



**Protecting The Sundarbans World Heritage site:
Petition to UNESCO's World Heritage Committee
concerning imminent threats posed by the proposed
Rampal and Orion coal-fired power plants**



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To: UNESCO World Heritage Committee
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Tim Badman, Director, IUCN World Heritage Program

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Dear Members of the World Heritage Committee:

The Sundarbans of Bangladesh (“the property”) is a World Heritage site “[b]estowed with magnificent scenic beauty and natural resources.”¹ This special place is facing imminent and substantial threats from the Rampal and Orion Khulna coal-fired power plants (“the projects”), two massive projects proposed to be constructed near the property that would require the alteration of Sundarbans waterways and would emit hundreds of thousands of tons of toxic coal ash and air pollutants into this fragile ecosystem each year. The Government of Bangladesh is moving rapidly forward with the projects in 2016, while at the same time ignoring almost every request from the World Heritage Committee to ensure that they do not undermine the property’s outstanding universal value. We are writing to urge the Committee to take immediate action to protect the property before construction proceeds further. We encourage the Committee to inscribe the property on the List of World Heritage in Danger, as it meets six of the eight relevant criteria for the List in Danger, and to urge Bangladesh to stop all activities associated with the power plants until the Committee has had the opportunity to fully evaluate the potential threats to the property. If the Committee does not act urgently, this exceptional part of the world’s natural heritage could be irreparably harmed.



*The Sundarbans.*²

The Sundarbans World Heritage site is comprised of three Wildlife Sanctuaries on the delta of the Ganges, Brahmaputra and Meghna rivers on the Bay of Bengal.³ These sanctuaries are adjacent to and

* The petitioning organizations are grateful for the assistance of Earthjustice (www.earthjustice.org) in preparing this submission. For information: intloffice@earthjustice.org.

part of the same ecosystem as the Sundarbans Reserve Forest, which encompasses most of the remainder of the Sundarbans ecosystem in Bangladesh, as well as India's Sundarbans National Park, also a World Heritage site. As the Committee has explained, the immense tidal mangrove forests of the Sundarbans "is in reality a mosaic of islands of different shapes and sizes, perennially washed by brackish water shrilling in and around the endless and mind-boggling labyrinths of water channels."⁴

The property and the greater Sundarbans ecosystem (together referred to as "the Sundarbans") support exceptional marine and terrestrial biodiversity and are home and a core breeding area to some of the most threatened, iconic animals on the planet, such as the Royal Bengal tiger, Ganges and Irrawaddy dolphins, estuarine crocodiles, and northern river terrapin.⁵ The Sundarbans also "provides sustainable livelihoods for millions of people in the vicinity of the site and acts as a shelter belt to protect the people from storms, cyclones, tidal surges, sea water seepage and intrusion."⁶

Because of the sensitive nature of the Sundarbans ecosystem, the World Heritage Committee has recognized that a "delicate balance is needed to maintain and facilitate the ecological process of the property on a sustainable basis."⁷ Unfortunately, the Sundarbans face a barrage of human-made and natural threats.⁸ Human-made threats in and around the Sundarbans include ongoing development activities, illegal hunting, timber extraction and agricultural encroachment. Natural threats include saline water intrusion, siltation, storms, cyclones and tidal surges up to 7.5 meters high. Climate change is increasing the frequency and intensity of many of these natural threats.

The two proposed power plants pose a substantial new threat to this already fragile ecosystem. The Rampal coal-fired power plant is being developed by the Bangladesh-India Friendship Power Company Ltd (BIFPCL), a joint project between the Bangladesh Power Development Board (BPDB), a State-run entity, and India's NTPC Limited (NTPC), and would consist of two coal-fired power generating units, each up to 660 megawatts (MW). The plant is proposed to be constructed in the subdistrict of Rampal in southwestern Bangladesh, only 4 kilometers from the edge of the Sundarbans' "Critical Ecological Area," (a formerly-forested buffer zone that has suffered deforestation), 14 kilometers from the Sundarbans Reserve Forest boundary, and 60 kilometers from the World Heritage site (the Wildlife Sanctuaries). The Orion Power Khulna Ltd. coal-fired power plant, a 680 MW plant being developed by the Orion Group, a private company, would be located across the river from the Rampal plant and even closer to the Sundarbans ecosystem and the property. The Rampal plant is expected to be operational by 2019; the Orion Group states on its website that the Orion Khulna plant will be operational by 2018.⁹

The Rampal plant alone would burn 12,900 tons of coal per day, or up to 4.7 million tons per year, generating 940,000 tons of toxic coal ash each year¹⁰ and emitting air pollution that would spread for hundreds of kilometers around the plant. Based on its size, we estimate that the Orion plant would produce roughly half the coal ash and air pollution as Rampal. Construction and operation of the Rampal and Orion plants would also require the dredging of extensive portions of the Sundarbans waterways, which would deteriorate water quality and pose a threat to many aquatic species. The Sundarbans are already under threat from many other sources of harm; the Rampal and Orion plants would compound these existing harms and would likely be catastrophic for the Sundarbans' iconic species and vital ecosystem functions.

Due to existing and proposed threats, the Sundarbans meets six of the eight criteria for inscription on the List of World Heritage in Danger. The criterion most directly implicated by the power plants is criterion 180 b) ii), which authorizes listing a property that is faced with threats that could have deleterious effects on its inherent characteristics, including from development projects. Although the Bangladesh government has completed an environmental impact assessment (EIA) for the Rampal project, that assessment inadequately addresses the threats from the power plant on the World Heritage site. Moreover, the process by which the government prepared the EIA was severely flawed, undermining the credibility of the process and its conclusions. Although preparations for construction are being made at the Orion site, to our knowledge the Government of Bangladesh has not conducted an EIA or issued the required environmental permits for that project.

In a decision concerning the Sundarbans WHS taken at its 39th Session in July 2015, the World Heritage Committee made a number of official requests to the Government of Bangladesh aimed at gaining a better understanding of the potential impacts of the Rampal plant on the property and of the steps the government is taking to mitigate those threats. Bangladesh has taken little or no action to comply with many of these requests. For example, the government has not assessed the potential impacts on the World Heritage site from the proposed dredging of the Pashur (also called Passur) River, or completed a comprehensive and independent Strategic Environmental Impact Assessment of the indirect and cumulative impacts on the property from the Rampal project, other proposed power plants, and industrial developments in the vicinity of the property. To the contrary, BIFPCL is moving steadfastly ahead with the construction of the Rampal plant — it has prepared the site for construction, awarded a contract for the construction of the plant, and asserted that the plant will be operational by 2019. Bangladesh's blatant disregard for the Committee's decision-making sets a bad precedent that significantly undermines the Committee's ability to achieve the goals of the World Heritage Convention.

In light of the preceding concerns, we strongly urge the Committee to:

- 1) *Inscribe the property on the List of World Heritage In Danger; and*
- 2) *Regardless of whether the property is inscribed on the List of World Heritage in Danger:*
 - a. *renew all of the requests on Bangladesh set out in the Committee previous decision on the property (Decision 39 COM &B.8);*
 - b. *request that the government undertake further, science-based environmental review, including additional analysis on the specific threats discussed here, and to reopen the environmental review process to ensure full and meaningful public participation;*
 - c. *request that Bangladesh stop all activities associated with the Rampal and Orion projects until it adequately complies with the Committee's multiple requests and until the Committee has had the opportunity to fully evaluate the potential threats from the projects and other developments on the property's OUV; and*
 - d. *consider requesting to Bangladesh to cancel the projects because of the unavoidable and irreparable threats that they pose to the property's OUV.*

I. Significant developments since the Committee met in 2015

At its 39th session in July 2015, the World Heritage Committee issued a decision concerning the Sundarbans World Heritage site which, among other things, formally requested that the government provide additional information on the potential impacts from the operation of the Rampal plant to the property, and the proposed mitigation measures to minimize the impacts.¹¹ The Committee's multiple requests indicate that there is insufficient information for it to adequately ascertain the project's potential threats to the property's OUV. To the best of our knowledge, the government has taken little or no action to meet many of these requests. In particular, it has not assessed the impacts of dredging on the Sundarbans or assessed the indirect and cumulative impacts on the Sundarbans from the coal plant projects and other developments in the vicinity.

Other concerning developments since the Committee's July 2015 decision include:

- rapid movement towards beginning construction of the Rampal plant;
- progress towards developing the Orion Khulna coal plant across the river from the Rampal plant;
- dredging of the Pashur River to create landfill at both sites;
- a third major shipping accident in the Sundarbans over the span of one year; and
- a fact-finding mission documented irregularities in the environmental impact assessment process as well as multiple human rights violations associated with the Rampal plant.

These developments, which are discussed in more detail below, reaffirm the need for the World Heritage Committee to issue a strong decision concerning the property.

A. The government is taking steps to bring the Rampal power plant online quickly

In August 2015, the Bangladesh-India Friendship Power Company Ltd (BIFPCL), the project's proponent, wrote: "Land development for the BIFPCL's site has been completed. Construction of embankments and slope protection works are about to complete. Site office construction is yet to start. At present, due to monsoon, no physical work except minor maintenance work of land development, slope, embankments, etc. is ongoing."¹² In January 2016, the Government of Bangladesh awarded the contract for construction of the plant to Bharat Heavy Electricals Limited, an Indian power company.¹³ Financial closure allowing construction to begin is expected to be complete by July 2016.¹⁴ The Bangladeshi Minister of Power, Energy and Mineral Resources, Nasrul Hamid, recently asserted that the Rampal plant would be operational by 2019 and that "[s]ome 2.5-3.0 per cent of works of the power plant have already been completed."¹⁵

B. Site preparation for the proposed Orion Khulna coal-fired power plant has begun

In visits to the site, we have observed that the proposed 630 MW Orion Khulna coal-fired power plant has begun staging for construction, although the government has not made public an EIA or permits

(and we are not aware of an EIA being completed or any permits for the project). Independent reports corroborate our observations, with one news source reporting that construction, dredging and landfilling has begun prior to environmental assessment or permits being issued.¹⁶

C. Significant river dredging has taken place in the Sundarbans over the last year

Despite the absence of adequate assessment of the environmental impacts to the Sundarbans, dredging has begun in the Pashur River to supply landfill for the Rampal plant construction site. One of the Bangladesh Department of the Environment's conditions for approving the environmental permit for the project was that "[a] separate EIA/morphological study shall have to be conducted for coal transportation and river dredging to develop sound environmental management plan towards conservation of ecosystem and biodiversity."¹⁷ The World Heritage Committee has also urged Bangladesh – in both 2014 and 2015 – not to allow dredging without first conducting an EIA on potential impacts to the Sundarbans.¹⁸

We are not aware of any such EIA having been completed. The project proponent, BIFPCL, appears to justify moving forward with dredging without an EIA by shifting responsibility for the EIA to the Mongla Port Authority. In a quarterly monitoring report, aimed at "monitoring environmental and social parameters and implementation of environmental management plans during pre-construction and construction phases of the proposed [Rampal] Power Plant," BIFPCL gave an unintelligible response claiming it had complied with the Department of Environment condition: "Mongla Port Authority (MPA) is the Implementing Agency for dredging and coal transportation will be through the existing maritime route, which is Mongla port controlled waterways. M/s IWM has already been appointed by MPA for EIA for the dredging activity."¹⁹ That another entity is responsible for conducting the EIA does not excuse moving forward with dredging before the EIA is complete. Moreover, although the statement is intended to address the request for an EIA for dredging, the statement provides no support for the existence of such an assessment.

D. A third major shipping accident in the Sundarbans within the span of a year

In October 2015, a cargo vessel carrying 510 tons of coal sank in the Pashur River along the northern boundary of the Sundarbans.²⁰ The sinking vessel marks the third shipping accident in the Sundarbans ecosystem over the course of one year. In December 2014, an oil tanker carrying approximately 350,000 liters of heavy fuel oil sank after colliding with a cargo vessel in the Shela River,²¹ which flows through the Sundarbans and is connected to the Pashur River. In May 2015, another cargo vessel carrying fertilizer capsized in the Bhola River, also in the Sundarbans.²²



Since 2011, large commercial ships have been allowed into Sundarbans delta. There have been numerous accidents, including the sinking of this oil tanker in 2014, which spilled 350,000 liters of furnace oil.²³

In all three accidents, the government significantly delayed taking the necessary steps to protect these precious waterways from pollution. For example, newspapers reported that three days after the October 2015 accident there was still no sign of salvaging the wreck, or otherwise containing the toxic material.²⁴ As we explain in section II below, the inevitable increase in shipping accidents that will take place once the Rampal and Orion plants become operational, coupled with the government's inability to adequately respond to the accidents, poses a serious threat to the property.

E. A fact-finding mission to Rampal documented irregularities with the environmental review process and human rights violations associated with the Rampal plant

In September 2015, South Asians for Human Rights (SAHR), a non-governmental organization that “seeks to contribute to the realisation of South Asian peoples’ right to participatory democracy, good governance and justice,”²⁵ published a report on its April 2015 fact-finding mission to Rampal.²⁶ According to the report, the mission’s objective “was to evaluate the impact of the power plant on the livelihoods of the people and ecology of the region, examine the legal framework governing its establishment and assess if the proposed power plant violates any laws, policies and guidelines that protect the Sundarbans.”²⁷ Members of the mission visited the site of the power plant and met with “key state and non-state stakeholders including affected villagers, environmentalists, lawyers, academics, journalists, human rights defenders and other members of the civil society.”²⁸

The mission corroborated evidence, cited by many other sources, of irregularities in the environmental review process for the project, including issues related to access to information and meaningful public consultation,²⁹ which are internationally recognized as essential elements of legitimate environmental

decision-making.³⁰ For example, the report noted obstacles preventing local communities and advocacy groups from accessing and adequately reviewing the draft EIA:

The [draft EIA], written in English, is 676 pages long and was not disseminated among any citizens' groups. It was available only online and the time for sending people's views on the report was limited to two weeks, that too, during the Eid holidays when all the offices were closed for 3-5 days. It appears that people's access to the report was deliberately restricted by the government.³¹

The report further documented a lack of meaningful public participation throughout the EIA process:

The EIA states that different groups of people, including farmers, fishermen, development workers, activists etc., were consulted. Locals claim however, that opinions reflected in the EIA were misleading, partisan and unrepresentative of people's true sentiments. Informants alleged that most of the people who were invited to discussions for the EIA were affiliated with the ruling party, and as such, they did not represent the people's concerns about the environment, loss of livelihoods etc. ... Within a week from the event, the EIA was finalized, without incorporating any of the changes suggested by the stakeholders.³²

These procedural irregularities call into question the legitimacy of the environmental review process and its conclusions.

In considering human rights, the mission found that the expropriation of land for the construction of the Rampal plant, and compensation for that expropriation, took place without proper notice to or consultation with affected communities, violating the right to due process of law. In addition, the mission found that the government was violating the right to freedom of expression of local people and activists protesting against the plant through harassment, threats, assault and other mistreatment.³³ Since the report's publication, the government again clamped down on people protesting Rampal, with police clubbing and injuring peaceful protesters repeatedly over a three day march.³⁴ Although these alleged human rights violations do not directly concern the potential impacts from Rampal on the Sundarbans, the nature and seriousness of these findings calls into question the government's motives and credibility surrounding the entire project.

II. The Sundarbans World Heritage site meets the criteria for inclusion on the List of World Heritage in Danger

The World Heritage Convention establishes a List of World Heritage in Danger for properties "threatened by serious and specific dangers,"³⁵ such as the "threat of disappearance caused by accelerated deterioration, large-scale public or private projects or rapid urban or tourist development projects; destruction caused by changes in the use or ownership of the land; [or] major alterations due to unknown causes."³⁶

Determining whether a site is threatened by "serious and specific" dangers is guided by the World Heritage Committee's "Operational Guidelines for the Implementation of the World Heritage Convention" ("Operational Guidelines"), which establish two cases for inscription of a site on the List of

World Heritage in Danger: “*ascertained danger*” and “*potential danger*.”³⁷ The Operational Guidelines then enumerate criteria for each of these cases, which are described and analyzed below. Importantly, a site need only meet one of the criteria to be inscribed on the List of World Heritage in Danger.³⁸

Even without considering the proposed Rampal and Orion power plants, existing threats to the Sundarbans World Heritage site meet several of the criteria for inscription on the List of World Heritage in Danger established by the Committee’s Operational Guidelines. The harms from those two power plants meet additional criteria as well as exacerbating the situations that satisfy some of the other criteria. The majority of this section focuses on criterion 180 d) ii) (“The property is faced with major threats which could have deleterious effects on its inherent characteristics,” such as “*planned ... development projects within the property or so situated that the impacts threaten the property.*”³⁹), which is most relevant to the proposed Rampal and Orion power plants. The following chart summarizes our findings:

CRITERIA		LEGAL ASSESSMENT OF THE EVIDENCE
Paragraph 180 a) ASCERTAINED DANGER – The property is faced with specific and proven imminent danger, such as:	180 c) i) A serious decline in the population of the endangered species or the other species of Outstanding Universal Value for which the property was legally established to protect, either by natural factors such as disease or by man-made factors such as poaching.	The evidence satisfies this criterion.
	180 c) ii) Severe deterioration of the natural beauty or scientific value of the property, as by human settlement, construction of reservoirs which flood important parts of the property, industrial and agricultural development including use of pesticides and fertilizers, major public works, mining, pollution, logging, firewood collection, etc.	The evidence satisfies this criterion.
	180 c) iii) Human encroachment on boundaries or in upstream areas which threaten the integrity of the property.	The evidence satisfies this criterion.
Paragraph 180 b) POTENTIAL DANGER – The property is faced with major threats which could have deleterious effects on its inherent characteristics. Such threats are, for example:	180 d) i) a modification of the legal protective status of the area.	The evidence does not satisfy this criterion.
	180 d) ii) planned resettlement or development projects within the property or so situated that the impacts threaten the property.	The evidence satisfies this criterion.
	180 d) iii) outbreak or threat of armed conflict.	The evidence does not satisfy this criterion.
	180 d) iv) the management plan or management system is lacking or inadequate, or not fully implemented.	The evidence satisfies this criterion.
	180 d) v) threatening impacts of climatic, geological or other environmental factors.	The evidence satisfies this criterion.

A. Criteria related to “Ascertained Danger”

The Operational Guidelines list three criteria related to ascertained danger for the inscription of a natural site on the List of World Heritage In Danger, all of which the evidence satisfy.

1. **Criterion 180c)i: A serious decline in the population of the endangered species or the other species of Outstanding Universal Value for which the property was legally established to protect, either by natural factors such as disease or by man-made factors such as poaching.**

The Sundarbans are home to many iconic and endangered species including Bengal tiger, Ganges river dolphin, Irrawaddy dolphin, finless porpoise, small clawed otter, smooth coated otter, estuarine crocodile, masked finfoot, fishing cat, Pallas’ fishing eagle, river terrapin, white-rumped vulture, and lesser adjutant.⁴⁰ The Statement of OUV recognizes many potential threats to these and other species leaving in the Sundarbans, including from natural sources, such as cyclones, and human sources, such as illegal poaching.⁴¹



The Sundarbans is one the last viable habitats for tigers, whose global population has fallen by half since 1998 and whose global range has declined over 40 percent since 2006.⁴² The proposed power plants are likely to contaminate the food chain of the Sundarbans, harming tigers and jeopardizing their survival.

The Sundarbans is home to dozens of endangered species, including two amphibian, 14 reptile, 25 bird and five mammal species.⁴³ Some of the most iconic species are on the verge of extinction. For example, the 1997 Statement of OUV estimates a population of Royal Bengal Tigers of between 400 to 450,⁴⁴ but by July 2015, biologists estimated that there were only around 100 tigers living in the Bangladeshi Sundarbans, and 74 in the Indian Sundarbans.⁴⁵ The northern (or “four toed”) river terrapin was considered extinct in the wild until a small population was found in the Sundarbans in 2013, but it is unknown if any remain in the wild today.⁴⁶ Only 100 estuarine crocodile were estimated to survive as of 1994, and only two animals were found by 2004.⁴⁷

A 2014 report by the IUCN observed a major over-exploitation of timber stock in the Sundarbans, with forest coverage with high canopy closure declining from 78% in 1959 to only 24% in 2010.⁴⁸ The report concluded that the “changes in the forest composition and coverage would have a major impact on the wildlife and other terrestrial and aquatic animals, as well as the ecosystem as a whole.”⁴⁹

Because many of the species that are recognized as part the property’s OUV, as well as the mangrove forests, are in serious population declines, this criterion is satisfied.

2. Criterion 180 c) ii: Severe deterioration of the natural beauty or scientific value of the property, as by human settlement, construction of reservoirs which flood important parts of the property, industrial and agricultural development including use of pesticides and fertilizers, major public works, mining, pollution, logging, firewood collection, etc.

Both the natural beauty and scientific value of the Sundarbans World Heritage site and the greater ecosystem is deteriorating from anthropogenic activities, including timber extraction, illegal hunting, agriculture, and industry. Industrial development has also increased shipping and dredging of the Pashur River, which pose additional threats to the Sundarbans.

The World Heritage Committee’s Statement of OUV recognizes many of these threats, noting that: “Over exploitation of both timber resources and fauna, illegal h[u]nting and trapping, and agricultural encroachment also pose serious threats to the values of the property and its overall integrity.”⁵⁰ The 2015 State of Conservation report of the World Heritage Committee also notes that “non-renewable energy facilities, salinity, and dredging of the Pashur River are a threat to the property.”⁵¹



Industrial development and shipping are increasing along the Pashur River, including at Mongla port, pictured here.⁵² The Rampal and Orion power plants will exacerbate these stresses on the Sundarbans ecosystem and its endangered wildlife.

Industrial development near Rampal has intensified in recent years, posing a major threat to the Sundarban ecosystem. Cement industries, petroleum industries, brick industries and a massive 50,000 ton grain silo have been developed along the banks of the Pashur River just outside the Sundarbans.⁵³

Recent development in and around the Sundarbans has also increased ship traffic on the Pashur River to unsustainable and dangerous levels.⁵⁴ In 2014-2015, the Mongla port recorded an all-time high of 416 ship arrivals per year.⁵⁵ In 2014, the IUCN observed that this increased ship traffic is contributing to pollution in the Sundarbans:

This includes various kinds of pollution caused by ships plying through the Sundarban, as well as those anchored at Mongla port and the pollutants generated by the port. Oil spills and discharge from ships, use of high sulphur fuel, discharge of ballast water and sewage, and spilled over fertilizer, cement, coal etc. during transshipment at the port, are all detrimental to both aquatic and terrestrial life forms. *The Mongla Port will assume greater importance and is expected to carry a much larger load of cargo once the bridge over the Padma River is completed and this will increase shipping traffic through the Sundarban substantially. The food grain silo complex being built on the left-banks of the Passur River in Joymonirgol of Mongla upazila, will also increase river traffic with potential for increased pollution.*⁵⁶

A December 2015 meeting convened by the Department of Forestry gathered a group of experts who also recognized that the shipping traffic has caused “[r]egular spillage of oils [and the] release of ballast and bilge water from vessels.”⁵⁷

As described above, there have been three major shipping accidents in the Sundarbans since December 2014, and the Committee has expressed serious concern about the impact of the December 2014 ship collision that spilled oil over a 60 km area of the Sundarbans, killing wildlife and causing unknown long term impacts.⁵⁸

Dredging of the Pashur River has also increased since the EIA was done to accommodate the increase in ship traffic, including at Mongla port, the Rampal site and the Orion Khulna site,⁵⁹ with unknown impacts on the species and ecosystems of the Sundarbans. The Mongla port expects to have 1,000 ships berthing there by 2030.⁶⁰ Over the last few months, we have also observed that dredging is already taking place near the Rampal and Orion power plant sites for landfilling.

As this discussion indicates, timber extraction, illegal hunting, agriculture, industry, and the increase in river dredging and shipping associated with these activities are deteriorating the natural beauty and scientific value of the Sundarbans by causing the depletion of its resources and injecting severe pollution into the ecosystem. Many of these threats and their impacts on the ecosystem will be substantially amplified should the Rampal and Orion plants come online. The evidence thus satisfies this criterion.

3. Criterion 180 c) iii: Human encroachment on boundaries or in upstream areas which threaten the integrity of the property.

Human activity from upstream areas as well as from within the Sundarbans are threatening the integrity of the property. As mentioned above, there is significant agriculture and industrial development in and around the Sundarbans which is causing harm to the ecosystem. Recent studies have documented a 45 percent loss of mangrove coverage due to continuous encroachment from logging, paddy cultivation, shrimp farming and natural calamities.⁶¹

Wastewater pollution from large upstream cities and industry, and upstream diversion of freshwater for agricultural and urban needs and to satisfy treaty obligations to India also pose serious threats to the Sundarbans mangrove forest.⁶² As the IUCN explains:

An increased withdrawal and water diversion to meet growing agricultural and urban needs, together with the water diversion of the Ganges river after commissioning of the Farraka Barrage (in India) have resulted in a drastic reduction of freshwater flow into the Sundarban, particularly during the dry season. This has contributed to an increase in salinity and is adversely affecting the growth and vitality of some of the most important tree species. A continuation of this situation would make the habitat condition unsuitable for supporting the current range of species and would ultimately lead to its replacement by more salinity tolerant species, as has been the case in the Western Sundarban. This increase in salinity will also affect the diversity and abundance of fishery resources of the Sundarban.⁶³

Substantial human encroachment in and around the Sundarbans, and upstream along the Pashur River, is threatening the integrity of the property. Once Rampal and Orion become operational, the power they produce will facilitate the construction and operation of even more energy intensive industries as well as commercial and residential development in close proximity to the Sundarbans. Not only will the water and air pollution released by Rampal and Orion be major additional contributions to this widespread human encroachment, but the new developments they make possible will significantly threaten the integrity of the property. The evidence thus satisfies this criterion.

B. Potential danger

As discussed above, the Sundarbans face a barrage of ascertained threats, placing this sensitive and critical ecosystem on the precipice of massive deterioration. However, these existing threats will be significantly exacerbated by a number of potential threats, the most imminent and significant of which are the proposed Rampal and Orion coal-fired power plants. These power plants and other potential threats discussed in this section should therefore be considered cumulatively within the context of the existing, prolific industrial development and commercial activity in and near the Sundarbans, as well as the numerous other ascertained threats discussed in section II.A above.

The evidence satisfies three of five criteria related to potential danger set out in the Operational Guidelines for the inscription of a natural site on the List of World Heritage In Danger.

1. Criterion 180 d) ii: “The property is faced with major threats which could have deleterious effects on its inherent characteristics,” such as “planned ... development projects within the property or so situated that the impacts threaten the property.”

Coal-fired power plants—even the more efficient “supercritical” plants-- produce the most polluting electricity in the world.⁶⁴ The proposed massive Rampal and Orion coal-fired power plants would not be exceptions, posing many threats to the Sundarbans from, among other things, the release of air pollutants, production and storage of toxic coal ash, shipping of coal, dredging of the Pashur River, and

the use of water. Although the multi-volume EIA of the proposed Rampal power plant, completed in 2012, identified many of these and other threats, its analysis consistently falls short when assessing the potential impacts of these threats on the Sundarbans, and also fails to assess potential measures for mitigating them.⁶⁵ Many scientists, civil society organizations, and international observers, including UNESCO's World Heritage Committee, have criticized the EIA.⁶⁶

Because there is no EIA for the Orion plant, we cannot discuss Orion in detail in this submission. However, the Orion plant will almost certainly present the same threats as the Rampal plant, and the contribution of each plant will amplify the harms caused by the other and drive even more development.

a) Threats from air pollution

Air emissions from the Rampal and Orion plants would threaten the Sundarbans. Burning coal produces a number of harmful air pollutants, including sulfur dioxide (SO₂), nitrogen oxides (NO_x), particulate matter and mercury, all of which could impact on the Sundarbans.⁶⁷ Emissions from coal plants are a leading cause of smog, acid rain, and toxic air pollution, posing a danger for ecosystems, agriculture, fisheries and human health.⁶⁸ The potential emissions of some of these air pollutants and their impacts are discussed below.

SO₂ and NO_x are a leading cause of acid rain, which would pose a significant threat to the Sundarbans ecosystem. Once SO₂ and NO_x have been released into the air, they can be transported by the wind up to 1000 miles.⁶⁹ Eventually, these elements will dissolve in water droplets and return to earth in the form of acid rain, acid fog, or dry deposition (falling to the surface as small particles or going directly from gaseous form in the atmosphere to soil or water).⁷⁰ These can all severely harm the environment. For example, acid rain can cause the loss of fish in the lakes and streams, harm plants and animals in an aquatic ecosystem, and weaken natural defenses of trees, making them more vulnerable to some diseases and pests.⁷¹ Globally, coal-fired power plants are the largest source of anthropogenic SO₂ emissions.⁷²

The EIA for the Rampal plant estimates that the plant would emit 255µg/m³ of SO₂ in a 24 hour period, which is more than double the World Bank/IFC (2007) standard of 125µg/m³.⁷³ The EIA further estimates that SO₂ concentrations in a 24 hour period at the point of the Sundarbans nearest to the Rampal plant would be 58.43 µg/m³, 48.93 µg/m³ of which would come from the Rampal plant and the remainder from other undefined sources.⁷⁴ Although these concentrations alone would exceed Bangladesh's SO₂ standard for ecologically sensitive areas like the Sundarbans (30µg/ m³),⁷⁵ the actual concentrations are likely to be much higher, as the EIA did not consider other significant sources of SO₂ in the area, such as the proposed Orion coal-fired power plant, and increasing shipping on the Pashur river for the cement factories and grain silo near Mongla port that were completed after the EIA was concluded.⁷⁶ Moreover, the EIA based its calculation of background levels of SO₂ on an air samples taken on a day when the wind was flowing northwest from the Sundarbans, leaving it unclear if the sample was affected by industries near Mongla port or not; the EIA did not consider that this concentration of SO₂ would be likely to increase during the four months of the year when the prevailing winds flow towards the Sundarbans from the industrialized north.⁷⁷

Air pollution from the power plants could also affect the health and reproductive success of insects, including bees and butterflies, which are key pollinators of the mangroves of the Sundarbans.⁷⁸ Such potential impacts could have far reaching and long term ecosystem effects that have not been considered in the EIA.

Coal naturally contains mercury, and coal burning is the largest source of human-caused mercury emissions. When coal is burned, roughly two-thirds of its mercury is released into the air as gas or particles,⁷⁹ with the remaining third being retained in a toxic residue called coal ash (see coal ash discussion in sub-section b) below).⁸⁰ Airborne mercury can remain aloft for six months to two years before falling to the ground in precipitation, dust, or simply due to gravity.⁸¹ Mercury deposition rates vary greatly depending on many factors, but coal fired power plants have been shown to cause local mercury pollution hotspots in regional waterbodies, with fish and wildlife responding rapidly and proportionally to local sources of mercury.⁸² In several studies, the highest levels of airborne mercury from power plants deposited to soils within five kilometers of the plants.⁸³ Mercury deposition is also enhanced by high ground-level ozone, sea salt, forest cover, and proximity to sources,⁸⁴ many of which can occur in the Sundarbans. One study in the Singrauli area of India found serious mercury pollution in a local reservoir and other surface waters, and determined that the main cause of the pollution was the “deposition of mercury transported via the air route from the emissions of large thermal power plants.”⁸⁵



Irrawaddy dolphins (one pictured dead found after the 2014 oil spill) and Ganges river dolphins of the Sundarbans could be harmed by pollution from the power plants, and by increased dredging and shipping on the Pashur River.⁸⁶

Trace amounts of mercury can contaminate large bodies of water and remain in the soil for decades.⁸⁷ For example, the equivalent of one gram of mercury deposited from the atmosphere into a 20-acre lake each year can make the fish unsafe to eat.⁸⁸ Once in the ecosystem, mercury naturally converts to methylmercury, a highly toxic compound that builds up in organisms and increases in concentration with each level of the food chain; birds and mammals that eat contaminated fish and shellfish, like the Bengal tiger, Ganges and Irrawaddy dolphins, estuarine crocodiles, river terrapin, masked finfoot, and small clawed otters could have potentially high exposures to methylmercury.⁸⁹ Methylmercury has been found to bioaccumulate faster in water bodies like the Sundarbans with fluctuating water levels that

expose extensive shore land, and can increase in concentration within the food chain as much as 10 million times.⁹⁰

At high levels of exposure, methylmercury's harmful effects in animals include death, reduced reproduction, slower growth and development, and abnormal behavior.⁹¹ Research has linked elevated mercury in fish to decreased spawning success, increased embryo mortality, altered schooling movements, and at extreme levels, acute toxicity.⁹² In fish-eating birds, mercury exposure is associated with reduced reproductive success, spinal cord degeneration, decreased chick survival, disrupted hormone levels, and difficulty flying, walking, and standing.⁹³ High mercury levels in fish-eating mammals can cause impaired motor skills, weight loss, and acute toxicity.⁹⁴

Although an increase in mercury contamination could wreak havoc on the Sundarbans ecosystem, the EIA for the Rampal power plant does not estimate how much mercury the plant could emit or how such emissions could be reduced.⁹⁵ Such estimations are routinely done in the industry,⁹⁶ so to omit it in the EIA is highly problematic.

b) Threats from the production and storage of toxic coal ash

The burning of the coal at the Rampal plant alone would generate 940,000 tons of toxic residue, called coal ash, each year.⁹⁷ Twenty percent of this residue is “bottom ash,” the portion of the non-combustible residue from a coal furnace that sinks to the bottom of the furnace or sticks to its walls, while the remainder escapes up the chimney stack, and is called “dry fly ash.”⁹⁸ Orion, which is reported to be about half the size of the Rampal plant, would likely generate something in the vicinity of 450,000 tons of coal ash.

Coal ash typically contains heavy metals including arsenic, lead, mercury, cadmium, chromium and selenium. If these leak into the environment, they pose significant health risks to wildlife, especially to the aquatic and semi-aquatic organisms which are abundant throughout the Sundarbans.⁹⁹ Exposure to coal ash contaminants may lead to death, even wiping out entire fish populations, or cause lesser effects, like physical abnormalities and reproductive complications.¹⁰⁰ For example, selenium from a coal ash spill in one lake eliminated nineteen of twenty fish species, while surviving fish exhibited deformities and serious pathological problems.¹⁰¹ Coal ash contaminants “can also affect the abundance, diversity and quality of food resources, thus creating substantial indirect effects that ripple up through food chains to impact higher life forms.”¹⁰²

The EIA for the Rampal plant explains that the coal ash from the project will be used as landfill on 1,400 acres for developing the second phase of the project.¹⁰³ In addition, the tender documents released after the EIA, call for construction of a 25-acre coal ash pond with dams up to 13 meters high.

Coal ash not used for landfill would be recycled throughout Bangladesh as much as possible for other uses, including for “soil amendment, fertilizer, cattle feeders, soil stabilization in stock feed yards, and agricultural stakes; Loose application on rivers to melt ice; [and] Loose application on roads and parking lots for ice control.”¹⁰⁴ Many experts, however, have expressed concern about the use of toxic coal ash for other purposes, such as agriculture, because the loose coal ash can leach or dissolve in water, and subsequently contaminate surface water systems and underground aquifers with heavy metals.¹⁰⁵ The

EIA proposes that unsold or excessive coal ash would be disposed in a 100-acre, concrete-lined coal ash pond that is just three meters above sea level.¹⁰⁶

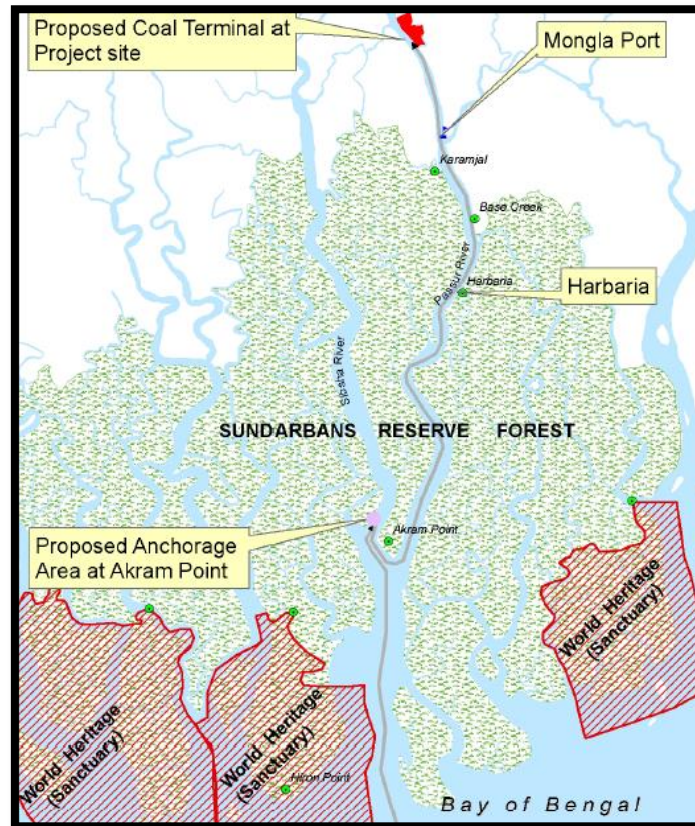
These proposals for using and storing toxic coal ash create a high risk for the ash to leach into the Sundarbans surface water system. For example, there are many documented cases of wet coal ash ponds and coal ash used as landfill material in construction leaching heavy metals into groundwater and surface water systems and harming human and environmental health.¹⁰⁷ Moreover, the proposed 100 acre coal ash pond at Rampal is anticipated to be full within four years of plant operation, creating a risk of overflow.¹⁰⁸ In addition, although the ash pond is expected to be 3 meters above sea level, tides in the area are known to reach 4.5 meters, creating an unacceptable risk of overflow into the Sundarbans' river system.¹⁰⁹

Time and time again, the best planned coal-ash disposal sites, such as lined ash ponds, contaminate surface and groundwater systems. For instance, a 2013 study of the disposal of coal ash at thermal power plants in India concluded that the ash had contaminated soil, vegetation, and ground water with mercury, posing risks to soil and aquatic ecosystem, fish, wildlife, and humans.¹¹⁰ And at India's Sasan supercritical coal facility, in 2015 a committee of experts reported to the National Green Tribunal that groundwater in the nearby village of Harrahawa had high levels of mercury.¹¹¹ A 2010 report documented severe contamination from 31 coal ash waste storage sites (including ash ponds and landfills) in the United States to groundwater, wetlands, creeks, or rivers.¹¹² For example, in 2008 at a coal-fired power plant in Kingston, Tennessee, the earthen wall holding back a 40-acre coal ash disposal pond failed, spilling water and coal ash into the adjacent river valley, covering about 300 acres with toxic sludge and contaminating the local rivers.¹¹³ In another case from Tennessee, coal ash was stored in a pond across from a creek that was designed to hold twenty years' worth of ash.¹¹⁴ After only twelve years the dam was filled to within four feet of the top, and eventually coal slurry was released over the dam and into the creek, causing severe contamination.¹¹⁵

c) Threats from shipping

As discussed in section II.A.2. above, ship traffic is already busy in the Sundarbans and has caused extensive pollution to its ecosystem. Statistics from the Mongla Port Authority show that navigation in the Sundarbans' waterways is at record high levels, increasing 236 percent in last 7 years.¹¹⁶ The Rampal and Orion plants would substantially increase the shipping volume, which would add even more pollution, noise, wake, and risks of ships striking endangered dolphins, as well as collisions and other accidents.

According to the EIA, coal ships with a capacity of 80,000 tons will bring coal from abroad 59 times per year to Akram point, situated within the Sundarbans (see Map 1 below), passing adjacent to one of the three World Heritage Sanctuaries.¹¹⁷ From Akram point, the coal will be transferred to lighter vessels with 10,000 tons capacity that will transport coal through the Sundarbans along the Pashur River, to a coal terminal at the project site.¹¹⁸ These vessels would need to make 470 voyages through the Sundarbans to deliver the 4,700,000 tons of coal the power plant requires annually.



Map 1. Shipping route through the Sundarbans for coal transport to Rampal and Orion power plants.¹¹⁹

As the EIA explains, the proposed navigation route for coal transportation is home to “critically endangered mammalian species, freshwater dolphins and Irrawaddy dolphins and saltwater crocodiles and an important bird – the masked fin foot.”¹²⁰ The EIA also includes a map of important dolphin areas near coal transportation route; the southernmost area would become the anchorage area for large coal ships at Akram Point.¹²¹ All of these species face extreme risks from the increasingly busy shipping lanes in the Sundarbans through, among other things, the discharge of pollutants from ships and the risks of major shipping accidents.

For example, heavy ship traffic would increase the risk of shipwrecks which could severely contaminate the Sundarbans ecosystem. Although the EIA explains that “[t]here is no record of ship collision in the Mongla region in last 10 years,”¹²² that is no longer correct. As described in section II. above, there have been three major shipping accidents since December 2014. The December 2014 accident contaminated a 60 kilometer area with fuel oil, killing wildlife and harming fisheries. A Joint United Nations and Government of Bangladesh investigation into the accident concluded that “the management of vessel traffic through the Sundarbans and measures taken to prevent pollution incidents are currently weak and need to be addressed to help mitigate the risk of future pollution.”¹²³

Moreover, ships can release many types of pollutants that can harm aquatic and semi-aquatic species. As the EIA notes, this can include “residue of the bulk (coal in this case), ballast water, bilge water, oil, lubricant, garbage, domestic waste, food and kitchen waste, slurry of sea water, sewage, etc.”¹²⁴ The

EIA also acknowledges the potential threats to the Sundarbans ecosystem, stating: “If the vessel do not comply [with] the maritime rules and regulation and IMO conventions for transporting and handling coal, ECR 1997, in the Passur river system, it may have impact on the ecosystem of Sundarbans especially Royal Bengal Tiger, crocodile, deer, dolphins, mangrove etc.”¹²⁵ In addition, “[b]allast water, oil spillage and coal dropping might affect pneumatophore of Mangrove plants. The excess traffic loads also possesses risk of intrusion of invasive species.”¹²⁶

The EIA explains that these threats would be minimal assuming all applicable regulations are enforced: “If the responsible authorities properly enforce ... regulations, water pollution due to shipping and barging activities may be minimum.”¹²⁷ Unfortunately, as explained in section II.A.2) above, the EIA’s assumption here is inappropriate. Evidence of widespread pollution from ships currently operating in the Sundarbans’ waterways suggests that the regulations are inadequate to prevent water pollution from shipping or that the government is failing to effectively enforce the relevant regulations. The IUCN, in a 2014 report on the state of the Sundarbans ecosystem, found that pollution from “ships plying through the Sundarban, as well as those anchored at Mongla port and the pollutants generated by the port” affects the Sundarbans delta.¹²⁸ The report found that, “[o]il spills and discharge from ships, use of high sulfur fuel, discharge of ballast water and sewage, and spilled over fertilizer, cement, coal etc. during transshipment at the port, are all detrimental to both aquatic and terrestrial life forms.”¹²⁹ Moreover, a December 2015 meeting of experts co-convened by the Bangladesh Department of Environment recognized that “[r]egular spillage of oils, release of ballast and bilge water from vessels navigating through the Sundarban and increasing industrial development requires sincere attention to be brought under environmental management.”¹³⁰

The river shipping lanes would also be marked by lighted buoys and beacons day and night for round-the-clock shipping.¹³¹ The EIA explains that the noise and light of constant ship traffic could impact Bengal tigers and their prey, but again assumes that impacts would only occur if regulations are not “properly maintained”:

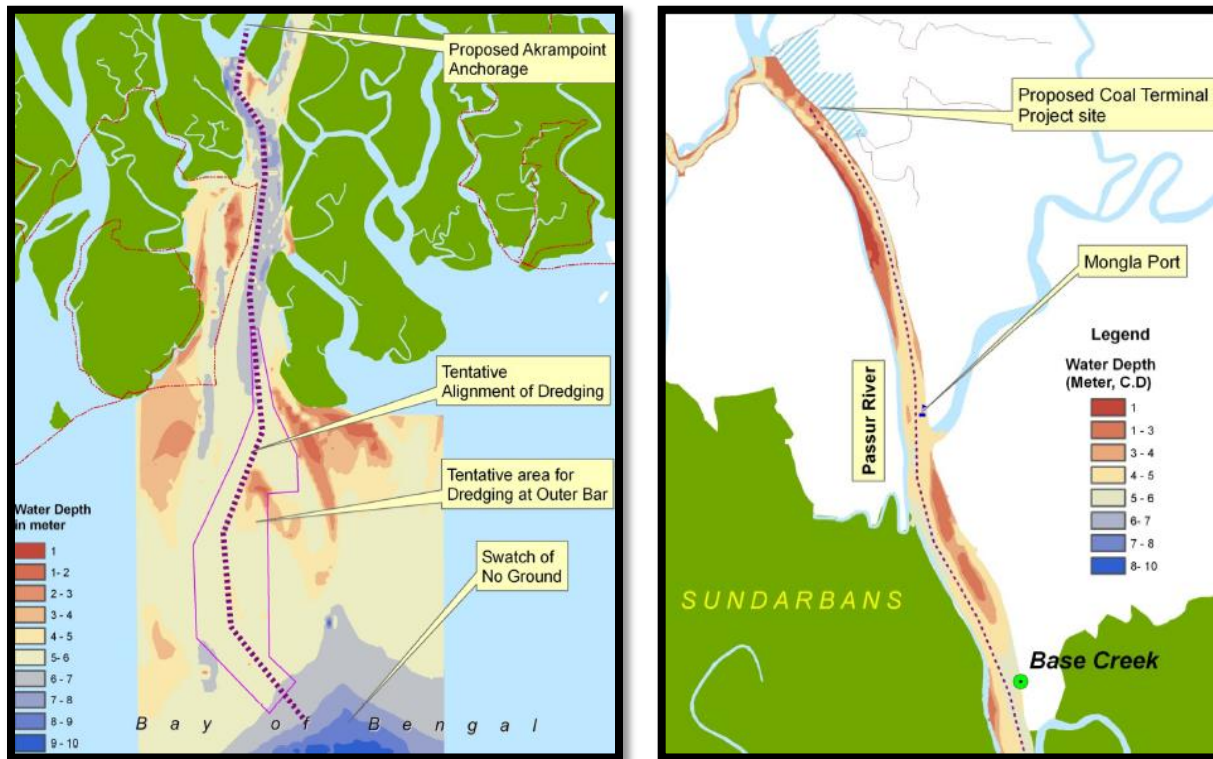
The project has been located ... 14 Km away from the nearest point of Sundarbans. However, the materials and equipment during the construction period would be transported by river to the project site. As such, the frequencies of the vessels will relatively increase. *If navigational, spillages, noise, speed, lighting, waste disposal rules regulations are not properly maintained, it may impact the Sundarbans ecosystem especially Royal Bengal Tiger, deer, crocodile, dolphins, mangroves etc.*¹³²

The EIA, however, does not address the potentially disruptive impacts from these lighted buoys on other animals, including fish, dolphins, crocodiles, turtles, and otters.¹³³

The Rampal and Orion plants will substantially increase the volume of ship traffic in the Sundarbans. The EIA’s faith in the government to enforce existing regulations that could minimize pollution from this increase in shipping is misplaced, and it is not supported by the facts.

d) Threats from river dredging

In order to accommodate the 80,000 ton coal ships coming to and from Akram point, 32 million cubic meters along 20 kilometers of the Sundarbans outer bar and channel that leads to the Bay of Bengal would need to be dredged. Some of this dredging would occur adjacent to one of the Sundarbans World Heritage Sites.¹³⁴ In addition, 2.1 million cubic meters spanning 6 kilometers of the Pashur River would need to be initially dredged,¹³⁵ and maintenance dredging would need to take place annually. 24 million cubic meters would be dredged in the outer bar and channel over the first five years and 1.8 million cubic meters in the Pashur River annually.¹³⁶



Proposed dredging from the Bay of Bengal to Akram Point, and Base Creek to Rampal power plant.¹³⁷

The EIA briefly discusses various threats that dredging poses to the environment. For example, the EIA states that “[i]f the dredgers cannot be managed properly, water quality of river may be contaminated by spillage of oil, grease and effluent from dumping site. Dumping of dredged material and seepage from dumped dredged material may also increase the turbidity of river water at project site.”¹³⁸ The EIA further acknowledges that the dredging may have impacts on the dolphin community of the Pashur River¹³⁹ as well as on fish migration, habitat and diversity.¹⁴⁰

The World Heritage Committee has already recognized that the EIA does not adequately assess the potential impacts on the property from dredging, noting that the EIA “for dredging of the Pashur River, adjacent to the property, did not include a specific assessment of the potential impacts on the property’s Outstanding Universal Value” and requesting that Bangladesh “submit to the World Heritage Centre an assessment of potential impacts on OUV, in accordance with IUCN’s World Heritage Advice

Note on Environmental Assessment, and to ensure activities are not conducted before the revised EIA is submitted to the World Heritage Centre and reviewed by IUCN.”¹⁴¹ As explained in section I above, however, it appears that dredging of the Pashur River has begun at the power plant sites without the government having prepared and submitted to the Committee an EIA on dredging impacts on OUV.

e) Water use

The Rampal power plant would draw an initial 144 million liters of water from the Pashur River, use an additional 9 million liters per hour, and discharge 5 million liters per hour back into the river.¹⁴² The plant will reduce the downstream flow of the Pashur River by 4 million liters each hour. Operating continuously, it would remove over 35 billion liters of water from the river each year, in an ecosystem already stressed by increasing salinity and reduced freshwater flow from upstream diversions (see discussion in section II.A.2 above). The Orion plant would further reduce the freshwater in the Pashur River.

f) The poor environmental track record of Rampal proponents NTPC and BPDB

India’s NTPC Limited has a history of disregarding Indian environmental laws and causing serious harm, raising concerns about the company’s suitability to co-manage the Rampal power plant. India’s Centre for Science and Environment (CSE) has rated NTPC as one of India’s most polluting and poorly managed coal-fired power plant operators because of its track record of contaminating water, local people, and ecosystems with air emissions and coal ash pollution of groundwater, surface water, and fisheries.¹⁴³

There have been a number of recent environmental regulatory proceedings against the NTPC’s operations in India. In January 2016, India’s National Green Tribunal issued an order requesting that the NTPC provide the Tribunal information in response to allegations that the NTPC Sipat plant discharged contaminants into the Lilagar river, used coal with a higher sulfur content than conditions permit, exceeded sulfur dioxide emission limits, exceeded ash content standards and did not comply with requirements for planting trees around the perimeter of the site.¹⁴⁴ Seepage from a dyke intended to contain coal ash at the Sipat plant is alleged to have adversely affected soil and agricultural land in at least seven nearby villages.¹⁴⁵ In August 2015, the National Green Tribunal ordered the NTPC-operated Badarpur thermal power station to bring the levels of particulate matter "within permissible limits" after a report highlighted excessive particulate levels in the air around the plant.¹⁴⁶ As the order was not effectively implemented, in December 2015, the Delhi Government ordered the closure of the Badarpur station for emitting particulate matter above permissible limits.¹⁴⁷ The National Green Tribunal has also issued a notice to NTPC for alleged illegal excavation of sand from the Sitareva tributary for construction of a 1600 MW thermal power station at Gardarwara in the Narshingpur district of Madhya Pradesh without a valid mining lease.¹⁴⁸ The illegal excavation is suspected to have harmed the habitat of at least eight endangered fish species.¹⁴⁹

The environmental management record of the Bangladesh Power Development Board (BPDB) also requires careful consideration. BPDB has been accused of major corrupt practices in large contracts by the Bangladesh chapter of Transparency International.¹⁵⁰ The World Bank has also raised concerns about corruption within the BPDB.¹⁵¹

The proposed massive Rampal and Orion coal-fired power plants would release air pollutants and toxic heavy metals, reduce water flow, and increase shipping-related pollution in the Sundarbans. These are major threats to the property which on their own could have deleterious effects on its inherent characteristics. However, the threats posed by the power plants should be considered cumulatively with the existing harms that the Sundarbans are facing (discussed in section II.A.) and with other potential impacts discussed below. The evidence thus satisfies this criterion for inscribing the Sundarbans on the In Danger list.

2. Criterion 180 d) iv): The management plan or management system is lacking or inadequate, or not fully implemented.

The 2015 State of Conservation report noted that “management systems/management plan” threaten the Sundarbans.¹⁵² This is supported by the IUCN, which has severely criticized the adequacy of the Sundarbans management plan. The IUCN noted that the Bangladesh Forest Department, which manages the Sundarbans, “focuses on the harvest of commercially important resources, through implementing working schemes and plan prescriptions, rather than managing the whole ecosystem and neighbouring impact zones under an integrated plan.”¹⁵³ Moreover, the IUCN explained that while “a few integrated management plans were developed in recent years, most of them were not fully implemented due to various constraints.”¹⁵⁴

The IUCN also noted that the government has no system in place to evaluate the effectiveness of the Sundarbans management systems. It explains:

Although the forest management system changes periodically with the development of technology and management paradigms, no serious investigation or research has been carried out to find out how the forest ecosystem is reacting to these management regimes in a habitat where the condition on the ground is undergoing slow but steady changes. ... Without a proper scientific and ecosystem based management system in place, the situation may possibly lead to the creation of a forest, which is much poorer in species diversity, economic value, and in its ability to provide goods and services in the long run.¹⁵⁵

The European Union Environment Program for Bangladesh has also concluded that “forest protection in [Sundarbans Reserve Forest] is inadequate to protect the forest from unsustainable extraction of forest produce or wildlife poaching.”¹⁵⁶

The evidence demonstrates that the Sundarbans’ management system is inadequate to address the multiple threats the property is facing and that the Sundarbans therefore satisfy this criterion.

3. Criterion 180 d) v): threatening impacts of climatic, geological or other environmental factors.

The Sundarbans face climactic and environmental threats from large storms, salinization, siltation and natural sea-level rise. Climate change, particularly through an increase in the frequency and intensity of storms and sea level rise, would also affect the Sundarbans.

The OUV recognizes threats to the Sundarbans from cyclones and other large storms, saline water intrusion and siltation. The OUV states that:

Natural calamities such as cyclones, have always posed threats on the values of the property and along with saline water intrusion and siltation, remain potential threats to the attributes. Cyclones and tidal waves cause some damage to the forest along the sea-land interface and have [previously] caused occasional considerable mortality among some species of fauna such as the spotted deer.... Storms, cyclones and tidal surges up to 7.5 m high, while features of the areas, also pose a potential threat with possible increased frequency as a result of climate change.¹⁵⁷

The property is also threatened by sea level rise, both from climate change and through continuous natural subsidence. UNESCO's World Heritage Centre explained that "there is a continuous natural subsidence in the Sundarbans, which causes a sea-level rise of about 2.2 mm per year."¹⁵⁸ In 2009, the World Heritage Committee's State of Conservation report recognized the risk of increased flooding and increased salinity from sea level rise and noted that a 25cm rise in sea level could result in a loss of 40 percent of mangroves in the Bangladesh Sundarbans.¹⁵⁹ In 2010, scientists studying sea level rise impacts in the Sundarbans noted that a 28 centimeter rise in sea level is likely to occur in the next 50 to 90 years, which would reduce tiger habitat in the Sundarbans by 96 percent, and reduce the tiger breeding population to just 20 individuals.¹⁶⁰

The IUCN also notes the potentially disastrous impact of climate-change induced sea level rise on the Sundarbans:

Most of the Sundarban is at risk of prolonged inundation and salinity intrusion due to its very low elevation from sea level, sea level rise, and coastal subsidence. Even though different species in this forest require periodic tidal inundation for healthy growth, none of these species can withstand prolonged water logging and ultimately, die in waterlogged conditions. Recent studies suggested that a 32 cm rise in sea level would result in diminishing suitable areas for Sundri (*Heritiera fomes*) trees (by up to 50%) by 2050 compared to the coverage in 2005.

Gradually, the Sundri trees will be replaced by high salt tolerant trees like Gewa (*Excoecaria agallocha*) and Goran (*Ceriops decandra*); Likewise, the habitat for wildlife, including tigers, will shrink substantially. *Changes in physiographic conditions and tree composition would also lead to changes in habitat conditions for the wildlife and may impede their population, or even lead to extinction from the forest.*¹⁶¹

The impacts from sea level rise will be exacerbated by other sources of stress, including upstream water diversion which would reduce dry season (winter) flow in the Pashur River by 40 percent.¹⁶² The World Heritage Centre explains that

[t]he joint action of sea-level rise, increased evapotranspiration, and lower freshwater flow in winter will also result in increased salinity in the area threatening the conservation of the Sundarbans mangroves. In the Sundarbans, as in many protected areas worldwide, conservation is threatened by several external factors and, again, climate change should be viewed as one source of stress among others. Altogether these factors could lead, in the case of a 45 cm rise in global sea level, to the destruction of 75% of the Sundarbans mangroves.¹⁶³

The evidence demonstrates that the Sundarbans are facing multiple threatening impacts of climatic, geological or other environmental factors, including from increasing large storms, salinization, siltation and natural and climate-change induced sea-level rise. The Sundarbans therefore meet this criterion.

III. Requests for the World Heritage Committee

The Sundarbans is a unique and fragile ecosystem that provides habitats for hundreds of aquatic, terrestrial and amphibian species, many of which are threatened or endangered. Unfortunately, rampant industrial development and other human encroachment have already caused the Sundarbans immense harm. Climate change and other natural factors will continue to threaten the ecosystem. The Rampal and Orion power plants are also moving ahead with construction, with a substantial amount to be likely completed by the summer of 2017. Should the Rampal and Orion power plants become operational, they may serve as a tipping point of contamination and stress on wildlife, pushing some of species to extinction, and irreparably harming important ecosystem functions as well as the outstanding universal values of the property.

In light of the above, we strongly urge the Committee to:

- 1) *Inscribe the property on the List of World Heritage In Danger; and*
- 2) *Regardless of whether the property is inscribed on the List of World Heritage in Danger:*
 - a. *renew all of the requests on Bangladesh set out in the Committee previous decision on the property (Decision 39 COM 7B.8);*
 - b. *request that the government undertake further, science-based environmental review, including additional analysis on the specific threats discussed here, and to reopen the environmental review process to ensure full and meaningful public participation;*
 - c. *request that Bangladesh stop all activities associated with the Rampal and Orion Khulna projects until it adequately complies with the Committee's multiple requests and until the*

- Committee has had the opportunity to fully evaluate the potential threats from the projects and other developments on the property's OUV; and*
- d. consider requesting to Bangladesh to cancel the projects because of the unavoidable and irreparable threats that they pose to the property's OUV.*

Sincerely,

Adv. Sultana Kamal, Convener
National Committee for Saving the Sundarbans (NCSS)

Dr. Mohd. Abdul Matin, General Secretary
Bangladesh Poribesh Andolon (BAPA)

Khushi Kabir, Coordinator
Nijera Kori

Sharif Jamil, Coordinator
Waterkeeper Alliance Bangladesh

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- ¹ UNESCO, *World Heritage Committee: The Sundarbans Bangladesh, Outstanding Universal Value (OUV)*, <http://whc.unesco.org/en/list/798>.
- ² Photo copyright by Mohammad M Rahman, Photo taken in Kyra Upazila, Bangladesh (2012) <http://www.panoramio.com/photo/65450100>.
- ³ Sundarbans Statement of OUV, note 1 above.
- ⁴ Ibid.
- ⁵ Ibid.
- ⁶ Ibid.
- ⁷ Ibid.
- ⁸ Ibid.
- ⁹ Orion Group, *Orion Power Khulna Ltd.*, <http://www.orion-group.net/concern/27/61/orion-power-khulna-ltd> (accessed January 28, 2016).
- ¹⁰ Government of the People's Republic of Bangladesh Ministry of Power, Energy & Mineral Resources Bangladesh Power Development Board, *Final Report on Environmental Impact Assessment of 2x (500-660) MW Coal Based Thermal Power Plant to be Constructed at the Location of Khulna* ("EIA volume 1") (July 2013) p. 291.
- ¹¹ World Heritage Committee, *Decision 39 COM 7B.8, The Sundarbans (Bangladesh) (N 798)* (July 2015), <http://whc.unesco.org/en/decisions/6209>. The Committee requested that Bangladesh, among other things: 1) submit to the World Heritage Centre an assessment of potential impacts from dredging of the Pashur River on the property's OUV, and to ensure activities are not conducted before the revised EIA is submitted to the Centre and reviewed by the IUCN; 2) undertake a comprehensive Strategic Environmental Assessment (SEA) to assess the indirect and cumulative impacts from the project and other developments in the vicinity of the property, including a specific assessment of potential impacts on its OUV; 3) provide further details on the mitigation measures taken for the power plant, which should fully consider the findings of the SEA; 4) submit without delay to the World Heritage Centre and review by the IUCN the results of ecological monitoring data for the property which also documents the impacts of climate change on the property's OUV; and 5) to take measures to prevent shipping accidents in the Pashur River and to strengthen its oil spill preparedness and response capacity.
- ¹² Bangladesh India Friendship Power Company Ltd, *6th Quarter Monitoring Report* (August 2015), <https://bifpcl.com/wp-content/uploads/2016/01/6th-Quarter-Monitoring-Report.pdf> at xv.
- ¹³ The Daily Star, *India's Bhel gets Rampal contract* (January 18, 2016), <http://www.thedailystar.net/frontpage/indias-bhel-gets-rampal-contract-203518>.
- ¹⁴ Ibid.
- ¹⁵ The Financial Express, *Rampal thermal power plant complete by 2019 : Minister* (November 23, 2015), <http://old.thefinancialexpress-bd.com/2015/11/23/119644>.
- ¹⁶ Interactive Investor, *[reposting of Daily sun article]*, (May 24, 2014) <http://www.iii.co.uk/investment/detail?code=cofn:GCM.L&display=discussion&id=11225802&action=detail>; The Report, *Orion Group More Powerful than Government!* (May 30, 2014) <http://english.thereport24.com/article/7733/index.html>.
- ¹⁷ Department of Environment, *DOE Clearance 5062/2011/206, Approval of Environmental Impact Assessment (EIA) Report for Proposed Khulna 1320 MW Coal Based Power Plant Construction Project at Rampal Upazila under Bagerhat District* (August 5, 2013).
- ¹⁸ World Heritage Committee, *Decision 39 COM 7B.8*, note 11 above.
- ¹⁹ Bangladesh India Friendship Power Company Ltd, *6th Quarter Monitoring Report* (August 2015), <https://bifpcl.com/wp-content/uploads/2016/01/6th-Quarter-Monitoring-Report.pdf> at 25.
- ²⁰ Dhaka Tribune, *No salvage three days in* (October 31, 2015), <http://www.dhakatribune.com/bangladesh/2015/oct/31/no-salvage-three-days>.
- ²¹ Reliefweb, *Sundarbans Oil Spill Assessment: Joint United Nations/Government of Bangladesh Mission* (December 2014), (March 1 2015), <http://reliefweb.int/report/bangladesh/sundarbans-oil-spill-assessment-joint-united-nationsgovernment-bangladesh-mission>.

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