

# China



## 1 Which bioeconomy-related policy strategies exist?

In China, the political interest in the biobased economy is strongly linked to biotechnology development. China's research and technology landscape is one of the most complex and diversified in the world. The High-Tech R&D Program (863-Program), which was launched in 1986, is considered as the key impulse for Chinese biotechnology development. Today, biotechnology is promoted in the **Medium and Long-Term Plan for the Development of Science and Technology** as well as in the **12<sup>th</sup> Five-Year Development Plan for National Strategic Emerging Industries**. End of 2012, the State Council published the corresponding **“Plan for Development of Bioindustry”**. With regard to bioenergy,

China has been leading the production of bioethanol and nearly half the fuel demand is covered by biofuels. With the exception of biobased jet fuels, however, the importance of biofuel development in biotechnology science and policy has been reduced in favor of other industrial uses of biomass.

With a view to agricultural innovations, specifically the **“12<sup>th</sup> Five-Year Plan for National Agriculture and Rural Economic Development”** and the **“12<sup>th</sup> Five-year Plan (2011–2015) on Agricultural Science and Technology Development”** can be considered guiding policies for bioeconomy development.

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## 2 Is the term “bioeconomy” or “biobased economy” used in the strategy documents?

Yes No



The term “bioeconomy” has been used in the 11<sup>th</sup> Five-Year Plan for National Strategic Emerging In-

dustries. In the 12<sup>th</sup> Five-Year Plan, “bioindustry” is used more frequently.

### 3 Who is the author of the strategies?

The Central Committee guides the national efforts to develop China into a global biotechnology player. The State Council (Science, Technology and Education “Lead Group”) coordinates the innovation policy and publishes the five-year plans. Besides the Ministry for Science & Technology,

also the Ministries for Agriculture, for Industry and Information Technology, for Education, Land Use and Resources as well as the Chinese Academy of Sciences also have their own budgets for science and technology programs.

### 4 What are the key goals of the strategies?

The Five-Year Development Plan for National Strategic Emerging Industries (2012) has been developed with a view to fostering sustainable growth, economic upgrading and strengthening of domestic demand. The biosciences should specifically foster “indigenous industrial innovations”. Another important goal of the plan is “smart urbanization” in China’s fast growing megacities.

The “Plan for Development of Bioindustry” responds to key societal challenges, such as healthy

aging, food security, energy supply and environmental improvements. In terms of sustainable growth, China should double the added value generated by the bioindustry as a percentage of GDP by 2015 compared to 2010. Between 2011 and 2015, bioindustry is set to create one million jobs, increase life expectancy by one year, reduce child mortality by 12 percent and cut harmful emissions by 10 percent. With regard to biobased materials, the plan envisages producing three million metric tones of biobased polymers by 2015.

### 5 What are the priority areas of the strategies?

The Five-Year Development Plan defines seven strategic emerging industries, i.e. energy-saving and environmental industries, next-generation information technology industries, biotechnology industry, advanced equipment manufacturing, a new energy industry, new materials industry in addition to the electric car industry. By 2020, these industries together should contribute to 15 percent of GDP. Biotechnology will be promoted across these diverse application areas. Besides biotechnology, bioeconomy-related issues are also addressed in some of the other strategic industry programs, for example in energy efficiency, environmental technologies and innovative materials. The plan defines twenty key projects, which include biomedicine,

plant breeding and also the development of biobased materials. The budget for the plan has been indicated at USD 1.7 trillion.

Biotech innovations should be fostered with more than USD 10 billion. End of 2012, the State Council published the corresponding “Plan for Development of Bioindustry”. The emerging bioindustry comprises biomedicine, agriculture, bioenergy and biobased industries. The plan focuses on the development and dissemination of new drugs, new crop varieties, green planting techniques, biofuel and biomass power generation, green biotech and biobased products.

Another key focus area of the Chinese bioeconomy is agricultural innovation with a view to ensuring food security. Agricultural biotechnology and specifically GMOs are promoted in a support program which was launched in 2008 for the following fifteen years. The “Agricultural Science & Technology Innovation Program”, which runs from 2013–2025,

should increase the efficiency of political support for agricultural innovations. The program encourages international cooperation, capacity building and upgrading of research infrastructures. It comprises eight “discipline clusters” that comprise practically the full breadth of agri-sciences from crop science to agri-technology and agro-economics.

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