

Analyses of Risks and Opportunities

[Physical risks]

■ Short-term risks (1 to 3 years)

- Changes in maximum and minimum temperatures

The temperature rise in the summer reduces production efficiency because of the risk of heat stroke among employees.

■ Long-term risks (7 years or longer)

- Increasing seriousness of abnormal weather such as cyclones

Climate change has negative impacts, such as the falling of trees in our forest plantations and company-owned forests caused by destructive tropical storms including cyclones, a decline in the value of our assets caused by landslides, and a difficulty in procuring wood materials, recovered paper, and other key raw materials.

[Opportunities related to physical risks]

■ Short-term risks (1 to 3 years)

- Changes in maximum and minimum temperatures

In response to the rise in the maximum temperature and the decline in the minimum temperature caused by climate change, there will be growing demand for comprehensive greenery business including roof greening, air-conditioner components, and biomass fuels, which help alleviate the problems.

■ Long-term risks (7 years or longer)

- Increasing seriousness of abnormal weather such as cyclones

The increasing seriousness of abnormal weather will cause landslide disasters, including in forests, and the collapse of infrastructures such as roads. This will lead to growing demand for reforestation technologies, mineral materials needed for infrastructures, and facilities for power generation and other purposes as well as products and services for repair, construction, and maintenance of such facilities.

[Transition risks]

1) Risks attributed to political measures or regulations

■ Medium-term risks (3 to 6 years)

- Increase in the burden of carbon price tax

In Japan, the government is considering the further introduction of environmental taxes in addition to the Global Warming Tax, possibly raising the tax rates.

■ Long-term risks (7 years or longer)

- Emissions trading system

There is a risk of an increase in costs for purchasing carbon credits if an emissions trading system is introduced in Japan, with emission limits are set for businesses, and we fail to achieve the limits.

- Mandatory energy efficiency target

There will be a risk of costs being incurred if the achievement of the energy

efficiency target is made mandatory and fine system is imposed for any failure to the target, in the revision of the Energy Conservation Act, scheduled in just over a year.

[Opportunities related to transition risks]

■Medium-term risks (1 to 3 years)

- Increase in the burden of carbon price tax

Demand for the electric power business with biomass fuels, biomass power generation, and hydraulic power generation will increase in response to the increase in the petroleum and coal tax rate, which will be implemented in just over a year.

■Long-term risks (7 years or longer)

- Emissions trading system

If the emissions trading system is fully introduced in just over a year, resulting in the active trading of carbon credits as carbon sinks, the value of the 190,000 hectares of our company-owned forests (including 20,000 hectares of profit-sharing forests) will increase, and at the same time, carbon sink trading will lead to an increase in our profit.

Cost of Climate Change by Risk

[Physical risks]

1) Changes in maximum and minimum temperatures

Changes in the ecosystem caused by changes in the maximum and minimum temperatures are likely to affect the growth of trees in company-owned forests and result in the reduction of the timber yield. The poor growth of trees also increases the operating cost related to wood production. If climate change has a fatal impact on the growth of trees, it will be impossible to continue the forest plantation business, which is likely to result in the loss of all or part of our forest plantation stands as our assets, whose value was ¥93,238 million as of the end of FY2017. This will result in the generation of costs of approximately ¥9,000 million or more (excluding investments) for the research and development of technologies for selecting species of trees to plant at an early stage and for the maintenance of the forests.

2) Increasing seriousness of abnormal weather such as cyclones

Intensified tropical storm activity may result in damage to our facilities, including damage to mills that leads to the suspension of production due to causes such as flood. A short-term effect of such a disaster is a decline in sales and profit due to reduction in the production volume. This will turn into a long-term effect if our market share is lost to our competitors. Our FY2017 sales in Southeast Asia, which is relatively vulnerable to damage from tropical storms, were approximately ¥70 billion and part of this may be lost if our facilities in the region are damaged.

[Transition risks]

1) Risks attributed to political measures or regulations

Due to the Feed-in Tariff (FIT) that was introduced in Japan, the FIT charge is added to electricity bills. The rapid spread of renewable energy may lead to a surge in the FIT charge and a significant increase in the cost of purchasing electricity. The FIT charge was ¥3.4 billion in FY2017. The FIT charge is expected to continue rising, resulting in a financial burden of billions of yen per year and the generation of costs of ¥3 million or more (excluding investments) for energy-saving measures taken in each business site.

2) Market risks

There is a risk that demand for paper products will decline, resulting in the partial loss of sales and profit, if consumers fear that the use of paper will lead to deforestation and the worsening of climate change. Sales of our businesses related to paper and corrugated containers stood at around ¥510 billion in FY2017 and the consumer concern may cause the partial loss of sales from these businesses. In response, we will carry out PR activities to ensure that consumers, etc. understand that the use of wood raw materials from forests that are managed in a sustainable manner and the purchase of forest-certified products lead indirectly to forest conservation. These activities will generate a cost of ¥60 million or more (excluding investments).

If capacity utilization declines due to a decrease in production quantity reflecting decreased demand, specific energy consumption and GHG emission intensity will be worsened, resulting in higher operating costs.

Methods of Management of Climate Change Risks and Opportunities

1.

We conduct monthly monitoring of climate change risks and opportunities that will have an impact on the Oji Group, summarize the results of the monitoring, and report them to officers and board members. The areas to be monitored are those where the Oji Group operates businesses, and the subject risks are those that may be occurred within the short-term (1 to 3 years) and the medium- to long-terms (3 to 5 years and 6 years or longer, respectively).

Specifically, we conduct monitoring by constantly collecting and checking information disclosed by administrative authorities, media reports, and information from industry associations. We submit and report important risks and opportunities to the Board of Directors in the judgment of the officer in charge of climate change. Where necessary, we conduct detailed investigations which include the collection of information from business locations and interviews with experts. We carry out periodic reporting on a monthly basis and report highly important or urgent matters as needed.

2.

Group-wide risks and opportunities are identified by the Environmental Management Department of Oji Holdings by collecting information related to climate change, such

as information about international discussions and frameworks, domestic policies, laws, and regulations, movements of other companies, and reputations. We assess these risks and opportunities and address them as needed.

Facilities and divisions of the Oji Group report the status of energy management and other matters to the Environmental Management Department. They also receive information about risks and opportunities related to climate change from the Environmental Management Department and use the information for managing their risks and opportunities. The facilities and divisions collect information about local policies and regulations on their own and respond appropriately to them.

Concerning risks and opportunities, the Environmental Management Department or a related division, such as the division in charge of risks, conducts a comprehensive assessment of the intensity or magnitude of their impact on the company or the area around each business site, as well as their financial impact, urgency, and other aspects. Then, they are handled, with priority given to those deemed by the management to be closely related to business continuity.

Impact of Risks and Opportunities on Businesses

In the Oji Group, risks and opportunities across the entire Group are managed, collecting information about climate change, such as international discussions and frameworks, domestic policies, laws, and regulations, movements of other companies, and reputations, and alleviation targets are proposed by the Environmental Management Department. A report is submitted to the Director in charge of climate change problems on a regular (monthly) basis, and highly important or urgent matters are reported as needed. In addition, the highly important or urgent matters are submitted and reported to and deliberated by the Management Meeting, which consists of Directors, while each business segment determines business strategies related to climate change. The facilities and divisions of the Oji Group report the status of their energy management and other matters to the Environmental Management Department every three or six months. They receive information about the status of the achievement of the Oji Group's GHG emission intensity target, which was set in accordance with the Japanese government's target formulated based on the 2-degree scenario for 2030, as well as risks and opportunities related to climate change to manage their risks and opportunities. In addition, the facilities and divisions collect information about local policies and regulations on their own and respond appropriately to them.

In the Oji Group, a cost of around ¥9.0 billion has been generated for the conservation of forests in Japan and overseas. Failure to implement these measures may result in the loss of part or all of the value of the Group's forest plantation stands and forest lands as its assets, which is ¥205,828 million (as of March 2018), due to landslide disasters, floods, and other disasters caused by climate change.

Measures against Climate Change Problems

To address climate change, the Oji Group implements the following measures:

- Decentralized procurement, which is aimed at avoiding resource procurement risks caused by climate change
- Keeping emergency supplies and creating hazard maps
- Altitude indication
- Watershed protection and prevention of soil erosion with forest conservation and other means
- Forestation of sand dunes and deserted land through environmental plantations (in Vietnam, China, etc.)
- Operation of business continuity management (addressing risks such as the risk of disaster occurrence)
- Monitoring disaster damage by using a safety confirmation system
- Provision of water treatment systems for the water environment (research and proposal, design and construction, and maintenance and management)
- Development of a technology for cultivating licorice, a medicinal plant
- Recycled wood pavement that uses wood resources, such as wood from thinning
- Conclusion of an “Aid Distribution Agreement under Disaster Cases” between corrugated container plants and local municipal governments all over Japan, under which we deliver corrugated container products such as beds, partitions between sheets, and portable toilets, for use at evacuation centers