Position Paper on Sustainability by
Asian Chemical Fiber Industries Federation (ACFIF)

Title: "Chemical Fiber Industry in Asia Supporting the Realization of a Sustainable Society"

I. Mission of the Asian chemical fiber industry

1. As the world population continues to grow, especially in emerging countries, demand will also grow for fibers, which are raw materials for essential items such as clothing. Since it is difficult to expand the production of natural fibers because of the need to compete with food production on limited cultivated land, we must respond to future increases in demand, mainly by expanding chemical fiber production.
2. Chemical fibers can exhibit many outstanding functions in accordance to how they are applied, such as strength and lightness, depending on the design. They contribute to enriching people's lives by providing comfort, design, and durability in clothing, while also being an indispensable material for various non-clothing industries such as medical care, construction, automobiles, and aerospace.
3. Concern and interest have grown in recent years over global sustainability due to mounting global challenges such as climate change, water scarcity, resource depletion, and aging populations in many countries. Chemical fibers are already contributing to the realization of a sustainable society through various applications such as weight reduction of aircraft, purification of water and air, and smart textiles. They are expected to become an even bigger contributing factor with the development of high-functioning and high-performance fibers.
4. The negative impact of chemical fibers or chemical fiber industry on global sustainability, such as dependence on fossil resources that emit CO2, marine pollution, and outflow of environmental pollutants in the production process, is a very important issue. We, the Asian chemical fiber industry, aim to resolve the issue, by taking effective measures based on scientific evidence.
5. The Asian chemical fiber industry, which accounts for about 90% of the world's chemical fiber production, shares an understanding of the issues discussed above and will support the realization of a sustainable society through effective cooperation among countries and regions.

II. Impact of Covid-19

1. Due to the spread of Covid-19 from the beginning of 2020, the Asian chemical fiber industry has been directly impacted by government forced suspensions of operations in some of the countries and the regions and has also suffered an unprecedented decline in earnings due to a steep fall in demand in various fields.
2. As infections decline going forward, demand for many of the uses of chemical fibers is expected to return to previous levels over time. However, we must note that the following impacts of Covid-19 is very likely to be permanent.

(1) Post-Covid economic recovery policies in Europe aim to link sustainability with industrial competitiveness. In response, efforts related to sustainability are expected to intensify mainly in Europe and spread to the rest of the world.
(2) As lifestyles change as a result of Covid-19, consumers are expected to become more altruistic and minimalistic, with an increasing awareness for sustainability.
(3) The risk of disruptions in the supply chain (policies that prioritize domestic supply, suspension of operations due to spread of infectious diseases and financial difficulties) has become apparent.
(4) There has been a renewed recognition of the role that chemical fiber products play in preventing the spread of infectious diseases and in providing treatments. Demand is also growing in areas such as essential use, resulting in a need for its stable supply.

3. All of the moves above are in line with the aim to realize a sustainable society, and the importance

of addressing sustainability—the measures taken before Covid-19—has also grown, triggered by the virus. Given this situation, the Asian chemical fiber industry will aim to contribute greatly to policies around the world to control infectious diseases in the post-Covid era.

III. Efforts by the Asian chemical fiber industry for the realization of a sustainable society and its challenges

We, the Asian chemical fiber industry, must fulfill its responsibility of providing supply to meet future growth in global fiber demand. At the same time, it is becoming an urgent issue for the chemical fiber industry to shift to a resource circulation model and to work on measures to address climate change, with the aim to achieve the goals of the Paris Agreement and SDGs of the United Nations, for the realization of a sustainable society.

1. Realization of resource circulation

From the perspective of decarbonization and the effective use of resources, we are working toward contributing in the short term through the promotion of PET recycling, which has already been put into practical use, and in the long term, shifting the raw materials for chemical fibers to renewable raw materials that do not emit CO2 in their life cycle.

(1) PET recycling

A. Some Asian countries and regions have been promoting the production of chemical fibers that use collected PET bottles instead of petrochemical raw materials. We will contribute to resource circulation from the perspective of promoting the use of recycled raw materials by expanding the production of chemical fibers going forward.

B. [Challenge] Chemical fiber companies are required not only to develop technology to make full use of recycled PET raw materials such as the removal of impurities and applications for fibers made of such materials, but also to secure a stable supply of collected PET bottles, build systems for collecting bottles, and cooperate with national and local governments.

(2) "Fiber to Fiber" recycling

A. Some Asian chemical fiber companies have already begun commercialization of fiber to fiber recycling of clothing and fishing nets. Going forward, we will expand areas of practical use by overcoming technical issues and various problems related to collection of products after use. We will contribute to resource circulation by building a closed loop recycling system for final products made of chemical fibers.

B. [Challenge] For a fiber product to be recycled by returning to a polymer or a monomer, it must be designed for easy recycling. This makes the type of applicable products limited. The first challenge is to recycle used fiber products that are close to mono-materials. When applying new chemical recycling technologies such as liquefaction and gasification, we must also analyze their effectiveness from various environmental perspectives including CO2 emissions.

(3) Use of plant-derived raw materials (Bio-based fibers)

A. In Asia, the commercial production of chemical fibers using fully or partially plant-derived raw materials (bio-based fibers) is growing. Bio-based fibers are excellent in that they do not depend on finite fossil resources, and they do not emit CO2 in their life cycle, even if they are incinerated at the time of disposal. This contributes to promoting a circular economy and tackling climate change, making further growth desirable.

B. [Challenge] When increasing the amount of production and fully expanding the range of applicable fibers, it will be necessary to take measures such as using only leftover parts of edible

crops to avoid competing with food production and to prevent the destruction of forests and other parts of the environment. We must compare, in terms of the quality and cost, chemical fibers using plant-derived raw materials with those using petrochemical raw materials, and work on expanding the types of use for bio-based fibers.

(4) Common challenges of (1) to (3) above

A. Making consumers aware of the value of products using recycled or bio-based materials that contribute to resource circulation will lead to more use of these products. Therefore, it will be important to raise consumer awareness and to establish a system for labeling or certifying products so that end-use industries and consumers can evaluate the environmental impact of these products and make correct choices.

B. For (2) and (3) in particular, further development and demonstration of technologies are needed for practical use, and the support of national and regional governments is desirable.

C. In order to realize resource circulation, it is necessary to design and implement regulations on waste collection appropriately in each country and region.

2. Reduction of environmental burden

(1) Reduction of CO2 emissions

A. Asian countries and regions are working to curb climate change under the Paris Agreement, setting high targets for reducing CO2 emissions. The Asian chemical fiber industry will respond to climate change issues from both “defensive” and “offensive” perspectives.

B. [Challenge] In addition to actively promoting energy saving and environmentally friendly technologies and equipment in chemical fiber manufacturing, we must accelerate efforts to address global warming and other climate change issues through products and technology that contribute to protecting the environment. Such efforts include weight reduction of transportation equipment, development of comfortable and functional materials such as thermal and cooling materials, and purification of water and air, etc.

(2) Response to the problem of marine plastic pollution

A. The Osaka Blue Ocean Vision agreed in 2019 at the G20 Osaka Summit sets a goal of reducing additional pollution by marine plastic litter to zero by 2050. The Asian chemical fiber industry will work toward the effective use of resources by promoting recycling and will seriously address the problem of fiber fragments that come from textile products.

B. [Challenge] For implementing appropriate and effective measures aimed at the issue of fiber fragments, we are urgently working to obtain scientific knowledge of their amount/distribution in the ocean, the originating sources, runoff routes, and impact on the ecosystem, while also trying to standardize a necessary test method. Based on this, we must address the problem of marine plastic pollution not only through fiber products, but also through cooperation with related industries such as washing machine, detergent, and apparel or textile manufacturing industries. When addressing this problem with the use of biodegradable fibers, it will be necessary to carefully make sure that they will be completely decomposed in the ocean and soil under various conditions.

(3) Chemical substance management

A. Chemical substance management regulations are intensifying globally, especially in Europe, and restrictions are also emerging in the Asian chemical fiber industry over the use of chemical substances, processing agents, dyes, etc. We will obtain the latest safety information and scientific knowledge of chemical substances, and continue our efforts toward reducing

environmental pollution by, for example, replacing high-risk substances with alternatives, while working as an environmentally friendly chemical fiber industry and textile industry chain as a whole.

B. [Challenge] It is necessary to appropriately shift to production with low environmental impact and materials that use environmentally friendly chemical substances, while paying close attention to changes in environmental regulations and risk assessments in countries around the world.

(4) Challenges to be addressed by the textile supply chain as a whole

In addition to the challenges (1) to (3) above, which the chemical fiber industry will take the lead in addressing, it is also necessary to cooperate with related industries to resolve the following challenges that need to be improved in the textile supply chain as a whole.

(a) Overproduction and disposal of textile products such as apparel

(b) Mass consumption of water during the stages of textile dyeing and processing

3. Expansion of chemical fiber products that contribute to the realization of a sustainable society

(1) Contributions of the chemical fiber industry in the post-Covid era

A. With the spread of Covid-19, the importance of personal protective equipment (PPE) for medical and hygienic purposes such as masks, medical gowns, protective clothing, and sanitary wipes is increasing. Chemical fibers have contributed significantly to efforts to control infections around world through the stable supply of PPE mentioned above.

B. [Challenge] It is necessary to build a system for providing a stable supply of PPE in emergencies, and to further improve the performance and functionality of such products.

(2) Promotion of standardization activities

A. In Asia, as consumers become more sophisticated, and as we promote a circular economy and respond to climate change as explained above, there is an increasing need to visualize the added value of chemical fibers as a way to ensure security, safety, and reliability more than ever.

B. [Challenge] It is necessary to properly understand the situation of the increasingly sophisticated Asian chemical fiber market and to continue promoting activities for standardization in the Asian chemical fiber industry, such as cooperation in activities associated with ISO standards. To this end, the ACFIF Working Committee of Standardization will become an important platform.