



## **Policies on Genetically Modified Organisms (GMO) Products in Indonesia**

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### **INTRODUCION**

Recently, the rapid growth of population as well as climate change are major problems of the community in line with “food security”. On the one hand, the increase of population encourages the escalating basic needs of food, health, clothing, and so forth. On the other hand, the impact of climate change on food production due to disruption of plant pests and soil conditions require efficient and effective solutions.

The utilization of transgenic method is one of the options that deals with the constraints in the cultivation of crops. This method is widely known internationally as “Genetically Modified Organism (GMO)” to which it would be one of the breakthrough results of the application of biotechnology to boost food production. The agricultural products produced through GMO are expected to be, bigger and durable, with a cheaper price compared to conventional agricultural products.

#### **Rationale**

It is noted that more than 250 million Indonesians currently require the certainty of food supply in which this number would approximately increase to about 4 million a year. Improving agricultural production of about 3.5% annually should follow the population growth rate of 1%. On the other hand, Indonesia is facing shrinkage of agricultural land due to land conversion, limited water availability, limited fossil energy, and leveling off of crop productivity. Hence, exploiting the potential biotechnology such as genetic manipulation in the form of molecular biology, microbiology, bioprocesses, tissue culture, and genetic

engineering are expected to improve productivity and product quality in accordance with environmental dynamics. By employing biodiversity through genetically engineered technology provides an opportunity to support food security and human's quality of life improvements. However, this technology should be implemented appropriately through *precautionary approach*.

### **Policy framework**

The government of Indonesia (GoI) has formulated some anticipation with regard to the GMO issues. It initially issued Law No. 7/1996 on Food. Furthermore, the GoI issued several laws and regulations related to biosafety and food safety of GMO products in the form of laws, government regulations, minister regulations, and others. The following essential laws and regulations, among others, are briefly discussed below.

#### ***Food Law No. 7/1996***

The Food Law No. 7/1996 was the first regulation associated with the utilization of GMO products in Indonesia. It was regulated that any person who produces food or uses raw materials, food additives, and other materials in the activities or processes of food production resulting from GMO must initially examine the items in terms of food safety for human health prior to release. The government sets the requirements and the principles of research, development, and utilization method of GMO in the activities and processes of food production, as well as determining the requirements for the testing of food resulting from GMO processes.

#### ***Agricultural Minister Regulation, 1997***

In 1997, the regulation of GMO biosafety was implemented based on the Decree of Agricultural Minister No. 856/1997. This regulation was issued based on the provisions of biosafety of genetically agricultural biotechnology products. The term "biosafety" was defined as efforts to prevent the disruption, damage and/or harm to humans, other biological objects, and the environment. This regulation covered the types, requirements, assessment procedures, rights and obligations, monitoring, controlling, and reporting of biosafety provisions. Hence, the Biosafety Commission was established in order to implement this regulation. Subsequently, this commission was supported by the Biosafety Technical Team under the Agency for Agricultural Research and Development.

It is necessary to test the biosafety of GMO products carefully in accordance with procedures and protocol standards. It was carried out gradually in the limited testing facilities

(biosafety containment) from the levels of laboratory, greenhouse/stall/pond, up to the limited field testing. The guidelines of the testing of biosafety GMO products had been prepared by the biosafety technical team and approved by the biosafety commission. These guidelines include general and specific aspects due to different testing techniques covering five series related to general aspects (general) and specific aspects (plants, animals, fish, and microorganisms).

### ***Joint Minister Decree, 1999***

Since the aspect of food safety was not regulated under the Agricultural Minister Regulation No. 856/1997; therefore, the new regulation namely the Joint Minister Decree of the Ministers of Agriculture, Forestry, and Health, as well as the State Minister of Food and Horticulture No. 998/1999 was issued on biosafety and food safety of agricultural products generated from GMO. It refers to the conditions and efforts required to prevent the safety of GMO products which could possibly disrupt, harm, and jeopardize the biodiversity including animals, fish, plants, and the environment. The scope of this Joint Minister Regulation includes the setting types and uses of biosafety and food safety, procedures of biosafety and food safety, rights and obligations, monitoring, controlling, and reporting of GMO products. It covers plants, animals, fish, and microorganisms.

In accordance with the Joint Minister Regulation, the Commission of Biosafety was altered to the Commission of Biosafety and Food Safety. The new commission was established to support the related ministers through the director general in each ministry particularly to provide technical recommendations on biosafety and food safety of GMO products. This new commission was assisted by the new technical team comprising of senior experts from various institutions (universities, researches, etc.) assessing, testing, controlling, and reporting the technical biosafety and food safety of GMO products. The new technical team covered the groups of plants, animals, fish, microorganisms, and foods.

### ***Government Regulation No. 28/2004***

In 2004, the GoI issued the regulation with regard to the utilization of GMO products particularly food, namely the Government Regulation No. 28/2008 on food safety, quality, and nutrition. This regulation implemented the mandate of the Food Law No. 6/1996. One of the essential aspects of this regulation was “every person who produces food or using the raw materials, food additives, and other supplement materials in food production processes resulting from GMO must initially examine the items in terms of food safety for human

health prior to release”. The examination of food safety as defined in this regulation is associated with food security assessment.

It was noted that in the same year, the GoI approved the Cartagena Protocol on Biosafety to the Convention on Biological Diversity by the Law No. 21/2004. Previously, the GoI had ratified the United Nation Convention on Biological Diversity by Law No. 5/1994. The Cartagena Protocol covered the basic materials regulating the aspects of advance informed agreements, direct utilization of GMO products, risk assessment, risk management, unintentional transboundary movements, emergency measures, handling, transporting, packaging, and using, as wells as biosafety clearing house, capacity building, and obligations of parties to community.

#### ***Government Regulation No. 21/2005***

The Government Regulation No. 21/2005 was issued based on the Joint Minister Decree No. 998/1999. In this regulation, the biosafety of GMO products was associated with environmental safety, food safety, and/or food security. These safeties require conditions and efforts to prevent the potential risks adversely affected by biodiversity, human, animal, and fish health caused by the processes of production, preparation, storage, distribution, and utilization of GMO products.

The implementation of the Government Regulation No. 21/2005 was based on the precautionary approach in order to generate the safeties of environment, food, and feeds by considering the norms related to religion, ethics, social culture, aesthetics, and preservation. The scope of this regulation includes the types and requirements, research and development, importation, assessment, release, distribution, utilization, monitoring, controlling, institutional, and financing the GMO products. The Government Regulation No. 21/2005 was more complete compared to the Joint Minister Decrees No. 998/1999 since it governed research and development, importation, timeline of assessment processes, and public notifications. Nevertheless, the contents of the Joint Minister Decrees No. 998/1999 remained valid as long as those were not contrary or not further regulated by the Government Regulation No. 21/2005, including its institutional aspects.

#### ***National Agency of Drug and Food Control Regulation, 2008***

In accordance with the Government Regulation No. 21/2005, the guideline of food safety assessment of GMO products was set by the *BPOM* (National Agency of Drug and Food Control) through the Regulation No. 1563/2008. Its aim is to ensure the risk assessment

carried out carefully in terms of types and requirements, mechanisms, and decisions related to food safety of GMO products.

### ***Presidential Regulation No. 39/2010***

On 15 June 2010, the Presidential Regulation No. 39/2010 was issued on the setting up of the Biosafety Commission of GMO. This commission was administratively under and directly responsible to the President. The member of this commission consisted of government and non-government representatives providing recommendations of biosafety of GMO products to the Ministers of Environment, Agriculture, Marine and Fisheries, and Director of National Agency of Drug and Food Control as well as supporting the monitoring of importation and utilization of GMO products including examination and verification towards the accuracy reports related to its the negative impacts.

### ***Food Law No. 18/2012***

The Food Law No. 18/2012 basically states that food derives from genetically engineered products is a process involving similar or dissimilar gene transfer from one to another biological types to obtain a new gene type by which it is able to produce superior food products. According to this Law, one of its food safety implementations is performed through controlling the GMO food products. There are two essential aspects related to controlling these products. *First*, everyone is prohibited to produce GMO products which have not obtained food safety approval. *Second*, everyone who carries out food production activities are prohibited to use raw materials, food additives, and/or other materials generated from GMO processes that has not attained food safety approval.

### ***Other regulations***

Other regulations were the Agricultural Minister Regulations No. 37/2011 and No. 61/2011. The former issued on the conservation and utilization of plant genetic resources, while the latter governed the examination, assessments, releases, and withdrawal of varieties. The term of conservation, in particular, was a series of activities whose objective is to maintain the existence and diversity condition and potency of genetic resources which could be utilized in a sustainable manner. The examinations, assessments, releases, and withdrawals of varieties were aimed at providing the protection and certainty of varieties that do not harm the public and/or damage the environment.

### ***Hierarchy of GMO products management policy***

The hierarchy of GMO products management policy in Indonesia is arranged according to the justification of experts, which consists of four levels, related to its purposes, factors, criteria, and alternatives. They are:

1. First level, it aims for sustainable management policy of GMO products.
2. Second level, it plays a role in influencing GMO products management (environmental, economic, social, and technological factors).
3. Third level, it covers the criteria of the following factors: (a) environmental factor includes the safety of GMO products to non-target organisms and potential biodiversity, transfer of genetic materials, and environmental quality improvement; (b) economic factor consists of the stability of GMO products in terms of producing criteria, reducing production costs, and increasing farmers' income; (c) social factor comprises public perception and acceptance, public education, the safety of GMO products for human health, and the commercialized GMO products labeling; and (d) technological factor covers human resources capability criteria in performing biological safety testing and human resource capability in carrying out basic research until obtaining the GMO products.

## **CONCLUSION**

The vision of the Indonesian Agricultural Ministry is to achieve sustainable industrial agriculture based on local resources to improve food self-sufficiency, value-added, competitiveness, exports, and welfare of farmers. To achieve this vision, it takes the right set of technologies to elevate the position of the local genetic resources, especially those that encourages the national resilience and well-being of farmers. Therefore, GMO technology is positioned as one of the alternatives that can be utilized carefully. It is reflected that the utilization of GMO products must go through biosafety assessment tools.

The efforts to the utilization and development of biotechnology products are related to policy and regulation. With clear regulation it is expected that stakeholders could place themselves in a better situation than just arguing the broader interest, so that GMO products processes can run properly. Various forms of support are needed for the dissemination of technology through direct transfer to farmers by public research institutions or through the mechanisms of commercialization by private/industrial sector from research results that have potential transgenic merits and these that meet the needs of farmers. Warranty of biotechnology products can be used when it is certified that it is safe for the environment and

food as well as it has been proven that it is superior and carries the added attributes which have high economic and ecological benefits.

The supporting systems which have been possessed in the development of biotechnology products include dissemination of information (substance, GMO, and regulatory progresses), application of appropriate regulations and effective targeting, transparency of products (labeling), the right of consumers to select GMO products, the institutional information systems, and the assessment of risk management. With regard to this, the groups of interest which play important roles include farmers (producers), public (consumers), researchers (technology developers), government (regulators), and other related institutions (partners).

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