

**First Annual Monitoring Report to the Board of Directors**  
**on the**  
**Implementation of Remedial Actions**  
**for the**  
**Mundra Ultra Mega Power Project**  
**in India**  
**(Asian Development Bank Loan 2419)**

**13 September 2016**

## **ACKNOWLEDGMENTS**

The Compliance Review Panel thanks all those who contributed to this first monitoring report of the Mundra Ultra Mega Power Project in India; the Coastal Gujarat Power Limited, an ADB private sector client, the complainants, and national and regional and national government agencies for their cooperation during our site visit, the Asian Development Bank (ADB) Board of Directors, in particular, the members of the Board Compliance Review Committee; and ADB Management and staff.

## ABBREVIATIONS

ADB	–	Asian Development Bank
CGPL	–	Coastal Gujarat Power Limited
MoEF	–	Ministry of Environment and Forests
NIO	–	National Institute of Oceanography
PSOD	–	Private Sector Operations Department (ADB)
PM <sub>10</sub>	–	(respirable) particulate matter less than or equal to 10 microns
PPAH	–	Pollution Prevention and Abatement Handbook (World Bank)
RAP	–	remedial action plan

## WEIGHTS AND MEASURES

°C	–	degree Celsius
km	–	kilometer
m	–	meter
MW	–	megawatt

## NOTE

In this report, "\$" refers to US dollars.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

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## I. INTRODUCTION

1. A request for compliance review of Loan 2419-IND: Mundra Ultra Mega Power Project in India (Project) was filed by three individuals, one of whom was representing a group of fisherfolk affected by the Project on 17 October 2013. This is the first complaint that was received by the Compliance Review Panel (CRP) under the 2012 Accountability Mechanism Policy<sup>1</sup> (AMP) of the Asian Development Bank (ADB). On 27 December 2013, the request was determined by the CRP as eligible and the CRP did a compliance review upon authorization by the ADB Board of Directors (Board). The CRP submitted its Report to the Board of Executive Directors in March 2015.<sup>2</sup>

2. In accordance with the AMP, the CRP sent its draft report in November 2014 to the complainants, the borrower, Coastal Gujarat Power Limited (CGPL), and ADB Management for comments. The CRP finalized its report and submitted it to the Board on 9 March 2015. The Board considered the CRP report on 30 March 2015.

3. In response to the findings of noncompliance with the environment and public communications policies, the Private Sector Operations Department (PSOD), the operations department responsible for the Project, prepared a set of remedial actions that was sent to the CRP on 27 May 2015. This Remedial Action Plan (RAP) provides for measures to bring the Project into compliance with ADB operational policies and procedures. The RAP was approved by the Board on 24 June 2015.

4. This is the first annual monitoring report of the CRP for the remedial actions for this Project: Under the AMP, the CRP will monitor the implementation of the remedial actions annually for up to 3 years from the Board decision on the RAP. The mandate of the CRP is to monitor remedial actions of ADB staff and management to ensure that the project is brought into compliance with ADB policies and procedures. The CRP does not monitor the borrower, the Government or other agencies involved in the implementation of the project.

## II. DESCRIPTION OF THE PROJECT

5. The Project is a coal-fired power plant which uses supercritical technology and has a total production capacity of 4,000 megawatts (MW). It was constructed on a build–own–operate basis near Tunda and Wand villages in Mundra Taluka, Kutch district, Gujarat, India. The power plant has five 800 MW units. The total project cost amounts to about \$4.14 billion of which \$450 million was a loan by CGPL from ADB's ordinary capital resources without government guarantee.<sup>3</sup> Of that amount, \$200 million is a syndicated loan provided together with the Export–Import Bank of Korea (Korea Eximbank) under a risk participation agreement. The private sector loan was approved by the ADB Board on 17 April 2008. A total of \$351.18 million had been disbursed to CGPL under amount committed for ADB Loan 2419. Additional financing for the project has come from the International Finance Corporation (IFC), Korea Eximbank, and local banks.

6. The project is 1.5 kilometers (km) away from the coast of the Gulf of Kutch, which has often been described as an “ecological miracle” because of its shallow waters, intertidal zones,

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<sup>1</sup> Asian Development Bank (ADB). *2012 Accountability Mechanism Policy*. Manila.

<sup>2</sup> ADB. 2015. Final Report on Compliance Review Panel Request No. 2013/1 on the Mundra Ultra Mega Power Project in India (Asian Development Bank Loan 2419), 9 March 2015.

<sup>3</sup> ADB Private Sector (Nonsovereign) Loan No. 2419: Mundra Ultra Mega Power Project with approval number 7276. Details of this project are at [http://adb.org/projects/details?proj\\_id=41946-014&page=overview](http://adb.org/projects/details?proj_id=41946-014&page=overview).

stretch of mangrove forests, and corals.<sup>4</sup> More recently, the coastal zone along the Gulf has developed into an area of rapid industrialization. Between 2007 and 2012, the Ministry of Environment and Forests (MoEF) issued environmental clearances for 19,181 MW in power plant capacity.<sup>5</sup> In addition, numerous clearances have been provided for the expansion of ports in Gujarat. It has been argued that these developments, taken together, could have “huge adverse impacts on the environment and also on the livelihood of fishing communities.”<sup>6</sup> The industrialization has received widespread international attention because of its perceived detrimental impact on the environment in the Gulf of Kutch.<sup>7</sup>

**Figure 1: TATA Mundra Ultra Mega Power Project and Tragadi Bander**



Source: Compliance Review Panel

7. The CGPL plant was constructed near Tunda and Wand villages, on land used for pasture of the villagers’ livestock and about 2 km away from the Adani coal power plant. Commencing operation from 2009 to 2012, the Adani plant has a full operational capacity of 4,620 MW and does not use supercritical technology. With the proximity of the CGPL plant to the Adani plant, attribution of environmental impacts to one of the two plants is sometimes

<sup>4</sup> Asher, Manshi. 2008. *How Mundra Became India’s Rotterdam*. InfoChange, December; and Fishmarc and Kutch Nav Nirman Abhiyan (with support from the Foundation for Ecological Security); 2010. *Kutch Coast: People, Environment & Livelihoods*. Draft report for discussion at a workshop in Kutch on 7–8 January 2010. India.

<sup>5</sup> Ministry of Environment and Forests (MoEF). 2013. *Report of the Committee for Inspection of M/s Adani Port & SEZ Ltd. Mundra, Gujarat, April*. *Kutch Coast: People, Environment & Livelihoods*. pp. 73–74. New Delhi.

<sup>6</sup> Footnote 7, p. 74.

<sup>7</sup> Footnote 7.

difficult. The CGPL plant uses the West port of the Adani port to unload its coal and also uses the intake channel, which is owned and operated by the Adani plant, for the intake of cooling water.

### III. COMPLIANCE REVIEW AND REMEDIAL ACTION PLAN

8. The request for compliance review was sent to the CRP by (i) Bharat Patel, representing at least 12 project affected persons;<sup>8</sup> (ii) Gajendrasinh Bhimaji Jadeja, a farmer; and (iii) Harun Salemamad Kara, a fish trader. The complaint listed the harm allegedly done by the Project to the affected persons' livelihood, health, and environment, and attributed it to ADB's failure to adhere to its environmental and social policies and procedures. The CRP determined the request eligible, and with the Board's authorization and BCRC's clearance of the terms of reference for the compliance review, the CRP proceeded to its fact finding for the compliance review from February to November 2014.

9. In its report to the Board, the CRP detailed its findings on inadequate consultation; inadequate identification of project affected persons; negative impacts on the livelihood of foot fishers as a result of discharging water with elevated temperature through the outflow channel and due to alterations made to the Modhva creek where the outflow channel was constructed; restriction of access to fishing grounds; coal dust and fly ash pollution; and health impacts due to degradation of ambient air quality. Also, the CRP report noted that there was dilution taking place in order to meet the required water quality levels in the outflow channel. The CRP noted the absence of adequate baseline data which made it difficult to establish the extent of harm resulting from the Project. The CRP found noncompliance with the following ADB operational policies and procedures:

- (i) OM Section F1: Environmental Considerations in ADB Operations (issued on 25 September 2006);
- (ii) OM Section F2: Involuntary Resettlement (issued on 25 September 2006);
- (iii) OM Section L3: Public Communications Policy (issued on 1 September 2005); and
- (iv) OM Section C3: Incorporation of Social Dimensions into ADB Operations (25 April 2007)

10. Following the CRP's findings, ADB Management presented a Remedial Action Plan (RAP) which listed measures which would bring the Project into compliance with ADB's operational policies and procedures (see Appendix 1). This RAP was approved by the Board on 24 June 2015.

11. In its compliance review report, the CRP found harm resulting from fly ash and coal dust pollution in Wand village, a community located immediately adjacent to the CGPL plant and also located near the Adani plant. But the CRP also found that ADB staff had paid careful attention to the implementation of mitigation measures to reduce coal dust and fly ash pollution in Wand village. The CRP was thus of the view that ADB had exercised due diligence and acted in accordance with para. 67 of the ADB Environment Policy, which calls for the implementation of mitigation measures if unanticipated environmental impacts become apparent during project

<sup>8</sup> B. Patel submitted to the CRP on 20 January 2014 a list of affected persons whom he said he was representing. The letter contained references to MASS and B. Patel's position as general secretary. The president and the vice-president of MASS subsequently informed the CRP that MASS did not wish B. Patel to represent the association in this complaint. Accordingly, on 23 June 2014, the CRP accepted B. Patel as personal representative for the project-affected people for whom he presented authorization on 20 January 2014.

implementation.<sup>9</sup> As these mitigation measures were already underway and continue to be implemented, these measures are not part of the RAP. They are thus not monitored by the CRP but supervised by ADB staff under its regular supervision procedures.

12. As inadequate baseline data was collected during project preparation, the RAP provides for numerous studies to establish the impacts of the Project. The RAP provides that the CRP review these studies and provide comments. Based on the findings of the studies, agreements are then reached on what measures are to be taken to address the impacts. The very heavy emphasis on studies in the RAP was necessary as the absence of adequate baseline data made it impossible to specify the actions to address the impacts without further studies.

**Figure 2: CRP Monitoring Mission Visits Tragadi Bander and Mouth of Outfall Channel**



Source: Compliance Review Panel

13. The CRP as part of the monitoring, (i) conducted a fact finding mission in November 2015 and a monitoring mission from 2 to 8 July 2016; (ii) reviewed PSOD quarterly reports submitted to the CRP between September 2015 and June 2016; (ii) reviewed technical studies and relevant documents/plans with support from technical experts; (iii) met with ADB project staff, officials of relevant government regulatory agencies, CGPL, the complainants (including their authorized representative), other affected persons, and relevant local NGOs; and (iv) did site visits during the fact finding mission in November 2015 and monitoring mission in July 2016 to the vicinity of the plant (particularly its outfall channel and coal conveyor facility), nearby

<sup>9</sup> See para.103 of Final Report on Compliance Review of Panel Request 2013/1 on the Mundra Ultra Mega Power Project in India (Asian Development Bank Loan 2419), 9 March 2015.



villages, and adjacent communities of migrant fisherfolk (or *bander*<sup>10</sup>). The monitoring was led by Arntraud Hartmann (part-time CRP member) and had as members Lalanath de Silva (part-time CRP member) and CRP Chair Dingding Tang. From the Office of the Compliance Review Panel, Nirmal Ganguly, Advisor and Josefina Miranda, Compliance Review Officer, provided administrative and logistical support to the CRP missions. The fact finding mission in November 2015 was conducted by Arntraud Hartmann (part-time CRP member) and Nirmal Ganguly, Advisor, Office of the Compliance Review panel. The CRP was supported by two local consultants, i.e., a marine environment expert and a fisheries expert. A list of the persons met by the CRP during its missions is in Appendix 2.

#### IV. RESULTS OF THE MONITORING OF THE REMEDIAL ACTION PLAN

14. The following describes the CRP's findings in its first year of monitoring the implementation of the action plan for the Project and the CRP's suggestions to ADB Management to bring the Project into compliance.

##### A. Disclosure of Information and Conduct of Consultations

**Status of Compliance:** At the time of this report, ADB is in partial compliance with this action.

**Management's Action Plan No. 1: Action to address ADB's noncompliance in relation to CRP's findings on disclosure of information and conduct of consultations<sup>1</sup>**

Inclusive and transparent stakeholder consultations will be carried out to establish and address the impacts of the Project in relation to (i) thermal discharge into the outfall channel; (ii) livelihood of foot fisherfolk; (iii) access restrictions;<sup>1</sup> and (iv) ambient air quality, as detailed in this Action Plan. As part of this consultative process, the affected foot fisherfolk will be identified; information on their livelihoods will be collected and impacts will be assessed; and measures to address livelihood impacts will be established in a Livelihood Improvement Plan, as detailed in this Action Plan.

(See Appendix 1 for the full text of the Management's Remedial Action Plan.)

15. **CRP findings regarding compliance with Action No. 1.** With the guidance by ADB staff, CGPL has conducted consultations on the access restrictions report; has consulted with the identified *pagadiyas* (footfishers) on the Livelihood Improvement Plan; and has disclosed a summary of the draft report done by the National Institute of Oceanography (NIO report)<sup>11</sup> and a summary of the Livelihood Improvement Plan. Disclosure and consultation took place at a central meeting in the town of Mandvi in April 2015. The CRP recognizes that these were useful disclosure and consultation measures. However, it is not sufficient that the materials to be disclosed are only made available one time during a meeting in an oral presentation. The CRP finds it essential that all materials presented at the meeting should also be uploaded on the CGPL and ADB websites so that people who were unable to participate at the meeting can have

<sup>10</sup> The term *bander* is used locally to identify a port or haven along the seashore where fisherfolk establish temporary or permanent communities for the purpose of carrying on their occupation.

<sup>11</sup> National Institute of Oceanography. 2016. Model Conformity Study and Monitoring for Condenser Cooling Water Discharge from CGPL in the Coastal Waters of Mundra during premonsoon available at <http://www.tatapower.com/cgpl-mundra/pdf/NIO-report.pdf>.

access to the summaries of the studies and other documents which were presented at the meeting. In addition, the CRP advises that the English version of completed studies should be posted on the CGPL and ADB websites. The CRP is also of the view that the list of identified *pagadiyas* who will receive compensation for income losses under the Livelihood Improvement Plan (see para. 24) should be uploaded on the CGPL website and the methodology used to identify these *pagadiyas* should be explained in the material to be uploaded. This will make it transparent as to who has been selected and the methodology used for such selection.

16. The early public disclosure of the findings of the draft NIO report is of concern as disclosure on the findings of the NIO report took place prior to the receipt of comments from the CRP and prior to the review of the ADB expert. There are significant concerns with some of the findings of the report. (see para. 19). Once follow-up measures to the NIO report have been agreed upon (see para. 20 (iv)), appropriate dissemination processes of these follow-up measures need to be agreed upon and implemented. The set of agreed measures should need to be publicly disclosed including an explanation why these supplemental measures are necessary in order to establish robust findings. In regard to the air quality study, disclosure and consultations on the air quality study will need to be undertaken once the draft of the technical study becomes available (see para. 33).

17. The CRP is of the view that ADB Management should encourage CGPL to conduct consultations on the completed studies with the complainants who have stated to the CRP that they have not always been included in the consultative processes. The complainants have informed the CRP that they have not seen all the summaries of the studies which have been discussed during the consultation meetings at Mandvi in April 2016. ADB staff informed the CRP that on 17 June 2016, copies of (i) presentations (in Gujarati) on livelihood improvement plan and access restrictions, and (ii) access restrictions report (full report translated in Gujarati) were shared with the complainants. The CRP is of the view that the complainants are relevant stakeholders who should be fully included in the various disclosure and consultation processes conducted under the RAP.

18. **CRP conclusions regarding compliance with Action No. 1.** The CRP finds Action 1 in partial compliance. Important disclosure and consultation measures have already been undertaken and the CRP recognizes the efforts made by ADB Management and CGPL to conduct these outreach efforts. To achieve full compliance with Action 1, ADB should (i) support CGPL in disclosing the follow-up measures which will be agreed upon once comments of the ADB marine expert, who was hired to review the NIO report, have been received. Agreement will need to be reached about the appropriate format of the disclosure and on the explanation to be provided why these additional measures are necessary; (ii) translate into local language the summary of the technical study on air quality (see action 5c), disclose this summary and consult with all relevant stakeholders; (iii) post all translated materials and studies (in English) on the CGPL website and, if possible, the ADB project website. This should include the list of *pagadiyas* selected for inclusion under the Livelihood Improvement Plan.

## B. Thermal Discharge from the Outflow Channel and Loss of Livelihood of Fisherfolk

**Status of Compliance:** At the time of this report, ADB is in partial compliance with this action.

**Management's Action Plan No. 2: Action to address ADB's noncompliance in relation to CRP's findings on thermal discharge from the outflow channel and loss of livelihood of fisherfolk.**

- (a) The National Institute of Oceanography ("NIO") has been engaged by CGPL and is carrying out field observations on the actual impacts of thermal discharge from the Project in Modhva Creek and adjoining coastal areas; this will involve validating the thermal modelling previously carried out by HR Wallingford during the environmental due diligence (prior to Project approval). NIO will complete this model conformity study.

Findings of the draft NIO report to be reviewed by ADB Management (engaging external specialist marine consultant). ADB Management will submit to the CRP, as soon as available, for review and comment the draft study prepared by NIO.

- (b) Summary of the NIO report to be translated into the local language and shared with interested stakeholders (including fisherfolk) to obtain and record their views.
- (c) ADB will review the results of the study, including the advice of its specialist marine consultant and, in consultation with CGPL, will determine if any further action is appropriate. ADB shall consult with the CRP on any further action.
- (d) The results of the automatic temperature monitoring device at the outflow channel to be made accessible to the public.
- (e) ADB to advise CGPL appropriately on ongoing qualitative studies (i) to identify the fisherfolk who have practiced foot fishing on a regular basis in the creek and coastal area adjoining the outflow channel; and (ii) to assess any livelihood impacts on such identified foot fisherfolk for the purpose of preparing a Livelihood Improvement Plan in consultation with the identified foot fisherfolk (with disclosure of the plan in the local language). ADB shall provide the TOR for the qualitative studies and the results thereof to the CRP for its review and comment.
- (f) ADB to provide the draft Livelihood Improvement Plan to the CRP for its review and comment prior to finalization and implementation.
- (g) Review of the Livelihood Improvement Plan to be carried out by an independent expert for ADB.

(See Appendix 1 for the full text of the Management's Remedial Action Plan.)

19. **CRP findings regarding compliance with Action No. 2. NIO report - Action items (a)-(c).** The NIO has completed its report.<sup>12</sup> ADB has submitted the report to the CRP for review and the CRP has provided its comments. The objectives of the study were (i) to establish thermal dispersion from the discharge mouth by model study; (ii) to establish temperature variations in and around the outfall channel due to the cooling water discharge by direct

<sup>12</sup> See footnote 11.

measurement; and (iii) to confirm model behavior through field monitoring. The CRP finds that the study conducted does not meet these objectives for the following main reasons:

- (i) Ambient temperatures have been defined crudely by fixing 26°C for ambient temperature in December and 28°C for ambient temperature in April. According to NIO documentation, these are the baseline average temperature values for December and April, respectively. They may not reflect the actual temperature at the site. Ambient levels should have been set by simultaneous measurement of temperature at a suitable location far-off the outer channel. The inappropriateness of the fixed ambient levels is also evidenced by the fact that some measurements show temperature levels below the fixed ambient levels. A precise fixing of the ambient levels is essential, if temperature variations of 1°C or 2°C are being examined. If the ambient levels are not determined appropriately, the observations on temperature variations above ambient levels can be meaningless.
- (ii) The mathematical modelling reported in the NIO report does not appropriately describe the dispersion of the thermal plume. The model results presented in the NIO report do not show any temperature transport across the channel until the water with the elevated temperature reaches the channel mouth. Thus, the model fails to measure impacts on the nearshore areas in front of Tragadi *bander*, Modhva Creek and the Modhva shoreline to the west of the outfall channel. At the same time, there are insufficient measurement points available in these areas to establish the temperature impacts. The areas not adequately covered by the model and by temperature measurement are important, as *pagadiyas* are fishing in some of these areas which are likely to be impacted by elevated temperature.
- (iii) The report concludes that near ambient temperatures are attained at a distance of around 600 m from the mouth of the outfall channel during April 2015. This result is misleading as temperature variations over 1°C above the stated ambient levels have been observed even 2 km from the channel mouth in the westward direction along the Modhva shoreline.

20. The CRP also has observations on the assessment of the marine impacts provided under the study. The NIO report largely concludes that there are no impacts resulting from the temperature elevation. The CRP finds that some of these findings are based on incomplete and often imprecise presentation of data and methodology used. The key observations are as follows:

- (i) The report refers to pre-project conditions without specifying sites where pre-project data were collected. Given the site specificity of collected data, it is essential that pre-project data presented is compared to site specific data.
- (ii) Phytoplankton, zooplankton including fish eggs and larvae are compared with earlier studies but mesh sizes, time of hauling, and exact locations of data observations are not provided.
- (iii) The report concludes that fish are not affected. This observation is based on a one-time sample of fishing, only. No reliable pre-project data exist which could be compared to the experimental fishing results. The CRP thus fails to understand the report's conclusion that fish are not affected.

21. ADB has engaged a marine expert who is still reviewing the NIO report. ADB will submit the comments and observations of this expert to the CRP for further discussion. Based on the observations of the CRP and the expert engaged by ADB, ADB will discuss with CGPL further actions. The CRP will be consulted on these further actions and agree on a set of follow-up measures to help establish robust findings on the thermal impacts of the outfall channel and the impacts of the channel on marine fauna and fishcatch.

22. CGPL has already prepared a first summary of the draft NIO report in Gujarati and has presented the key findings of the report during a general consultation meeting in April 2016. Given the substantive observations presented by the CRP and further comments possibly to be provided by the ADB engaged marine expert, the presentation of the findings of the NIO which state that there are no impacts on marine fauna and fish catch, appears premature. The CRP is of the view, that as part of the follow up measures to the NIO report to be agreed upon, agreement should also be reached on how these follow-up measures should be disclosed to the public and on the explanation to be provided why these additional measures are necessary to arrive at robust findings of impacts.

23. **Automatic Temperature Monitoring Device – Action (d).** CGPL has installed an automatic temperature monitoring device at the outflow channel and is displaying measurement results at the public information board at the main entrance.

24. **Livelihood Improvement Plan- Action Items (e)-(f).** The CRP has received the draft Livelihood Improvement Plan for Identified *Pagadiya* Fishermen and has provided its comments on the draft plan. The CRP finds that the Livelihood Improvement Plan is well prepared and that ADB staff has provided substantial support and guidance in the preparation of the Plan. The CRP wishes to express its satisfaction on the process and believes that the program laid out will adequately compensate the identified *Pagadiya* fishermen for the impacts occurred for the period 2012-2016. However, the CRP has the following concerns:

- (i) The Livelihood Improvement Plan identifies 24 *pagadiyas* who regularly fish in the vicinity of the outfall weir. These 24 *pagadiyas* were identified based on field surveys in an area of around 1.5 km around the outfall channel, assuming that the impact would be limited to an area less than 1.5 km. Some fishermen were also identified based on consultations with the communities. The assumption that the impacts are limited to an area less than 1.5 km might not be correct and a number larger than 24 *pagadiyas* could well be impacted. Measurements under the NIO report have shown temperatures above 1°C in areas as far as 2 km towards the Modhva shoreline and lateral impacts within the channel are not measured (see para. 20 above). The impacts of the outflow channel might thus affect an area larger than the 1.5 km assumed under the Livelihood Improvement Plan and more *pagadiyas* might be affected. The CRP is of the view, that the Livelihood Improvement Plan as presently laid out should be implemented for the 24 *pagadiyas* already identified. But concurrently, a time series of sufficiently reliable temperature measurements will need to be collected in order to assess the impacts along the Modhva shoreline. In addition, field surveys will need to be conducted to identify *pagadiyas* who fish in this area and who might be impacted. Should these surveys and measurements show that there are additional *pagadiyas* who are impacted, then the measures laid out under the Livelihood Improvement Plan would also need to be applied to these additional *pagadiyas*.

- (ii) Under the Livelihood Improvement Plan, negative impacts will be compensated for the period 2012 until 2016, only. But impacts on *pagadiyas* resulting from the outfall channel are ongoing and are not restricted to the period 2012-2016. The CRP is of the view that, in addition to the compensation to be paid for the period 2012-2016, a program of developmental measures needs to be designed and included into the Livelihood Improvement Plan, which would support *pagadiyas* so that they can improve their income earning opportunities to make up for short falls experienced from fishing. The Livelihood Improvement Plan needs to be complemented by such a developmental program. The program can build on ongoing programs already supported by CGPL for residents of the Modhva and Tragadi villages, where the *pagadiyas* reside. But care must be taken to ensure that the identified *pagadiyas* will be included and that they benefit from these programs. Program components for the *pagadiyas* need to be defined, targets laid out, and progress monitored.
- (iii) The Livelihood Improvement Plan has been presented at a consultation meeting held in Mandvi in April 2015. This consultation meeting was attended by 23 of the identified *pagadiyas*, as well as village representatives from Tragadi and Modhva villages, and CGPL and VDAC representatives.. The CRP welcomes these consultation but is of the view that, in addition, the Livelihood Improvement Plan and the names of the 24 *pagadiyas* should be posted on the CGPL website (and possible the ADB project website).The methodologies on how these *pagadiyas* were selected should be explained.

25. **CRP conclusions regarding compliance with Action No. 2.** The CRP finds that Action No. 2 is partially complied with. The following measures and efforts need to be completed to reach full compliance:

- (i) the assessment of the NIO report needs to be completed once the ADB engaged marine expert has submitted the comments on the study and the CRP has submitted its comments on the study;
- (ii) agreement needs to be reached on the additional follow-up measures to be taken;
- (iii) follow-up measures should be publicly disclosed in an appropriate format with an explanation why these measures are necessary to arrive at robust findings of impacts.;
- (iv) the Livelihood Improvement Plan needs to be implemented and implementation progress needs to be monitored;
- (v) measures need to be taken to assess the additional areas which are impacted by elevated temperature resulting from water discharge from the outflow channel;
- (vi) the number of *pagadiyas* who fish in these additional areas need to be determined and, if negatively impacted by elevated temperature, the additional *pagadiyas* need to be included under the Livelihood Improvement Plan;

- (vii) the Livelihood Improvement Plan and the identified *pagadiyas*, together with an explanation of the methodology on how they were selected, should be posted on the CGPL and ADB websites; and
- (viii) the Livelihood Improvement Plan needs to be complemented by developmental programs for the identified *pagadiyas* so that they can improve their income earning opportunities over time. The program components need to be identified, targets established, and progress monitored.

### C. Sludge Treatment and Disposal

**Status of Compliance:** At the time of this report, ADB is not compliant with this action.

**Management's Action Plan No. 3: Action to address ADB's noncompliance in relation to CRP's findings on sludge treatment and disposal<sup>1</sup>**

- (a) Since this issue was discovered (in December 2013), ADB has engaged with CGPL on environmentally sound ways in which to segregate the iron bearing sludge from the demineralization plant. The options for segregation of sludge and its disposal are currently under technical evaluation.

On completion of the technical evaluation of options, ADB will consult with the CRP on the preferred option prior to finalization of preferred option.

- (b) Implement sludge treatment and disposal measures and discontinue discharging iron-bearing sludge into the sea water via outfall channel.

(See Appendix 1 for the full text of the Management's Remedial Action Plan.

26. **CRP findings regarding compliance with Action No. 3.** The CRP's report on the compliance review of the Project found that the CGPL undertakes significant dilution in order to remain within the required water quality standards with respect to iron.<sup>13</sup> The chemical quality of water discharged from the desalinization plant does not comply with the applicable standard on iron content as established under the World Bank Pollution Prevention and Abatement Handbook (PPAH), which the ADB environment safeguard policy adopts. Because the iron-bearing sludge from the desalinization plant is heavily diluted by the warm water from the CGPL plant's condenser cooling system, the water that is discharged into the sea comply with the PPAH standard for iron content at the point of discharge. As this dilution is significant, it is highly unlikely that the permissible water quality standards would have been achieved without dilution. As ADB environment policy does not allow for dilution to achieve permissible standards, this dilution is noncompliant with ADB's environment policy. The report of the CRP noted that ADB staff had not advised CGPL that dilution was not permissible.

27. At the time of the fact finding mission for the compliance review, ADB had agreed with CGPL that the iron-bearing sludge would not be disposed into the discharge channel, but that CGPL would disconnect the sludge line from the reverse osmosis reject line, and to connect it to the fly ash pond, to eradicate any disposal of sludge into the sea.

<sup>13</sup> See footnote 2, paras. 67 and 68, Final Report on Compliance Review Panel Request No. 2103/1 on the Mundra Ultra Mega Power Project in India, 9 March 2015.

28. This option has since been found impossible by CGPL for several reasons. CGPL has since undertaken an options analysis to consider the most viable option to dispose the sludge. At present, no consensus was reached on any of the examined options.

29. **CRP conclusions regarding compliance with Action No. 3.** The CRP finds Action No. 3 noncompliant. In order to bring the Project into compliance, the dilution needs to be discontinued or an option has to be agreed upon on how the iron-bearing sludge can be disposed of in a way different than through the outflow channel.

#### D. Access Restrictions

**Status of Compliance:** At the time of this report, ADB is in full compliance with this action.

**Management's Action Plan No. 4: Action to address ADB's noncompliance in relation to CRP's findings on access restrictions<sup>1</sup>**

- a) Subsequent to the CRP findings, ADB investigations indicate that actions taken by CGPL (including identification of and consultations with affected persons and the measures taken to address the impacts of such access restrictions) adequately address the impacts of access restrictions to Tragadi *bander*. ADB will submit these findings to CRP for their review and comments.
- b) The ADB's findings in relation to access restriction issue will be translated into local language and consultations with the relevant stakeholders held.
- c) Based on the CRP's review of ADB's findings, if any further action is required, such action will be determined by ADB. ADB will ensure the implementation of such action.
- d) The surface quality of the access road to Tragadi *bander* for undisrupted access during the monsoon to be maintained.

(See Appendix 1 for the full text of the Management's Remedial Action Plan.)

30. **CRP findings regarding compliance with Action No. 4.** ADB staff prepared a draft report on access restrictions on which the CRP provided comments in January 2016. A revised report was subsequently submitted to CRP which the CRP found had adequately addressed its comments. The CRP is in agreement with the assessment that incremental costs resulting from the longer access roads are compensated by the services (water, health care and educational services), which are provided by CGPL to the people living at Tragadi *bander*. During its monitoring mission, the CRP also assessed the surface quality of the road which it considered adequate. As the monsoon rains had not yet started, the CRP could not assess whether the surface quality was adequate during the monsoon season.



**Figure 3: Access Road from Tragadi Village to Tragadi Bander**



Source: Compliance Review Panel

31. **CRP conclusion with compliance with Action No. 4.** The CRP considers Action No. 4 in full compliance provided that the present level of services (drinking water, health and education services) continue to be provided to the fisherfolk at Tragadi *bander* at adequate levels and quality and that the road surface continues to be adequately maintained.

#### E. Ambient Air Quality

**Status of Compliance:** At the time of this report, ADB is in partial compliance with this action.

**Management's Action Plan No. 5: Action to address ADB's noncompliance in relation to CRP's findings on ambient air quality**

- a) Air quality monitoring (involving 10 monitoring stations at all villages within the Project's airshed) was established in April 2014 and will continue to be carried out for a two-year period.
- b) Undertake a study in the villages surrounding the Project to ascertain the extent of health impacts associated with air pollution (PM<sub>10</sub> and PM<sub>2.5</sub>).
- c) With respect to particulates, a technical study to be undertaken (to be carried out by an independent consultant engaged in consultation with ADB) to ascertain the contribution of the Project to ambient PM<sub>10</sub> levels within the Project's airshed.

(See Appendix 1 for the full text of the Management's Remedial Action Plan.)

32. **CRP findings regarding compliance with Action No. 5.** CGPL has conducted air quality monitoring on its 10 stations and has informed the CRP that it intends to continue to monitor air quality. ADB Management has provided the air quality monitoring data to the CRP. The data reviewed initially by the CRP shows that PM<sub>10</sub> levels are very significantly above national standards as well as the standards specified in the World Bank PPAH, which are applicable under ADB safeguard policies. PM<sub>10</sub> levels are also higher than at the time of the fact finding mission for the compliance reviewer.<sup>14</sup> CGPL argues that the very high PM<sub>10</sub> levels are

<sup>14</sup> See ADB 2015, Final Report on Compliance Review Panel Request No. 2013/1 on the Mundra Ultra Mega Power Project in India (Asian Development Bank Loan 2419), para. 104.

due to high dust at the site. Moreover, given the proximity of the Adani Plant to the CGPL plant, the high PM<sub>10</sub> level can only be partially attributed to the CGPL plant.

**Figure 4:** Location of TATA Mundra Power Project and Adani Power Project



Source: Compliance Review Panel

33. A consultant has been engaged by ADB to conduct the technical study to ascertain the contribution of the Project to ambient PM<sub>10</sub> levels within the project airshed. This study is ongoing and the draft study has, as yet, not been provided to the CRP.

34. CGPL and ADB Management have informed the CRP that the health study specified in Action 5 item (b) is presently under preparation. The CRP has not, yet, received a draft report. According to the June 2016 quarterly monitoring report, submission of the study had been planned by 15 July 2016.

35. **CRP conclusion regarding compliance with Action No. 5.** The CRP considers these actions partially compliant. Ambient air quality monitoring (item 1) continues to be carried out but points to disconcertingly high levels of PM<sub>10</sub>. Studies specified under Action No. 5 are ongoing but are not yet submitted to the CRP for review. The CRP has been informed that it will receive the draft reports in the near future. The CRP is of the view that the following actions be taken by ADB Management to bring the Project to full compliance:

- (i) agree with CGPL on continued ambient air quality monitoring and assessment of data;
- (ii) submit draft health impact study for review to CRP ;
- (iii) submit draft technical study prepared by ADB consultant on air quality and emission data for review by CRP;
- (iv) conduct correlation analysis on ambient air quality and stack emissions and determine measures needed to improve air quality in this degraded airshed;
- (v) submit correlation exercise to CRP for review and comment; and
- (vi) translate summary of technical study into local language and disseminate and discuss with local communities and other stakeholders including complainants.

## V. CONCLUSION

36. The CRP finds that during this first year of implementation of the RAP, very significant progress has been made in the implementation of Board approved remedial action. The CRP notes that ADB was very actively engaged in supporting CGPL in the implementation of these actions and in conducting some of the studies. The CRP is particularly pleased about the progress made in the preparation of the Livelihood Improvement Plan for the 24 identified

*Pagadiyas* and looks forward to the continuing efforts to assess whether additional *Pagadiyas* are impacted. The CRP also notes the thorough efforts made by ADB staff in conducting the access survey.

37. The CRP concludes that ADB is in partial compliance with the Board-approved RAP Nos. 1, 2, and 5. The CRP also concludes that ADB is not compliant with RAP No. 3 and in full compliance with RAP No. 4. A summary of the Management Action Plan together with the CRP's main conclusions and feedback to Management on actions to bring the Project into full compliance is listed below.

<b>Management's Action Plan Topic</b>	<b>Feedback to Management on Actions to Bring the Project into Full Compliance</b>
1) Disclosure of information and conduct of consultations	<p><b>Status of compliance: Partial Compliance</b></p> <p>The CRP suggests that the following actions be taken:</p> <ul style="list-style-type: none"> <li>(i) support CGPL in disclosing the follow-up measures to the NIO report, which will be agreed upon once comments of the ADB marine expert have been received (see action 2). Agreement will need to be reached about the appropriate format of disclosure of these follow-up measures and on the explanation to be provided why these additional measures are necessary to arrive at robust findings of impacts;</li> <li>(ii) translate into local language the summary of the technical study on air quality (see action 5c), disclose this summary and consult with all relevant stakeholders;</li> <li>(iii) post all translated materials and studies (in English) on the CGPL website and, if possible, the ADB project website. This should include the list of <i>pagadiyas</i> selected for inclusion under the Livelihood Improvement Plan.</li> </ul>
2) Thermal Discharge from the Outflow Channel and Loss of Livelihood of Fisherfolk	<p><b>Status of compliance: Partial Compliance</b></p> <p>The CRP suggests that the following actions be taken:</p> <ul style="list-style-type: none"> <li>(i) the assessment on the NIO study needs to be completed once the specialist engaged by ADB has submitted the comments on the study and the CRP has submitted its comments on the study;</li> <li>(ii) agreement needs to be reached on the additional follow-up measures to be taken;</li> <li>(iii) follow-up measures should be publicly disclosed in an appropriate format with an explanation why these measures are necessary to arrive at robust findings of impacts.</li> </ul>

Management's Action Plan Topic	Feedback to Management on Actions to Bring the Project into Full Compliance
	<ul style="list-style-type: none"> <li>(iv) the Livelihood Improvement Plan needs to be implemented and implementation progress needs to be monitored;</li> <li>(v) measures need to be taken to assess the additional areas which are impacted by elevated temperature resulting from water discharge from the outflow channel;</li> <li>(vi) the number of <i>pagadiyas</i> who fish in these additional areas needs to be determined and these additional <i>pagadiyas</i> need to be included under the Livelihood Improvement Plan;</li> <li>(vii) the Livelihood Improvement Plan and the identified <i>pagadiyas</i>, together with an explanation of the methodology on how they were selected, should be posted on the CGPL and ADB websites;</li> <li>(viii) the Livelihood Improvement Plan needs to be complemented by developmental programs for the identified <i>pagadiyas</i> so that they can improve their income earning opportunities over time. The program components need to be identified, targets established, and progress monitored.</li> </ul>
3) Sludge Treatment and Disposal	<p><b>Status of compliance: Not Compliant</b></p> <p>The CRP suggests that the following actions be taken by Management to support CGPL to:</p> <ul style="list-style-type: none"> <li>(i) agree on an option on how the dilution will be discontinued; or</li> <li>(ii) dispose the iron-bearing sludge differently than through the outflow channel.</li> </ul>
4) Access restrictions	<p><b>Status of compliance: Full compliance</b></p> <p>The CRP considers this action in full compliance assuming that services (drinking water, health and education services) are continued to be provided at adequate levels to the Tragadi <i>bander</i> people to compensate for increased costs resulting from longer access road. Full compliance also assumes that the access road will continue to be adequately maintained.</p>
5) Ambient air quality	<p><b>Status of compliance: Partial Compliance</b></p> <p>The CRP proposes that the following actions be taken by ADB Management:</p> <ul style="list-style-type: none"> <li>(i) agree with CGPL on continued ambient air quality monitoring and assessment of data;</li> </ul>

<b>Management's Action Plan Topic</b>	<b>Feedback to Management on Actions to Bring the Project into Full Compliance</b>
	<ul style="list-style-type: none"> <li>(ii) submit draft health impact study for review by CRP;</li> <li>(iii) submit draft technical study prepared by ADB consultant on air quality and emission data for review by CRP;</li> <li>(iv) conduct correlation analysis on ambient air quality and stack emissions and determine measures needed to improve air quality in this degraded airshed;</li> <li>(v) submit correlation exercise to CRP for review and comment; and</li> <li>(vi) translate summary of technical study into local language and disseminate and discuss with local communities and other stakeholders including complainants.</li> </ul>

**/S/ Dingding Tang**

Chair, Compliance Review Panel

**/S/Lalanath de Silva**

Part-time Member Compliance Review Panel

**/S/Arntraud Hartmann**

Part-time Member, Compliance Review Panel

Manila, Philippines

13 September 2016

## MANAGEMENT'S ACTION PLAN

### INDIA: MUNDRA ULTRA MEGA POWER PROJECT (LOAN 2419-IND)

#### Updated remedial action plan

On 3 June 2015, Management submitted its proposed remedial action plan to the Board pursuant to paragraph 191 of the Accountability Mechanism Policy (2012) (“**AM Policy**”).

This document outlines ADB Management's proposed updated remedial action plan (“**Action Plan**”) which takes into account the comments of the Compliance Review Panel (“**CRP**”) received on 2 June 2015. This Action Plan supersedes the remedial action plan previously submitted by Management to the Board.

In accordance with paragraph 190 of the AM Policy, the borrower has agreed on 19 June 2015 to the remedial actions.

#### Introduction

On 9 March 2015, the CRP submitted its final report (“**CRP Report**”) in relation to the above project (“**Project**”) in which it found Asian Development Bank (“**ADB**”) non-compliant with certain of its operational policies and procedures in four respects: (i) failure to adequately disclose information and conduct consultations; (ii) loss of livelihood of fisherfolk (due to thermal discharge from the outflow channel and impacts on Modhva Creek); (iii) access restrictions to fishing grounds; and (iv) ambient air quality.

This document outlines ADB Management's proposed remedial action plan (“**Action Plan**”) which is submitted to ADB's Board for its consideration pursuant to paragraph 191 of the Accountability Mechanism Policy (2012) (“**AM Policy**”).

Management acknowledges that, in a number of instances, the Action Plan requires further studies to be carried out, which will determine future actions that may be required to bring the Project back into compliance. Management will share these studies with the CRP and will seek the CRP's input prior to finalization of the studies and determination of the future actions.

The Action Plan is set out in Appendix 1 and includes the actions (including timelines) to bring the Project into compliance with ADB's relevant policies. Management accepts that responsibility to take all the required measures to bring the Project back into compliance with ADB's policies lies squarely with ADB's Management. The action to implement such measures ‘on the ground’ will be undertaken by Coastal Gujarat Power Limited (“**CGPL**”), ADB's borrower for the loan, unless otherwise indicated in the Action Plan. This action will include the engagement of a qualified NGO with relevant experience to assist ADB to undertake consultations with the local community (as specifically outlined in Appendix 1).

ADB acknowledges the ongoing cooperation of CGPL in addressing the various issues which have arisen from ADB's noncompliance with its policies, which demonstrates CGPL's strong

corporate responsibility ethos, which was also acknowledged by the CRP in the CRP Report. Management is positive that, with the support of CGPL, ADB can implement the Action Plan effectively and within the required timeline. A summary of cost estimates in relation to the actions is set out in Appendix 2.

Appendix 3 sets out the corrective actions that have been taken and are on-going in relation to coal dust. This appendix is included so that this document provides a complete picture of all on-going measures. Appendix 3 does not constitute a formal part of the Action Plan since the CRP found ADB in compliance with its policies in relation to coal dust.

### **Implementation Timelines**

The proposed Action Plan is to be implemented over a period of three (3) years up to September 2018 (whilst noting that certain actions have already commenced and are ongoing). During this period, ADB will provide the CRP with reports of further studies to be undertaken as stated in the Action Plan; will monitor the implementation of the actions on an on-going basis; and will submit quarterly progress reports during the first two years and then subsequently semi-annual progress reports to the CRP at the end of June and December of each year.

ADB's reports to the CRP will detail, for each item below, the latest status of the actions taken, in progress or to be taken, referencing the scheduled dates (including any updates) specified in the Action Plan. The objective of this quarterly / semi-annual reporting by ADB will be to assist the CRP in carrying out its monitoring and reporting to the ADB Board on the status of the implementation of the Action Plan pursuant to paragraphs 192 – 194 of the AM Policy.

ADB's progress reports will be publicly disclosed on ADB's website. The CRP's monitoring reports will be publicly disclosed on ADB's website pursuant to paragraph 3 (viii) of Appendix 9 of the AM Policy.

## APPENDIX 1

### PROPOSED ACTION PLAN

**Note: All scheduled dates (unless otherwise stated) are for the completion of the relevant action by the end of the specified month.**

<b>1. Action to address ADB's noncompliance in relation to CRP's findings on disclosure of information and conduct of consultations<sup>1</sup></b>		<b>Scheduled date</b>
(a)	Inclusive and transparent stakeholder consultations will be carried out to establish and address the impacts of the Project in relation to (i) thermal discharge into the outfall channel; (ii) livelihood of foot fisherfolk; (iii) access restrictions <sup>2</sup> ; and (iv) ambient air quality, as detailed in this Action Plan. As part of this consultative process, the affected foot fisherfolk will be identified; information on their livelihoods will be collected and impacts will be assessed; and measures to address livelihood impacts will be established in a Livelihood Improvement Plan, as detailed in this Action Plan.	See relevant tables below.

<sup>1</sup> This corresponds with Findings 'A 1 and 2' of the CRP's Report (pages 10 – 20).

<sup>2</sup> Fisherfolk in the Modhva and Tragadi villages were recognized in 2009 as affected by access restrictions to Tragadi bander. The CRP notes (in paragraph 127 of its report) that a participatory, inclusive consultation process started and livelihood support measures were introduced for these particular villages, and that which ADB staff supported CGPL's significant engagement in the consultations conducted in these villages.



<b>2. Action to address ADB's noncompliance in relation to CRP's findings on thermal discharge from the outflow channel and loss of livelihood of fisherfolk<sup>3</sup></b>		<b>Scheduled Date</b>
(a)	<p>The National Institute of Oceanography (“<b>NIO</b>”) has been engaged by CGPL<sup>4</sup> and is carrying out field observations on the actual impacts of thermal discharge from the Project in Modhva Creek and adjoining coastal areas; this will involve validating the thermal modelling previously carried out by HR Wallingford during the environmental due diligence (prior to Project approval). NIO will complete this model conformity study.<sup>5</sup></p> <p>Findings of the draft NIO report to be reviewed by ADB (engaging external specialist marine consultant). ADB will submit to the CRP, as soon as available, for review and comment the draft study prepared by NIO.</p>	October 2015.
(b)	Summary of the NIO report to be translated into the local language and shared with interested stakeholders (including fisherfolk) to obtain and record their views.	February 2016.
(c)	ADB will review the results of the study, including the advice of its specialist marine consultant and, in consultation with CGPL, will determine if any further action is appropriate. ADB shall consult with the CRP on any further action.	March 2016.
(d)	The results of the automatic temperature monitoring device at the outflow channel to be made accessible to the public.	Ongoing.
(e)	ADB to advise CGPL appropriately on ongoing qualitative studies (i) to identify the fisherfolk who have practiced foot fishing on a regular basis in the creek and coastal area adjoining the outflow channel; and	October 2015.

<sup>3</sup> This corresponds with Findings ‘B 1 and B5’ of the CRP Report (pages 21 – 26 and 31 – 33).

<sup>4</sup> The NIO study is a requirement of the MOEF clearance dated April 2008.

<sup>5</sup> NIO was engaged in 2013, as an expert institute to undertake this study. The first set of field investigations under this study were completed in December 2013 and a report was submitted in September 2014. Another field investigation has been completed in April 2015 and a draft report is under preparation.

2. Action to address ADB's noncompliance in relation to CRP's findings on thermal discharge from the outflow channel and loss of livelihood of fisherfolk <sup>3</sup>	Scheduled Date
<p>(ii) to assess any livelihood impacts on such identified foot fisherfolk for the purpose of preparing a Livelihood Improvement Plan in consultation with the identified foot fisherfolk (with disclosure of the plan in the local language). ADB shall provide the TOR for the qualitative studies and the results thereof to the CRP for its review and comment.</p> <p>ADB to provide the draft Livelihood Improvement Plan<sup>6</sup> to the CRP for its review and comment prior to finalization and implementation.</p>	
(f) Implementation of Livelihood Improvement Plan for the identified foot fisherfolk.	October 2015 - July 2018.
(g) Review of the Livelihood Improvement Plan to be carried out by an independent expert for ADB.	June 2018 (for production of independent expert report).

<sup>6</sup> The Livelihood Improvement Plan will consider short term and long term options to address past and future impacts. The final Livelihood Improvement Plan will be disclosed on ADB's website.

<b>3. Action to address ADB's noncompliance in relation to CRP's findings on sludge treatment and disposal<sup>7</sup></b>		<b>Scheduled Date</b>
(a)	<p>Since this issue was discovered (in December 2013), ADB has engaged with CGPL on environmentally sound ways in which to segregate the iron bearing sludge from the demineralization plant. The options for segregation of sludge and its disposal are currently under technical evaluation.</p> <p>On completion of the technical evaluation of options, ADB will consult with the CRP on the preferred option prior to finalization of preferred option.</p>	<p>October 2015.</p> <p>December 2015</p>
(b)	Implement sludge treatment and disposal measures and discontinue discharging iron-bearing sludge into the sea water via outfall channel.	June 2016

<b>4. Action to address ADB's noncompliance in relation to CRP's findings on access restrictions<sup>8</sup></b>		<b>Scheduled Date</b>
(a)	Subsequent to the CRP findings, ADB investigations indicate that actions taken by CGPL (including identification of and consultations with affected persons and the measures taken to address the impacts of such access restrictions) adequately address the impacts of access restrictions to Tragadi bander. ADB will submit these findings to CRP for their review and comments.	Report August 2015.
(b)	The ADB's findings in relation to access restriction issue will be translated into local language and consultations with the relevant stakeholders held.	October 2015
(c)	Based on the CRP's review of ADB's findings, if any further action is required, such action will be determined by ADB. ADB will ensure the implementation of such action.	December 2015.
(d)	The surface quality of the access road to Tragadi bander for uninterrupted access during the monsoon to be maintained.	Regular maintenance for the life of the Project.

<sup>7</sup> This corresponds with Finding 'B 2' of the CRP Report (pages 26 – 29).

<sup>8</sup> This corresponds with Finding 'C' of the CRP Report (pages 34 – 36).

<b>5. Action to address ADB's noncompliance in relation to CRP's findings on ambient air quality<sup>9</sup></b>		<b>Scheduled Date</b>
(a)	Air quality monitoring (involving 10 monitoring stations at all villages within the Project's airshed) was established in April 2014 and will continue to be carried out for a two year period.	March 2016.
(b)	Undertake a study in the villages surrounding the Project to ascertain the extent of health impacts associated with air pollution (PM <sub>10</sub> and PM <sub>2.5</sub> ).	December 2015 – July 2018.
(c)	With respect to particulates, a technical study to be undertaken (to be carried out by an independent consultant engaged in consultation with ADB) to ascertain the contribution of the Project to ambient PM <sub>10</sub> levels within the Project's airshed. <sup>10</sup>	April 2016 (draft study).
(d)	Findings of the technical study to be made accessible to interested stakeholders, and technical study to be finalized taking into account their views. A summary of the technical study will be translated into local language and shared with local communities and other stakeholders.  ADB will provide the CRP with the terms of references for the study and draft study report for its review and comments.	June 2016.
(e)	Using the results of the ambient air quality monitoring and the technical study, ADB will undertake a correlation analysis of ambient air quality and stack emissions which will be used to determine, in consultation with CGPL, and relevant stakeholders, any further action in relation to ambient air quality monitoring and any control measures.  ADB will submit the correlation analysis to CRP for its review and comment. Any further action in relation to ambient air quality monitoring and any control measures may include additional monitoring, plantation of trees and paving of internal roads within the villages if considered appropriate.	December 2016.

<sup>9</sup> This corresponds with Finding 'E' of the CRP Report (pages 41 – 46).

<sup>10</sup> This study will ascertain at all monitoring stations the proportion of PM<sub>10</sub> contributed by the Project. For this purpose, the study will involve undertaking physical and chemical analysis of particulates and their correlation with the characteristics of fly ash emissions and coal dust from the Project. This study therefore should demonstrate the Project's contribution towards particulate air pollution. This study therefore has significantly higher scientific rigor than a 'dust analysis' which could only indicate what proportion of the total dust comprises the various components of dust (fly ash, unburnt coal, airborne salt and silica) without being able to indicate the source of such dust.

## APPENDIX 2

### SUMMARY OF COST ESTIMATES FOR ACTION PLAN

Action	Estimated Cost (in US Dollars equivalent)
Costs in carrying out required studies to identify affected foot fisherfolk and continued consultation with fisherfolk by NGO.	\$100,000
Engagement by ADB of specialist marine consultant to assess the results of the NIO study.	\$40,000
Implementation of Livelihood Improvement Plan for foot fisherfolk.	\$300,000 (to be finalized in the Livelihood Improvement Plan)
Engagement by ADB of independent expert to assess the implementation of the Livelihood Improvement Plan.	\$25,000
Design and implementation of sludge treatment and disposal measures.	\$150,000
Contingency amount in relation to any access issues, as specified in Appendix 1, Section 4, item (c) on page 6.	\$50,000
Annual maintenance of access road.	No additional cost as CGPL will carry out in any event
Third party monitoring of ambient air quality.	Ongoing, so no additional cost
Air quality study to ascertain the Project's contribution to particulate pollution in the airshed.	\$200,000
Engagement by ADB of technical support as required.	\$300,000

### APPENDIX 3 – CORRECTIVE ACTION PLAN FOR COAL DUST ISSUES

**Note: Appendix 3 does not constitute a formal part of the Action Plan since the CRP found ADB in compliance with its policies in relation to coal dust.**

Corrective Action carried out to date includes:		
(i)	A tube coal conveyor belt covering the elevated 1.3 km stretch along the Vandh village has been designed (estimated cost of \$18,500,000).	
(ii)	In the future, a 20-50m wide “green belt” comprising rows of fast growing trees to break the wind and intercept coal dust will develop (planted in 2012).	
(iii)	A 9 m tall wind barrier has been constructed along the Vandh village-ward plant boundary, adjoining the coal stockyard to arrest the movement of coal dust.	
(iv)	The height of coal piles over one-third of the Vandh village-ward length has been restricted to below 6 m.	
<b>Further Corrective Action<sup>1</sup></b>		<b>Scheduled Date</b>
(a)	Construction of the covered tube conveyor belt.	October 2016.
(b)	A water sprinkler system for the suppression of coal dust will be designed to throw a fine mist of water up to a height of 20 m along the width of the coal piles on the Vandh village-ward side to capture the coal dust that escapes over the 9 m tall wind barrier. Completed technical design of water sprinkler system to be submitted to ADB for review.	September 2015.
(c)	Implementation of water sprinkling system.	October 2016.
(d)	Until the above system has been implemented, during adverse wind condition periods (typically November – February), use (already installed) fire hydrants.=	October 2015.
(e)	The area underneath the present coal conveyor to be paved for more efficient removal of coal dust that falls through the conveyors to prevent its getting air borne during gusts and windy conditions.	March 2016.

<sup>1</sup> This corresponds with Finding ‘C’ of the CRP Report (pages 36 - 40).

## LIST OF PERSONS MET DURING THE MONITORING MISSION

The Compliance Review Panel (CRP) met with the following persons within and outside the Asian Development Bank (ADB) in carrying out the monitoring of Management's remedial action for the Mundra Ultra Mega Power Project. This list is not exhaustive as it does not include persons who requested their identities to be kept confidential.

### ADB Staff

1. Michael Barrow, Director General, Private Sector and Operations Department
2. Craig Lee Roberts, Director, Portfolio Management Division (PSPM), PSOD
3. Vijay Joshi, Principal Environment Specialist, Private Sector Transaction Support Division (PSTS), PSOD
4. Enzo Gregori, Principal Investment Specialist, PSPM
5. Viswanathan Ramasubramanian, Safeguards Specialist, PSTS
6. Mary Greenhow, Principal Counsel, Office of the General Counsel

### Government

1. Raj Kumar  
Joint Secretary (Multilateral Institutions Division)  
Department of Economic Affairs, Ministry of Finance (DEA, MOF)
2. Rishikesh Singh  
Director, Multilateral Institutions Division, DEA, MOF

### Coastal Gujarat Power Limited

1. Krishna Kumar Sharma, Executive Director and Chief Executive Officer
2. Dinesh Kudalkar, Chief, Operations and Maintenance
3. Pradeep Ghosal, Group Head, Community Relations
4. Amit Tyagi, Group Head, Environment
5. Pramod Singh, Head, Safety
6. Saurab Sharma, Senior Specialist, Community Relations

### Requesters' Representative and Complainant

1. Bharat Patel
2. Gajendrasinh Bhimaji Jadeja

### Others

Kalyan Danges, SWADEEP