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Statement

Dr. Hans Jürgen Wernicke

Chairman of DECHEMA Society for Chemical Engineering and Biotechnology
Frankfurt am Main, Germany

Ladies and gentlemen,

it is my pleasure to welcome you to the first event of the 8th AchemAsia, the opening press conference. This afternoon we will open the exhibition and congress officially with a grand ceremony to which you are cordially invited.

AchemAsia is not only a time to meet colleagues from all over the world or to establish new relationships. It is also an opportunity to make an assessment of the challenges we are facing as engineers and scientists, but also as responsible citizens of the world.

Today, almost 7 billion people are living on earth. Every day they use 87million barrels of oil and 16 million tons of coal in order to fulfill their demand for warmth, mobility and energy, and the basic needs of all are currently not even covered. At the same time, we have to accept that the resources are dwindling slowly, but surely and that our current way of life has dramatic consequences for the environment. What used to have a local or a regional effect – water pollution, desertification or local scarcity of resources – influences today complex global systems like the global climate. Our actions are affecting large, complex interrelations, and thus we have to think in large complex interrelations if we want to find appropriate solutions.

It is, therefore, not enough to simply replace oil or coal with biomass in order to generate electricity. We have to consider the implications on a greater scale: Does the production of biomass for energy use or as a chemical building block require fields that would otherwise be used for the production of food? Does the production

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and use of fertilizers ultimately produce more climate gas than can be saved by using biomass? If we consider these questions carefully, we will still find enough potential for the responsible use of renewable resources.

Using biomass in the chemical industry is not entirely new. In 2007, according to the German Chemical Industry Association, about 10 % of the 21 million tons of resources used in the German chemical industry were of renewable origin. Starch, sugars, cellulose, fats and oils are used in the production of plastics, fibers, detergents, cosmetics or lubricants. What is new, however, is the use of renewable building blocks as starting points for more complex synthetic pathways.

China alone produces 700 million tons of agricultural waste per year which is mostly burned without making any further use of it. This biomass consists of straw, husks and other residue containing cellulose, lignin and other substances that are hard to convert chemically. New routes for the use of these feedstocks have to be developed. Platform chemicals from biorefineries may be quite different from those in "classical" petrochemical plants. Usually established processes have to be adapted and new processes have to be developed, including new plant designs, new catalysts, different solvents and much more. Biotechnology becomes ever more important in this context because microorganisms and enzymes can perform chemical transformations that are hardly accessible in the conventional way.

Apart from contributing to solving the global climate and resource situation, shifting towards new resources may also help to solve regional problems. Countries that have little or no resources or no adequate infrastructure to rely on conventional systems of energy or oil supply are given new perspectives if we can offer intelligent technologies based on what is available to them: sun, wind or different types of biomass to generate electricity, provide fuel or produce basic materials for building or other purposes.

Of course, substituting resources is not the only way in which chemical engineering can contribute to shaping our future. Not all resources that we depend on can be replaced. Therefore, we need to improve our recycling methods, especially for rare metals, but also for other kinds of valuable so-called "waste". And we have to protect our water resources and find new ways to secure our water supply. The Chinese government is giving much attention to the protection of water resources in the 11th Five-Year Plan. Professor Geißen will give us some more details on the technical possibilities in his statement.

Besides using resources responsibly, saving them can also be an effective way to secure our future supplies. Energy efficient production methods and energy saving

products are very important topics. Apart from saving energy in our plants by employing new reaction pathways using modern catalysts or other new technologies, the chemical industry provides modern insulation materials and other products that enable energy saving in other industries, but also for the average household. Fortunately, chemists and engineers are used to thinking in complex interrelations and to working across borders, both in terms of geography and in terms of discipline. We will not solve today's challenges without a major contribution from the process industries. That is why I am especially happy to see that our Chinese partners are giving priority to the same questions that are moving us. I am certain that the assessment of the situation is not the only common ground, but that working together on the solutions will give us a much deeper understanding and esteem of each other and will help to make the world a good place for future generations.