The values arrived for day and night from the measured noise levels at an interval of five minutes at various locations.provides equivalent noise levels viz., Leq day and Leq night, at the noise monitoring locations, alongside noise standards as prescribed by the CPCB (Table 3.9). Leq was calculated using the following equation:

$$L_{eq,T} = 10\log\left(1/n\sum_{i=1}^{n}10^{\frac{L_i}{10}}\right)$$

Where, Li = levels observed at n equally spaced times during interval

(v) Water Environment

Ground and surface water sources covering 10 Km radius in and around the proposed project site were examined for physico-chemical and bacteriological parameters in order to assess the effect of industrial and other activities on surface and ground water. The samples were collected and analyzed as per the procedures specified in Bureau of Indian Standards and the results were compared to the IS 10500:2012 (Specification for Drinking Water Quality Standards). Samples for chemical analysis were collected in polyethylene carboys. Samples for bacteriological analysis were collected in sterilized glass bottles. Selected physico-chemical and bacteriological parameters have been analyzed for projecting the study area

(vi) Land Environment

Soil samples were collected from 8 locations, in order to assess the field infiltration rates and limitations of the soil for growth of appropriate plant species around the site. Plant species for development of green belt were identified taking into consideration the attenuation factors for air pollutants.

(vii) Socio-Economic Environment

Baseline data for socio-economic and cultural environment is important in conducting EIA studies. Any developmental activity will bring about changes in socio-economic pattern. Data on demographic pattern, population characteristics, employment, income, mortality rate, health status, land use pattern, energy and fuel consumption, and transport and recreation facilities were collected from neighboring villages. All therefore said environmental parameters will be used for identification, prediction and evaluation of significant impacts. Using the baseline data prediction of impacts of the project has been undertaken.

Environmental Impact Assessment Report

The EIA for the project began with an adoption of an environmental and social screening procedure during the feasibility stage. The purpose of the screening was to identify at the outset, key environmental and social issues such as sensitive receptors, change of land use, eco systems, impacts on community facilities, impacts on flora and fauna etc. The important findings of the assessment gave important feedback to the design team, especially in terms of the sensitive receptor utility /facilities to be impacted. It helped to modify the designs at locations where impacts had to be avoided and incorporate mitigation measures wherever the impacts are unavoidable due to other constraints. The steps covered in the preparation of EIA are as follows:

Reconnaissance Surveys

- Collection and Analysis of Data
- Documentation of Baseline Conditions
- Assessment of Potential Impacts
- Identification of Mitigation and Enhancement Measures
- Finalizing the EIA
- Mitigation and Enhancement Measures
- Environmental Management Plan
- Disaster Management

Result and Discussion

This Environmental Impact Assessment (EIA) report has been prepared in line with the Terms of References (TOR) issued by SEAC, Uttar Pradesh. The study area in 10 Km radius around the periphery of the proposed power plant site for Environmental Impact Assessment is carried out at different location. The Environmental Impact Assessment (EIA) is an integral part of the study of the proposed project. The EIA study is intended to ensure that the proposed project is economically feasible, socially acceptable and environmentally sustainable. It primarily includes the description of the baseline condition of the project area, identification of the potential impacts of the proposed project and to ensure suitable measures that will help to avoid or minimize the existing and/or potential negative impacts and would help to incorporate suitable measures to enhance positive environmental benefits, associated with implementation of the proposed project. It is also intended to enhance the positive impacts of the project

The Scope of the Study was:

i) Understanding of the EIA process

ii) Public hearing process

IMPACT ASSESSMENT

Impact During construction phase

Impact on Land use

The land use of proposed expansion is under industrial category. The total land required for the proposed expansion will be installed within the existing premises of sugar plant complex. Hence no additional land is required for the present expansion. The green belt development will be in an area of 33% of total area which is already being developed. The existing roads are well established and will be strengthened.

Impact on Soil

There is very less construction work involved in proposed expansion. The construction activities will result in minimum loss of vegetation and topsoil in the plant area. Maximum possible extent tree cutting would avoided. No significant adverse impact on the soil in the surrounding area is anticipated.

Impact on Air Quality

During construction phase, dust will be the main pollutant, which would be generated from the site development activities and vehicular movement on the road. The impact of such activities would be confined within the project boundary and restricted to the Construction phase. To mitigate these impacts, regular sprinkling of water will be done at the construction site.

The approach roads will be black carpeted and vehicles will be kept in good order to minimize automobile exhaust.

Impact on Noise Levels

The major source of noise during the construction phase are vehicular traffic, construction equipment like boiler, conveyor belt and machinery equipment invo0lve in the process. The operation of these equipment will generate noise ranging between 70-85 dB (A). The noise produced during the construction will have significant impact on the existing ambient levels. The major work will be carried out during the daytime.

Impact on Terrestrial Ecology

Most of the land identified for the proposed project with limited number of trees. Trees will be cut only if required and as per functional requirement. Therefore, no major loss of biomass is envisaged during construction phase.

Demography and Socio Economics

The non-workers constitute about 60% of the total population in 10 km radius study area. Some of them will be available for employment in the proposed plant during construction activities. As the laborers are generally un-skilled, the locals would get opportunities for employment during construction activities.

Impacts During Operational Phase

Impact on Soil vis-à-vis Solid waste

All the solid wastes generated will be used in making bio-compost alongwith press-cake and spent wash used as manure in crops. Hence, no impact of solid waste is envisaged on soil quality of the area.

Impact on Air Quality

Adequate stack heights have been provided to disperse gaseous emissions over a wider area. In order to control emissions of particulates adequate control equipment, ESP and dense phase as handling system are proposed.

Impact on Water Resources

The Seksaria Biswan Sugar Factory Ltd. has estimated the water requirement for its Cane crushing, captive power plant and residential colony. This water will be sourced from ground water through tubewell . The state of U.P. has already given permission to draw necessary water required for the plant operations. Hence, no impact is envisaged on the Water resources of the area.

Impact on Water Quality

As all of the industrial waste water and domestic wastewater generated will be suitably treated either in the proposed effluent treatment plant, and re-used for industrial processes & green belt development and no discharge is proposed outside the premises, no impact is envisaged on

water quality from the project. The plant will be operated on zero discharge basis.

Impact on Noise Levels

The proposed expansion of Cane crushing and power plant contains number of items of heavy equipment such as Boiler, Turbine ESP etc. consequently Sugar manufacturing is likely to generate noise and vibration. Noise and vibration is greater from heavy truck traffic associated with quarry operation and transport of raw materials and finished products.

Impact on Ecology

The impact of air pollutants on vegetation due to the proposed expansion of cane crushing and power plant, is identified and quantified by using air dispersion modeling. The simulations have been done to evaluate SPM, SO_2 likely to be controlled by the proposed project activities , the resultant concentrations for study period are within the limits as per National Ambient Air Quality Standards. The impact due to proposed expansion due to air emissions will be insignificant.

CONCLUSION

The Seksaria Biswan Sugar Factory Limited (TSBSFL) has proposed to 32 MW Cogeneration Plant & expansion cum Modernization of sugar production capacity of sugar plant from 7500 TCD to 8500 TCD.

EIA process is necessary in providing an anticipatory and preventive mechanism for environmental management and protection in any development. Several developing countries are still at the infancy stage of operationalization of their EIA processes.

The area falling within 10-km radius from the project site is defined as the study area. The study area around the plant boundary for environmental baseline data generation.The field studies was conducted in representing post monsoon. Environmental monitoring for various attributes like meteorology, ambient air quality, surface and ground water quality, soil characteristics, noise levels and flora & fauna had been conducted at the specified locations.

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