



Trip Report to ACC Gagal Cement Works, Himachal Pradesh

June 22-27, 2009

Introduction

In December 2008, ACC Limited approached the IUCN India country office to seek its assistance on strengthening biodiversity values at its plant at Gagal in the northern Indian state of Himachal Pradesh. (Gagal is one among ACC's 14 plant sites across India.)

Following discussions with the Managing Director of ACC and other senior management staff at Mumbai in March 2009 and considering the potential engagement of the private sector in biodiversity conservation, IUCN India decided to undertake a scoping visit along with a team of experts drawn from IUCN's member organisations in India. A visit to the plant at Gagal was undertaken from June 22-27, 2009.

The overall aim of this visit was to assess and define the scope of work in terms of biodiversity conservation that could be undertaken in the area. The key objectives were:

- Overview of ACC's operations
- Discussions with key stake-holders
- Assessment of the biodiversity related activities of the Gagal plant
- Assessment of the socio- economic variables in the area
- Defining the scope of work that could be undertaken by IUCN

Mission composition

The mission comprised:

- Dr. K. Ramesh, Wildlife Institute of India (IUCN Member organisation)
- Usha Srinivasan, Development Alternatives (IUCN Member organisation)
- Vijay Chaturvedi, Development Alternatives
- Mayukh Hajra, Development Alternatives
- Shiranee Yasaratne, Business Biodiversity Programme, IUCN Asia Regional Office, Bangkok
- Biren Bhuta, IUCN India Office
- Aditi Mehandiratta, IUCN India Office.

Itinerary and consultations

Before undertaking the scoping mission, a preparatory meeting for planning and strategizing the mission was organized at the IUCN India Office, New Delhi on June 16, 2009. The meeting facilitated interaction between the representatives from ACC and the IUCN team for the scoping mission, giving the team an opportunity to have a preliminary idea about the area. Based on this, a tentative action plan was developed for the mission. The team visited the plant, mines, township and the nearby villages, interacted with ACC officials and local communities as well as collected secondary data such as area maps, plant maps, mining schemes, social survey reports, EIA report, plantation plans,

photographs, etc. The later part of the visit was dedicated to interaction with government officials like the District Collector and Forest Officer (DFO) and overall compilation of the observations and further plans of action. The detailed itinerary of the visit is given in Annexure I.

ACC Gagal Plant – An Introduction

Commissioned on 12th March 1984, Gagal Cement Works (GCW) is part of India's largest cement company, ACC Ltd. It is located near Barmana in Bilaspur district of Himachal Pradesh, on the National Highway NH 21, connecting Ambala and Manali. Installed with a capacity of 5.6 Lakh tonnes of cement per annum, it has modernized and expanded to a total capacity of 4.64 million tonnes of cement per annum. GCW is a market leader in the northern region and maintains its market share in all strategic markets.



ACC's Gagal Cement Works: Nestled amidst the hills ©ACC Ltd

Located in the eco- sensitive zone of the Himalayas, the company has been pro- active in working towards environmental conservation and pollution control. It has reportedly planted more than 1 million trees over a period of 12 years, in and around the factory premises. As part of the environment management system, GCW has been regularly investing in technological up-gradation to achieve both economic and environmental efficiency.

Mines

The total mining area with GCW is 231.25 hectares comprising Barmana Hill and Gagal Hill. Of this, 52 hectares is the active mining area and forms part of the Gagal Hill. From an initial height of 947m, the hill has been mined down to 650m and the company plans to mine down further up to 500 m. It is expected that this level would be reached over the next 25 years, after which, further

reconnaissance would be carried out to assess more potential for extraction. If not found viable, the company plans to use the crater created post mining for harvesting of water.



Inspecting the mines. (l to r) Aditi Mehandiratta, Dr K Ramesh, Vijay Chaturvedi ©ACC Ltd

The Gagal mine has a belt length of 1.5km. Limestone is blasted by using a benching process i.e dividing the hill into benches. Blasting is carried out 3-4 days in a week and usually between 1pm and 3pm. About 20000 tonnes are mined in each blast.

In 2001, ACC adopted the Non-electric Bottom Initiation Detonator technique over the conventional detonating fuse technology for blasting. More sophisticated detonators are used today in order to minimize the impact of the blast on the surrounding areas. The vibrations and noise levels are measured at the closest monitoring station i.e. at the mining office. According to ACC, the vibration limits are well within prescribed limits.

The IUCN team had a chance to witness one blast. The vibrations and noise generated were muffled and the dust emissions appeared to be minimal and localised. The team was informed that the throw of the blasted material is about 20 m to 30 m.

The villages surrounding the mines are at a distance of more than 500 m from the blasting site. In later interactions with local communities, the team was informed that several houses had developed cracks. They attributed these to the vibrations caused due to the blasting. ACC officials maintain that the cracks, if any, are due to faulty constructions and that, the company has conducted studies in the past to demonstrate to villagers that there are minimal vibrations to cause cracks. However, the perceptions persist. The team believes that the company should try to dispel these perceptions and also demonstrate sound techniques for constructing houses.

At present, the Barmana Hill is inactive and not operational. The company's efforts towards reclamation by extensive heterogeneous plantations, are highly commendable. Protection of the area has also assisted the natural regeneration process. However, the team was informed that there is a possibility that in future, this hill might be explored for any further deposits of limestone.



A landscape in the quarry: Approach road to the mines ©ACC Ltd

Cement Plant

GCW comprises two units: Gagal I and Gagal II. ACC has invested continuously and considerably to upgrade the plant infrastructure as well as cement manufacturing techniques to increase economic as well as environmental efficiency.

To reduce source emissions, the company has installed 11 bag houses, 85 bag filters and 2 ESPs (Electro-Static Processors). These have resulted in drastic reduction in the stack emission levels, which are now maintained at less than 20 ppm. In fact, not only do the bag houses filter the emissions, they also feed it back to the manufacturing process. This not only reduces emissions, but also makes great economic sense.



Bag Houses: Reducing & Re-using ©ACC Ltd

The plant has installed a monitoring station to constantly monitor SO_x, NO_x and SPM levels.

Fugitive emissions are a bigger cause for concern. ACC has put in place dust suppression systems like water sprinklers to tackle these emissions, whether on the conveyor which carries the quarried limestone from the mines to the plant, or at the enclosed stockyards which store coal, gypsum and fly ash. However, current efforts to curb fugitive emissions might need augmentation and further improvements.



Covered Conveyors, but emissions fugitive ©ACC Ltd

The packing area also poses a challenge in terms of fugitive emissions. Every time, a cement bag is transferred, be it along the conveyor or from the conveyor on to the truck, there is some amount of leakage. ACC management could explore and seriously pursue options like using paper bags or despatching cement in bulk quantities. (The enclosed bunkers that are used to bring fly ash to Galgal

plant go back empty. These could be used to despatch bulk cement.) GCW is trying out packaging using laminated bags.

The company's greening efforts even within the plant premises have ensured a cleaner, relatively dust-free environment.

Alternate Fuels & Raw Materials (AFR)

The concept of AFR, though practised by Holcim for the last three decades, is a recent introduction to ACC. It involves substituting mainstream non renewable fuel resources like coal with replenishable alternate fuels. A subsidiary activity of AFR is waste co-processing which is basically a means of waste management.

Under the mainstream AFR activities, currently the Gagal plant is using mill scale (a reject from steel rolling mills) as a substitute for iron ore. It is also assessing the feasibility of harnessing the potential of pine needles as an alternative fuel. However, despite the high calorific value of pine needles, there are several limiting factors for its use. Collection of pine needles from the forest floor is one of the major issues of concern. Also, due to the voluminous nature of the needles, the cost of transportation increases. The pine needles are extremely inflammable, hence a safety issue. Processing the pine needles for use as a source of fuel for the kilns would add further to the cost.



Pine Needles: An Alternative Fuel? ©IUCN

The AFR division is exploring other options for alternative fuels such as rice husk, jatropha, castor, etc. There have been no significant breakthroughs as yet.

Waste co-processing, however, provides a wonderful business opportunity for GCW. The AFR division at Galgal spent its first few years in self-education on waste co-processing and then educating and making the state Government, MoEF and other stake-holders aware of the potential of cement plants in waste co-processing. It also inventorized the type of waste that could be directly used in the kiln without impacting on the clinker quality or environmental emissions.

The plant follows strictly all national norms for handling waste that is delivered for co-processing. Co-processing is a service which ACC extends to companies generating waste. At present, 10- 15 tonnes of waste is co-processed daily. The transportation of the waste to the plant is the responsibility of the waste generator. On entry, the waste is checked physically; a spot analysis is undertaken, and if it is found to be of a suitable, previously-agreed-upon nature, then it is let in the plant campus and is sent for co-processing.

The team was informed that currently, ACC Galgal has agreements with Hindustan Unilever Limited (HUL) and the Kullu Municipality to co-process their waste. In the case of HUL, ACC co-processes all trade rejects and expired products from HUL's depot at Parwanoo, located 140 kms away. The Kullu Municipality sends its sorted municipal wastes, especially plastics, to the ACC plant.

The waste generated in the plant itself, which includes paper wastes and waste oily rags and cloths, is also co-processed. However, since the household waste generated in the township as well as in the surrounding villages is not segregated, it is not yet used for co- processing. This is something which the ACC management might want to seriously consider, as it will also help in reducing the monkey menace, which township residents and local communities keep complaining about. Besides, given the available opportunity for waste co-processing, an integrated waste management system for the entire township would go a long way in developing it as a model township.

Township

Across the plant, ACC has developed a well-planned township with extensive plantations and measures like water harvesting demonstration structures, vermi-composting pits, use of root zone technology for effluent treatment (the treated water is then used in plantation activities) and a plant nursery.



Root Zone Technology: Re-cycling water....Naturally. ©IUCN

The residential colony has a club, a play school as well as senior secondary school, a hostel for management trainees and a hospital.

- **Hospital**

The company has constructed a well-equipped hospital with 14 beds and all basic medical health facilities as well as two full-time doctors to cater to the medical needs of the employees as well as local villagers. For any major ailments, patients are sent to hospitals in the nearby town through ambulances.

The common ailments reported in the area are bronchitis, diarrhoea, gout and arthritis. During the winter months, there are more number of cases of pneumonia and other respiratory ailments. The area sees a high occurrence of HIV/AIDS. The resident doctor informed us that, after Hamirpur, Bilaspur district has the second highest incidence of HIV/AIDS in Himachal Pradesh.

Some cases of human- animal encounters are also reported, mostly scratches by monkeys and snake-bites.

The hospital has also been instrumental in organising health camps, HIV/AIDS Awareness camps, eye camps, etc.

Greening and biodiversity

ACC has been actively working on greening the plant area as well as the surroundings. Over the last 25 years, the company has raised heterogeneous plantation on its inactive mine area, the township area and certain parts of the surrounding villages. Overall, since inception, ACC has reportedly planted over 1 million saplings in and around the plant, mines, colony and private land. Plantation activities as well as natural regeneration have greened the area considerably.



How Green Is My Valley ©Wildlife Institute of India

All these plantations have been the primary responsibility of the plant horticulturist, V.D. Thakur. According to him, native species have been selected for plantation, except in certain cases, where a fast-growing species like Eucalyptus has been preferred.



Eucalyptus Patch: Out of place? ©Development Alternatives

As a result of this greening effort and also due to habitat diversity, the overall biodiversity value of the area seems to show a positive trend. During the short stay of six days, as part of a casual observation, the IUCN team recorded around 30 species of birds, including Black Francolin (partridge) and a few mammal species.



Biodiversity at Gagaj © Wildlife Institute of India

Apart from improving the biodiversity, these efforts have also provided fringe benefits to the surrounding areas in terms of a clean, green environment and to the local villagers in terms of providing fuel wood. Despite 75% of them having LPG connections, they still opt for fuel wood for cooking purposes, both due to cost considerations as also due to the free availability of farm wastes which anyway needs to be managed.

Although efforts to date have been commendable, the plant authorities admit to the fact that their understanding on biodiversity is limited and therein lies great scope for understanding and enhancing the biodiversity value of the area.

Interactions with Local Communities

There are 8 villages which lie in close vicinity of the plant as well as the mines. The residents of these villages seem to enjoy sufficient incomes, as evidenced from their dwellings. Most have land holdings ranging from 0.5 to 5 acres. Agriculture (mainly maize and sugarcane cultivation) is still the primary occupation, though many have ventured into businesses like floriculture or commercial transportation. The youth mostly aspire for Government jobs.

The village communities apparently enjoy a decent standard of living without having to compromise on basic needs. This provides the threshold on which secondary level interventions can be built to demonstrate model initiatives for sustainable community development and higher level of socio-economic security.



Ground Realities: Interaction with Local Communities © Wildlife Institute of India

The IUCN team had a chance to visit a few villages like Kunanoo, Baloh, Dhaun, Kothi, Barmana and Bater and interact with local communities. By and large, the communities were quite appreciative and supportive of the various interventions that the company has made in the villages. There seems to be a net positive impact due to ACC's presence in the region. Access to health and education facilities has improved. The education levels have gone up with nearly all the youth studying up to Class X. Village roads have been constructed, which has catalysed development. Avenues for

employment have opened up. A case in point is the trucking industry which has had a huge multiplier effect.

However, communities seem to have certain misgivings regarding the company. While ACC has provided drinking water to 4 villages, the company water supply has not reached some villages which still face shortages. There are concerns that the blasting in the mines may be causing cracks in their houses. Company officials maintain that studies in the past have clearly shown that these fears are unfounded.

There is a general sense of appreciation for the greening efforts by the company and the salutary effect that these have had on the environment. However, there have been some unexpected consequences. Whilst earlier the landscape was dry and denuded, with no forests and very little wildlife; now, wild boars, deer and monkeys have been observed, which are also proving to be a menace, both for agriculture as well as for local communities, especially women and children. There has been a marked increase in the number of man-animal conflicts in the area. This has become an important and serious issue but we believe that it can be resolved with more planning and understanding. In this context, a need has been felt for awareness generation amongst the community on biodiversity benefits in terms of ecosystem services as well as the unique livelihood opportunities it provides. This would not only promote the adoption of bio-resources based sustainable livelihoods but also help in partnering with the communities as allies for the success of the environment conservation efforts initiated by ACC.

The ACC AHEAD programme has been initiated across ACC plants in India by the women's group comprising the wives of officials posted at the plants. At Galgal, ACC Ahead has been instrumental in forming a rural women's group for making various spice mixes and handicrafts and retailing through the cooperative stores catering to the township. Currently, the group consists of only 4 members and the enterprise is fairly successful, owing in no small measure to the readily available township clientele. However, the group is yet to progress to self-help mode, as the women are involved only in the skilled labour and not in the financial management or marketing (which is being steered by the cooperative store owner).

While there is a huge potential to scale up the formation of self help groups, it will be important to simultaneously build their entrepreneurial skills to facilitate the long term sustainability of the enterprises. Such interventions are essential to promote financial independence of the women in the area and would also have positive spin-offs in terms of women being empowered to voice their concerns and take action for community development.

Trucks

The IUCN team met up with office bearers of the Bilaspur District Truck Operators Co-operative Transport Society. With over 4000 trucks, it is Asia's largest truckers' union.

Although trucking is a flourishing business in the area, there are two major issues related to it:

- 1. Rise in pollution levels in the area because of truck movements**

The President of the Union himself accepted that the emissions from the trucks are much higher than the emissions from the plant. There are 4000 trucks entering or exiting the ACC plant every day. With another 3000 trucks plying for the Gujarat Ambuja Cement plant

located nearby, the numbers are quite staggering. Most of these trucks have been on the road for over 15 years. What would be ideal is if these single axle, 9 tonne trucks running on diesel are replaced with new, multi-axle, 15 tonne trucks running on cleaner fuel like CNG. However, voluntary conversions may not be forthcoming in the absence of any stringent legislation for the same.

2. Unavailability of Truck Drivers

This currently is a major concern for the union. Though the demand for trucks is increasing, however, there are not enough drivers available. The number of youth opting for this profession is declining as it is looked down upon by society and even girls are now hesitant to marry truck drivers. Again, replacing lower capacity trucks with higher capacity ones will reduce the requirement of trucks and hence, of drivers.

The Union says that it will educate the truckers but it looks towards ACC for help. One immediate solution would be to start a truck driving school that will encourage more people to pursue the profession.

Interactions with district officials

The IUCN team travelled to Bilaspur to meet Ms Nandita Gupta, Deputy Commissioner (DC) of Bilaspur district and Mr P Rana, District Forest Officer (DFO) of Bilaspur.

The team highlighted concerns about the trucks to the DC. Already, there are more than 7000 trucks plying every day. In the absence of a railway line and with more cement plants being proposed in neighbouring districts, this problem will only exacerbate. Apart from causing pollution, these trucks will also lead to congestion along the main highway leading up to the popular tourist destination of Manali. This could have serious implications on tourism and revenues to the state. The only way to reduce congestion as well as pollution is to replace old generation trucks with modern ones. The DC's office could play a major role by pushing for relevant legislation or policy interventions and then, ensuring strict implementation.

The team pointed out to the DC that the Kullu Municipality has taken a lead in sorting out its waste and sending the sorted waste material to the ACC plant for incinerating in the kilns. Bilaspur and other towns could follow suit.

The DC was extremely open and receptive to our suggestions and so was the DFO, when the team visited him. The planned biodiversity assessments at Gagal were explained with the advantage of serving as a useful benchmark for similar assessments in the district and even in the state. The DFO expressed his interest and willingness to be part of the assessment team.

The DFO was interested in the prospects of collecting and using pine needles as a subsidiary fuel source by ACC. He pointed out that, if it is found to be technically and commercially viable, then it would be a win-win-win situation for all stake-holders involved. The Forest Department would have to deal with fewer forest fires and hence, lesser threat to wildlife. Local people would get employment and income generation opportunities by collecting and processing the pine needles. ACC would find a substitute for coal, thereby reducing its carbon footprint. The DFO said that his office would extend all support and help for this initiative.

Key observations

As part of the wrap-up session on the last day, the IUCN team gave a presentation to the ACC Galgal management. Following a brief background about IUCN and its Business & Biodiversity Programme, examples of partnerships forged globally by IUCN and the private sector were highlighted. The nature of the relationship between IUCN and Holcim at the global level and also the work that IUCN does with Holcim in various countries in Asia, like Sri Lanka, Bangladesh and Vietnam were described. The team then shared its observations during the course of the visit to Galgal, with the ACC management:

- The ACC Management has shown appreciable concern for the environment.
- The environmental parameters for the plant and the mines seem to be well within prescribed national norms.
- There is considerable biodiversity within the site, which indicates healthy habitat diversity.
- The greening and reclamation efforts are laudable. They have assisted natural regeneration.
- Certain species with less biodiversity value have been favoured, maybe in response to early compulsions, but could be reconsidered.
- Records with regard to biodiversity enhancement efforts could be improved for the benefit of assessing improvements and trends.
- Fugitive dust is an area of concern at the mining and plant sites.
- Water scarcity and animal menace are the prime concerns for the community.
- CSR efforts need to be more planned and systematic in terms of systems, processes, people and interventions.
- CSR so far has been following a welfare approach which now needs to follow a more sustainable approach. It should progress from being mere providers to becoming enablers.

IUCN's role

Based on the above observations, IUCN proposed the following project ideas for comments, suggestions and finally, buy-in by the ACC officials:

A) Biodiversity Assessment

1. **Assessment of Biodiversity:** To catalogue/inventorise all possible biodiversity components, to convert into quantitative terms for feeding into a Biodiversity Score Card, to suggest interventions to improve biodiversity value and to develop monitoring protocols.

2. **Capacity Building:** To enhance the biodiversity knowledge and technical know-how to monitor and manage the biodiversity. This would target people within the management and local communities, and would develop mechanism for joint activities between the ACC staff and local communities.

B) Others

3. **Looking beyond Conventional Energy:** To assess the techno-commercial feasibility of locally available biomass (e.g. pine needles) and other forms of wastes.

4. **Partnering with Local Communities:** To mobilise local communities and create replicable models of self-employment and rural entrepreneurship.

5. **Managing the Trucks and Truckers:** To reduce traffic congestion, reduce pollution levels and offset the perceived threat of non-availability of trained workforce in the future.

All the proposals were received favourably by the ACC officials present and unanimous agreement was received for expanding these further. Subsequently, the ACC top management requested IUCN to develop the project ideas related to biodiversity assessment and capacity building, into full proposals and submit the same as this was a priority at this stage. The other project ideas could be considered subsequently.

Upon consideration of ACC, a planned implementation schedule over an extended period would be worked out through a MoU for administrative arrangements.

IUCN would undertake the implementation of the projects with the assistance of its members and partners who have expertise in the respective fields of work.

Acknowledgements

The IUCN Mission would like to acknowledge the support, hospitality and openness of ACC staff during this visit. We truly appreciate the time that they spent with us, the visits and meetings that they facilitated and their uncomplaining, smiling demeanour in the face of our unending queries and demands. In particular, we would like to mention:

Mr Sanjeev Kapur, Chief Manager – Energy & Environment
Mr Sandeep Sharma, Assistant Manager – Energy & Environment
Mr V D Thakur, Manager – Horticulture
Mr Jagjit Singh, Deputy Manager – Human Resources & Employee Welfare
Mr Sanjeev Soni, Joint Manager – Mining
Mr Shiv Sharma, Assistant Manager – AFR
Dr Prasad Bardoloi
Mr Deepak David, Head – CSR, North India
Mr P K Srivastava, Head – Operations

We would like to thank Mr P K Nanda, Chief Manager – Mines, who visited from Mumbai to be with us throughout the length of the visit and for sharing his insights with us.

Very special thanks to Mr Atul Khosla, Director – Gagal Plant for sharing his vision for the plant; for his amazing candour while articulating the issues and challenges that the company faces and for his extremely gracious hospitality.

This visit would not have been possible without the support of the top management team of ACC at Mumbai. In particular, we would like to thank Mr Sumit Banerjee, Managing Director and Mr Ravi Puranik, Head – CSR, for their initiative of inviting us on this Scoping Mission.

Last but not the least, we would like to express our sincere gratitude to the office and guest house staff at Gagal, who made us feel welcome and comfortable during our visit.

Annexure 1

Itinerary for Scoping Mission:

- June 22, 2009:** Arrival at Gagal
Visit to Water- treatment and Root- Zone treatment plants
Visit to the Colony Club and Hospital
Visit to ACC Plant and Mining Area
- June 23, 2009:** Visit to ACC Plant
Interaction with the AFR team and V.D. Thakur
Visit to the villages and Interaction with communities
- June 24, 2009:** Visit to the plant nursery and vermi-compost
Interaction with Self Help Groups (SHGs)
Visit to Mines to see the blasting
Visit to School
Visit to the villages and Interaction with communities
- June 25, 2009:** Meeting with the truckers
Internal team meeting to consolidate the observations and list the core project ideas
- June 26, 2009:** Meeting with Gagal Workers Union
Meeting with Plant Head, Mr. Atul Khosla and his team
Meeting with Women Group (ACC Ahead)
Visit to the ACC workshop
Interaction with Households of migrant labour
Meeting District Collector & District Forest Officer
Dinner hosted at Atul Khosla's residence
- June 27, 2009:** Wrap up meeting
IUCN team departs