Between Two Goliaths: the Enforcement of Genetically Modified Food Labelling Regulation in Indonesia

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Abstract

Despite being mandatory according to Indonesian law, Genetically Modified (GM) food is most of the time not labelled when it is exposed to consumers. The lack of efficient official controls due to a lack of resources and misaligned exercise of discretion is often determined as a major reason. At the international level, the Codex Standard on GM food labelling is not yet available. The endless debate between the US and the EU on how to regulate the GMO is one of the major causes of the deadlock negotiation on the issue of GM food labelling at the Codex level. Nevertheless, the central role of the US in recent mega Free Trade Agreements (FTA): TPP and TTIP will reshape the GM food labelling regulation globally. In that sense, enforcement of GM food labelling regulation hence requires new pathways. The effectiveness of enforcement of GM food labelling relies on the effective interplay of the definition, scope, desired labelling requirements, and voluntary pathway. We hence suggest to reshaping the GM food labelling regulation in light of such a holistic approach based on the desired Appropriate Level of Protection (ALOP) in the framework of international laws, taking into account a specific, developing-country-oriented application of the Food Safety Objective (FSO).

Keywords: GM Food Labelling, Enforcement, TPP-TTIP, FSO/ALOP

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Introduction

National Board of Trade Sweden (2015) pointed out "The EU and the U.S. have about the same levels of protection but their regulatory systems have been designed in a completely different ways. This creates unnecessary barriers to trade between the EU and the U.S". One contradictory example of that statement is the way they regulate Genetically Modified (GM) food labelling. The EU and the US implement a completely different level of protection and in a completely different way of regulatory systems. The EU applies a stringent and precautionary approach and in contrast the US applies a pragmatic and "science based" approach, which then coupled with the absence of international standard, generating a non-tariff barrier (NTB) in international trade of GM foods (Carter & Gruère, 2006).

The ratification of the Cartagena Protocol by the Indonesian government implies the acknowledgement of potential risk of GM food to human health (Government of Indonesia, 2004). Thus, there is a need to apply SPS measures to reach the appropriate level of risk (ALOP). In that sense, Indonesian government has established GM food related regulations in its national legal framework. However, the ALOP is not clear, including for GM food labelling regulation, which becomes one of the undermining factors for the effective enforcement. Hence, the link between ALOP related to GM food labelling regulation and the actual food safety management system (FSMS) of the business is weak or even absent. Businesses are hardly taking any notice of the need to label foodstuffs that contain GMOs (Gruère & Rao, 2007). One reason may be that the Indonesian law on GM foods is hard to understand for businesses as it is cumbersome.

Food regulations in developed countries give a significant impact on the similar regulations in developing countries (Jongwanich, 2009). Thus, the opposite governance of GM food labelling in the EU and the US gives undeniably influence to developing countries, including ASEAN countries. Some of the ASEAN countries take an intermediary measures on GM food labelling and some of them take no measures at all. However, the two recent Free Trade Agreements (FTA), Trans Pacific Partnership (TPP) and Transatlantic Trade and Investment Agreement (TTIP) will reshape the divergence of GM food labelling regime globally, including in Indonesia.

Therefore, the cumbersome enforcement of the GM food labelling regulation in Indonesia and the rise of TPP and TTIP are urgently needed to be handled to perpetuate the balance between trade and health interest. This paper explores the regulatory framework of GM food labelling in Indonesia to find out the constraints of the enforcement and reconcile the influence of recent mega FTAs, TPP and TTIP by using the FSO/ALOP general framework for developing countries (Wahidin & Purnhagen, 2016). Finally, based on that analysis, we provide recommendations to improve GM food labelling regulation in Indonesia from the aspect of enforcement.

GM Food Regulatory Framework in Indonesia

GM food control is part of the Food Law No 18 Year 2012. The Law stipulates some of GM food issues. Article 1 (33) defines GM food as "food that is produce or use raw materials, additives, and/or other materials that are produce from a genetically engineered process." Article 77 (1) and (2) stipulates the premarket approval of GM food, "everyone is prohibited from producing food obtained from genetically engineered process who has not obtained Food Safety Approval before it is distributed" and "everyone who carries out food production process or activity is prohibited from using raw materials, food additives and/or other materials produced from genetically modification process who has not obtained Food Safety Approval before it is distributed." The existence of Food Safety Approval for GM food can be interpreted as the adoption of precautionary approach in the related regulation of GM foods (Kai Purnhagen, 2015; Kai Purnhagen & Wesseler, 2015). That is in line with the Biosafety Protocol of Cartagena, which has been ratified by Indonesia since 2004. The application of the precautionary approach in the regulation of GMO is expressed under Article 3 of the Executive Order No 21 Year 2005 on Biotechnological Product Safety. Moreover, food control actors and their responsibilities are also regulated under the same Executive Order. The Executive Order stipulates that Ministry of Agriculture (MoA) is responsible for Authorization of Feed Safety Approval and commercialization of GM feeds, whereas, the National Agency of Drug and Food Control (NADFC) is responsible for authorization of Food Safety Approval and commercialization of GM foods.

The authorization for both GM foods and GM feeds shall be based on the recommendation from Commission of Biotechnological Safety and Ministry of Environment (Government of Indonesia, 2005). More technical detail of the process of Food Safety Approval is regulated under Head of NADFC Decree No HK.03.1.23.03.12.1563 of 2012 on Guideline of GM Food Risk Assessment and Head of NADFC Regulation No 19 Year 2016 on the amendment of the Head of NADFC Decree No HK.03.1.23.03.12.1563 of 2012 on Guideline of GM Food Risk Assessment.

Once the GM food is authorized, the requirement of food registration and labelling are applied in the same way as for conventional foods (Government of Indonesia, 1999). However, there is a special provision for GM food, which is the requirement to put the phrase "Genetically Modified Food" on the food label (Government of Indonesia, 1999). Furthermore, more technical detail on GM food labelling is regulated under the Head of NADFC Decree No HK.03.1.23.03.12.1564 of 2012. The labelling requirement is applied to all GM foods, except for the GM foods that have undergone a highly refining process so that no GMO protein is identified within the end product. Those requirements cover both the domestic and imported product, and both pre-package and non-pre-package GM foods. Furthermore, the Decree is also specified labelling requirements based on threshold level of GM ingredients in the product. The threshold level is 5 % per ingredient, which means the labelling requirement shall apply if the food contained more than 5% of GM ingredients on the weight basis. Moreover, there is no provision about traceability of GM food and further definition of threshold level whether it considers factor of adventitious and technical unavoidable of GMO content in food. Moreover,

there is also no provision about labelling for GM feed or animal-based foods which fed with GM feeds.

FSO/ALOP Based Analysis

Life can be simpler, if national governments apply international standards (WTO, 2016). However in the reality, international standards are not always available and GM food labelling standard is one of them. Most experts considered TBT Agreement as a more direct standard on GM food labelling. Nonetheless, country that challenges other country's GM food labelling regulation seems to prefer a stricter, science-based SPS Agreement over the more flexible provisions of the TBT Agreement (Stilwell, 1999). Furthermore, within the SPS Agreement, there is a concept of ALOP, which is defined as the level of protection provided by a country to protect human, animal, or plant life or heath within its territory and SPS measure, which is defined as "any measure applied to protect human or animal life or health within the territory of the Member from risks arising from additives, contaminants, toxins or disease-causing organisms in foods, beverages or feedstuffs" (WTO, 1995). Thus, ALOP is the level of risk that is tolerable by the society and functions as an objective and SPS measures as tool to achieve that objective (WTO, 1997). In that sense, we considered GM food labelling regulation as a SPS measure, which within the concept of FSO/ALOP for developing countries; SPS measure represents risk-based FSO (Wahidin & Purnhagen, 2016). Nonetheless, ALOP is also a function of trade, means that when a country determine an ALOP, it should take into account the objective to minimizing negative trade effect (WTO, 1995). Therefore, we propose developing countries to regulate GM food labelling from the perspective of risk and trade under the FSO/ALOP general framework (Wahidin & Purnhagen, 2016) (Figure 1). Moreover, from the perspective of trade, we use soybean trade to build the argument related to ALOP determination. Furthermore, we do an insight analysis of ALOP from the consumer awareness and FTA factor.

The general framework of FSO/ALOP consist of determining ALOP and FSO at governmental level taking into account food safety science and the available resources by determining an effective risk assessment system and take into account the objective to minimizing negative trade effect, and establishing an effective enforcement system, which will be elaborated as recommendations.

Determining ALOP and FSO

For determining ALOP for Indonesia, we carry out the comparative analysis of ALOP of other countries. Hence, we choose Malaysia as one of the closest neighbouring countries in ASEAN region and also one of the most important trade partners for Indonesia (World Bank, 2014). Besides that, Malaysia is also one of the signatory's countries of the TPP. Besides Malaysia, we also choose Japan, the US, and the EU, which represent rich market developed countries, biggest exporter and importer of GM food, and members of TPP and TTIP agreement. Besides that, we include China, which represent one of the biggest consumers of

GM foods, which is not member of the TPP and TTIP agreement. We interpret ALOP of the aforementioned countries qualitatively based on their existing threshold within their GM food labelling regulation; perspective of risk and trade; consumer awareness and trust towards food safety authority; and Influence of mega FTA. That will provide a benchmark to evaluate and assess the ALOP provided by the GM food labelling regulation in Indonesia.

Threshold Level

We can set indicator of ALOP based on the threshold level by using the Margin of Safety (MOS) formula (Wahidin & Purnhagen, 2016):

$$MOS = FSO - H$$

Where, MOS is Margin of Safety; FSO is Food Safety Objective; and H is the tolerable level of risk. Thus, if we set ALOP of the EU as a benchmark, then the 0.9% EU's threshold becomes the FSO and threshold level in another country as H. From table 1, we found that MOS for Japan, Indonesia, and Malaysia are negative, which means that their ALOP is lower than the EU. Next, ALOP of Japan is equivalent with Indonesia. As for Malaysia, the ALOP is higher than Japan and Indonesia. In contrast, China has positive value for its MOS, which means that China has a higher ALOP than the EU. The US is a special case, since there is no ALOP establish related to the GM food labelling.

Perspective of Risk and Trade

European Union

The EU's ALOP concerning GMO is to "provide the basis for ensuring a high level of protection of human life and health, animal health and welfare, environment and consumer interests in relation to genetically modified food and feed, whilst ensuring the effective functioning of the internal market" (EU, 2003a). The EU applies 0.9% threshold level to anticipate the commingled possibility of non-GM foods and GM foods along the supply chain. Hence, operator at all stages of supply chain are required to provide sufficient evidence to the authority that they have done appropriate steps to avoid the adventitious presence or technically unavoidable of GM content in their products. Both the 0.9% threshold level and the notion of adventitious and technically unavoidable are a non-separable requirement of mandatory labelling.

Moreover, the EU applies a process-based approach, means that every food containing, consisting of, or produced from GMO shall be labelled as GM food. The notion of "produced from" means that even if the end product does not longer contain or consist of GMO, the food is still required to be labelled as GM food. Therefore, the existence of traceability system is a must and not an option. The traceability system is managed by information transmission in writing among operators along the supply chain of GM food (EU, 2003b). Nevertheless, the use of GM ingredients in general for human consumption is limited since the food business

operators in the EU are avoiding using GM ingredients in their products. Thus, there are only few of GM foods can be found in the EU's market.

From the perspective of risk, the GM food labelling regulation results in unnecessary high ALOP. Even though, the EU is still one of the biggest importers of soybean products in the world, which approximately importing more than 30 million metric tons per year, but most of the soybean is used for animal feed and not for human consumption. From the perspective of trade, the 0.9% threshold, the wide scope of the regulation, and the existence of traceability system within the GM food labelling regulation in the EU have become NTBs for the international trade of GM foods. Nonetheless, the trend of GM crops cultivation around the globe is continuously increasing; leaving the EU in isolation and it is increasingly difficult for the EU's importers to find non-biotech sources for human consumption (USDA, 2015b).

Malaysia

Badawi (2005) pointed out that "while Malaysia is aware that biotechnology holds much promise, we are also concerned that biotechnological products should not pose any threat to the environment, or to human health and safety." That statement of Malaysian Prime Minister reflects the current Malaysian policy towards GM food, particularly related to the labelling regulation. Malaysia and the EU have the same process-based approach in governing GM food labelling. Besides that, both of them produce few GM foods or even none of it. Despite those similarities, there are differences particularly on the threshold level, scope of the regulation and traceability existence. In that sense, Malaysia has more moderate 3% threshold level and less scope than the EU and unlike the EU, the traceability is not exist within the GM food labelling regulation. Moreover, there is no GM crops have been approved for planting and only a few maize and soybean GM events have been authorized for import and commercialization, which result in a fewer object for labelling enforcement (USDA, 2016a). Hence, from the perspective of risk, the risk is relatively low means there is no need to put a higher ALOP. Thus, there is no reason for Malaysia to apply a lower threshold than 3%.

Even though, the trend of Malaysian soybean import from the US has been increasing in the recent years, but the soybean is not intended from human consumption. Food grade soybean is account for only 25% of the total soybean import (World Grain, 2016). The food grade soybean import is non GM soybean, which comes from Canada and most of it uses form soybean drink and tempeh production. Nevertheless, the labelling regulation is not enforced yet in Malaysia. Hence, from the perspective of trade, the current GM food labelling regulation is not yet regarded as NTB. However, it has the potential to become NTB in the near future, if the proportion of GM soybean for human consumption is increasing.

Japan

Japan employs a more moderate 5% threshold compared to the one in the EU; however, the GM food labelling is more complex to the EU. Unlike the EU, Japan uses product-based

approach, which put more concern on the presence of GM ingredients in the end product. Thus, the labelling requirement is exempted for products that produced from GMO, but no longer containing or consisting GMO. The GM food labelling requirement is only applied to seven "designated genetically modified agricultural products" and 32 processed foods, which contain those "designated genetically modified agricultural products" (Takahashi, 2009; USDA, 2015d). Thus, the scope is much more limited than the EU. Moreover, there are two options for mandatory labelling: segregated and non-segregated (MHLW, 2016). The difference lies on the segregation between GMO and non-GMO at each stage of production. Besides that, there is also an option for the operator to have a non-GE labelling; this option is voluntary basis (MHLW, 2016). Within that list, Soybean and processed foods, which contain soybean, are the most prominent.

Such as in Malaysia, there are no GM crops that are commercially planted in Japan, including soybean. Soybeans for human consumption is only count for 25% of the total imported soybean and Japan uses only non-GM soybean for human consumption (Shurtleff & Aoyagi, 2014). Most of non-GM soybeans are imported from the US, Canada, and China (Yamaura, 2011). Thus, from the perspective of risk, the level of risk is relatively low and so, there is no need to have a lower threshold level. From the perspective of trade, the complex structure of GM food labelling in Japan is seemed to provide a high ALOP and has the potential to be a NTB. However, a very limited scope, product-based approach, and the exclusive use of non GM soybean for human consumption makes the GM food labelling regulation seems vague and reduce the potential of the regulation as NTB.

China

In September 2014, the Chinese government released a remark by President Xi Jinping, assuring support from the government for biotechnology research, whereas calling for a cautious approach to commercialization (USDA, 2015a). Such as in the EU, China applies process-based approach in its GM food labelling regulation. Even though, China applies 0% level of threshold, which is stricter than the EU. Besides that, different from the EU, there is no traceability system in the GM food labelling regime. Moreover, the scope of the regulation is also much more limited than the EU. The scope is based on the list within the MOA catalogue, which makes the GM food labelling regulation seems vague. Regardless, such as EU, Malaysia and Japan, the approval for commercial cultivation of GM crops is minimal. To date China has not approved any foreign GM crops for commercial cultivation.

Nevertheless, China is one of the biggest consumers of GM foods and at the same time one of the most ambitious country in research of GM foods. That unique position gives China a dilemmatic situation regarding the regulation related to GM food labelling, especially when the view from the Chinese government is unclear (USDA, 2015a). That is reflected from the weak enforcement of the GM food labelling in China (Zhu, Roberts, & Wu, 2016). Hence, from the perspective of risk, the 0% threshold level is appropriate, but at the same time it is not feasible related to technical issues, such as the capacity of laboratory analysis, weak

enforcement from relevant food safety authorities, and low compliance from food business operators. From the perspective of trade, regardless the strict 0% threshold level, but the same technical issues such as described before have undermined the potential of GM food labelling regulation as NTB. Though, the delays in import approvals are more fit as NTB to the GM food trade in China (USDA, 2015a).

Indonesia

The overarching policy of the Indonesian government on agricultural biotechnology is to "accept with a precautionary approach" with respect to environmental safety, food safety, and/or feed safety based on scientific approaches as well as taking into consideration religion, ethical, socio-cultural, and esthetical norms (USDA, 2015c). Though, Indonesia applies 5% threshold level, which is more moderate than the one in the EU. Besides that, different from the EU, Indonesia uses product-based approach. Moreover, there is no traceability system within the GM food labelling regulation. However, the scope of the regulation is similar to the EU; though, high refined products are exempted from labelling requirement.

Such as Malaysia, China, and Japan, there is no GM crop approved for commercial cultivation. Whereas for imported GM crops, NADFC has published 19 Food Safety Approvals. Most of the imported soybean comes from the US (USDA, 2015c). Even though, unlike Malaysia or Japan, which exclusively use non-GM soybean for human consumption, Indonesia uses GM soybean, particularly to produce Indonesian favourite's foods, such as tempeh and tofu. Though, according to the Indonesian Food Law, processed foods, which have self-life less than 7 days, are exempted from the labelling requirement. Hence, tempeh and tofu are exempted from the labelling requirement. So, there is visually no GM labelled foods in the market. Thus, from the perspective of risk, the exposure of GM foods is high in Indonesia and so, the threshold level should be lower than the current one. Furthermore, to date the GM food labelling regulation is not fully implemented in Indonesia, which is most likely due to the unwillingness of the NADFC to spend its resources for official control and inspection of GM food and the fact that GM foods are never list within the sampling plan of NADFC. Thus, from the perspective of trade, the regulation has less potential as an NTB to the international trade of GM foods.

Awareness of Consumers and Trust towards Food Safety Authority

Consumers in the EU have a high rate of GMO familiarity compare to others and a low public trust toward the authorities, which lead to a high resistance towards GM foods (Ramjoué, 2007; Wunderlich & Gatto, 2015). In contrast, consumers in the US are relatively unknowledgeable and indifferent on GMO and they have a high trust toward the food safety authorities, which lead to a more permissive behaviour towards GM foods (Knight, 2009; Ramjoué, 2007). Nevertheless, the awareness of most Asian consumers is low, which leads to a neutral and not opposing attitude toward GM foods (Bongoni & Bongoni, 2016). For example, Indonesian consumers have been consuming a large amount of GM soybean in the

form of tempeh and tofu, but they are not aware of the GM properties of those foods since they are exempted from labelling requirement. Thus, they seem to accept GM foods. However, related to precautionary approach and mitigation of risk of GM foods, the low awareness of consumers toward their own safety needs to be anticipated through some measures by the government. One of the most prevalent mechanisms to ensure consumer safety is by mandatory standard and labelling mechanism (Consumer International, 2016).

Influence of Mega FTA

The US by far is the biggest producer and exporter of GM soybean (USDA, 2016b). Thus, it is natural for the US to apply a voluntary and product-based approach toward labelling of GM foods, particularly from the perspective of FDA. In contrast, the EU as one of the biggest importer of GM soybean uses mandatory and processed-based approach. Despite the different role in the international trade of GM food and differences in consumer attitudes, the different reaction between multiple stakeholder groups towards GM technology takes also the credit on the differences of GM policies in the US and the EU (Zilberman, Kaplan, Kim, Hochman, & Graff, 2013). The influence of two American biotechnology-based companies, Monsanto and Dupont, are strong in the determination of GM policies in the US and so in the TPP agreement. Related to that, in the TTP text, food business operators are given the possibility to challenge the decisions of public officials such as food safety inspectors on grounds of the agreement, arguably with little to no reference to the national legal system. In this sense, Article 7.9 of the TPP text stipulates a "Rapid Response Mechanism" that would give new powers to the food business operators (IATP, 2016). Hence, food business operators could challenge the decision from food safety inspector regardless the existing GM food labelling regulation in other TPP members.

Despite of the fact that Indonesia is not a contracting party to the TPP, the economic interplay from that agreement may influence Indonesia, particularly related to impact on access to (foreign) markets and transformation of relevant Indonesian laws. Nevertheless, current status of ASEAN countries related to GM food is diverse:

Countries that have GM food labelling regulation and not producer of GM crops (Indonesia, Malaysia, Cambodia and Thailand);

Countries that have GM food labelling regulation and producer of GM crops (Vietnam);

Countries that have no GM food labelling regulation and not producer of GM crops (Singapore and Brunei); and

Countries that have no GM food labelling regulation and producer of GM crops (Philippines and Myanmar).

From that profile, we found that the diversity could become hurdle for harmonization within the context of ASEAN Economic Community (AEC). However, since four members of ASEAN (Malaysia, Singapore, Brunei, and Vietnam) have become the member of TPP; GM food labelling regulation of those countries is most likely will be closer to the one in the US.

Hence, from the context of AEC, TPP will accelerate the harmonization of GM food labelling regulation among ASEAN countries.

Nonetheless, the EU as rich market for agricultural products from the US to ASEAN countries, including Indonesia has also influenced the establishment of related food safety standard in ASEAN countries. Related to GM food labelling regulation, the EU's rich market seems will undermine the influence of TPP. However, ongoing negotiations of TTIP (Transatlantic Trade and Investment Partnership) between the EU and the US may compromise the virtually no GM food policy in the EU. Thus, the GMO policies of ASEAN countries and other part of the world, including GM food labelling regulation, will be closer to those of the US. The diversity of GM food labelling regulation in ASEAN countries will be reshaped by the Agreement, which even surpass the harmonization framework of WTO. In that sense and the weak enforcement of the current GM food labelling regulation, Indonesia needs to improve the regulation in order to anticipate the influence of TPP agreement and to perpetuate trade and health interest related to GM foods.

Recommendations

Based on the FSO/ALOP analysis from the previous chapter, we conclude that the enforceability of GM food labelling regulation is depending on the improvement of the regulation itself. Thus, we propose to redesign the GM food labelling regulation in Indonesia on these parts: definition, scope, labelling requirement, and voluntary labelling pathway.

Definition

There is no definition of GM food within the Cartagena Protocol. However, there is a definition of Living Modified Organism (LMO) as "any living organism that possesses a novel combination of genetic material obtained through the use of Modern biotechnology." Modern biotechnology means the application of:

In vitro nucleic acid techniques, including recombinant deoxyribonucleic acid (DNA) and direct injection of nucleic acid into cells or organelles, or

Fusion of cells beyond the taxonomic family, that overcome natural physiological reproductive or recombination barriers and that are not techniques used in traditional breeding and selection.

Besides that, Cartagena Protocol also specified the scope of LMO products. Hence, Codex adopted the GMO definition from above Cartagena Protocol and implicitly defined GM foods as any foods derived from modern biotechnology.

The EU uses a similar definition of GMO as the Cartagena Protocol and Codex Standard. However, the EU specifies more on the exception of modern biotechnology techniques (EU, 2001). As for GM food, the EU defined it as "food containing, consisting of or produce from GMOs. Furthermore, the EU defines "produced from" as "derived, in whole

or in part, from GMOs, but not containing or consisting of GMOs." Malaysia uses a similar definition of GMO as the EU, Cartagena Protocol, and Codex. Malaysia uses similar GM food definition such as the one in the EU, including the distinction between "containing or consisting of" and "produced from." However, there is no further definition of the phrase of "produced from". Both the EU and Malaysia adopted process-based approach, which emphases on rigid distinction between transgenic and traditional food. Though, recent advancement of methods of genetic modification, such as gene editing, will make the process-based approach to become more obsolete and unsustainable (Marchant & Stevens, 2015). Hence, countries are encouraged to embrace product-based approach in regulating biotechnology.

Like the EU, Indonesia uses the same definition for GMO as the Cartagena and Codex Standard. However, related to GM food, Indonesia applies an unclear definition. Indonesia defines GM food as "foods produced from or use raw material, food additive, and / or any other ingredients that produced from genetic modification process." The word "produced from" is not defined in the GM food labelling regulation. Besides that, the current definition specifies the scope of the regulation (raw material, food additive, and other ingredient), which is confusing and redundant since the scope has already mentioned in the definition of "food" within the regulation. Since Indonesia uses the product-based approach, we propose to erase the word "produced from" and clear up the definition of GM food as food containing or consisting of GMOs. This definition will provide clarity related to product-based approach.

Scope

Currently, GM food labelling regulation in Indonesia covers all foods produced from, or uses raw materials, food additives, and / or other ingredients that produced from genetically engineering. Moreover, the requirement to put the phrase "GMO food" is applied to all listed GM ingredients in the product. Notwithstanding the exemption for refined foods, the coverage is wide. Consequently, if the authority decides to start allocate its limited resources for the official control of GM food labelling, then the implementation will be difficult. However, to define the scope in a positive list or in a catalogue such as the one in Japan and China is not practical, since it needs to be updated continuously, whenever a new GM food is authorized. Therefore, we propose to reshape the scope into a more practical one. The scope should be for all locally produced or imported food containing or consisting GMOs that has been authorized by NADFC and add a provision for food using GMOs with altered characteristic are required to be labelled even when the food does not contain GMOs.

Labelling Requirements

Bottom line, labelling requirement is applied for authorized GM foods that exceed threshold level and covered in scope definition. Hence, beyond that GM food is illegal and not required to be labelled. The enforceability of the threshold level is depending on the post-market control by the authority: screening and event specific detection method and the capacity of the industry to comply with the threshold. Nevertheless, beyond that controls, the ultimate

step to improve the GM food labelling regulation is by determining clear and transparent threshold.

The determination of threshold level is not based on science since up until now there is no scientific evidence that could prove GM food is unsafe for human health; hence, the determination is based on public policy (Zhu et al., 2016). The definition of threshold level in the current regulation is ambiguous since it is not clear whether the level comes from the content of GM ingredient in the specific ingredient or in the product. Thus, we propose to determine threshold level as the content of GM ingredients in the product on the weight basis. The current 5% threshold level is sufficient for Indonesia vis-à-vis the economic and food security consideration. If Indonesia applies more stringent threshold, then it will increase cost of compliance from food businesses and cost of enforcement from the government; eventually it will cause a higher consumer price particularly for non-GM food (Zhuang & Yu, 2012).

Related to scope of labelling, we propose to put the words “Genetically modified food” for three main GM ingredients. As for exemptions, we propose to put more details on these GM food types:

Food containing or consisting of GMOs in a proportion less than 5% of GM ingredients;

Foods that are exempted from labelling requirement such as defined in the executive order No 69 Year 1999;

Highly refined foods other than that with altered characteristic;

Food from animal fed with GM animal feed

Food produced using GM enzymes

Food produced using Genetically Modified Microorganisms (GMMs)

Voluntary labelling pathway

The absence of labelled GM foods in the Indonesian market due to low compliance from the business operators and weak law enforcement from the government of the mandatory GM food labelling system has undermined consumer’s right to know and the application of precautionary approach. Whereas, the voluntary labelling provides more efficiency and allows consumers to choose non-GMO product as a quality property (Carter & Gruère, 2003). Thus, we propose to the creation of voluntary non-GM food labelling pathway along with the existing mandatory GM food labelling pathway. We propose to apply 0.9% threshold level in order food containing or consisting GMOs to be authorized as “non-GM food” on the label. Hence, that voluntary labelling pathway can channel the interest of the consumer in knowing whether the food containing or consisting GMOs and can fill the gap of risk mitigation of GM food from the mandatory labelling pathway. From the food business perspective, the word “Non-GM food” can serve as a quality property and makes a new niche for their products.

Conclusion

There are more than 64 nations implementing mandatory GM food labelling regulation. Even in the US, some states are pushing for having mandatory GM food labelling regulation. In that sense, the current mandatory GM food labelling regulation in Indonesia should be stood. However, the low compliance and the unwillingness of the government of Indonesia in controlling GM food labelling should become a strong base for improvement of GM food labelling regulation. An improved GM food labelling regulation will result in a higher ALOP and at the end will provide a better link between public health goal and food safety controls and mitigates the risk posed by GM foods. To that end, we explored the current GM food labelling regulation in Indonesia, then we used FSO/ALOP concept for developing countries in analysing the problem and related constraint in enforcement of the regulation. Finally, we use the analysis to improve the GM food labelling regulation from the perspective of enforcement. Related to that, we redesigned the current regulation on these aspects: definition, scope, labelling requirements, and voluntary labelling pathway.

Generally, Indonesia has a nature to comply with Codex standards. Thus, if Codex could establish the international standard concerning GM foods labelling in the near future, then most likely it will be followed by Indonesia. However, looking forward to the continuous debate between the EU and the US, it is still uncertain that the standard will be put in place in the near future. On the other hand, a convergence of GMOs related regulations through the emerging mega FTAs, TPP and TTIP are more promising. Nevertheless, beyond increasing law enforcement, undermining asynchronous approval of GM foods and continuous education to consumer related to GM food labelling from the government and food manufacturers can be alternatives in protecting public health and at the same time enhancing international trade of GM food. Nevertheless, in the future, we expect that the establishment of GM food labelling regulation in the future will be based on robust scientific evidence and risk assessment, such as the concept of FSO/ALOP.

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Appendix A

Table 1 GM food labelling regulations in major Indonesia's trade partners

Country	Labelling type	Product/Process	Exemptions	Threshold level	MOS
Indonesia	Mandatory	Product	Refined foods, not always oil,	5%	-4.1%
United States (Federal Government)	Voluntary	Product	not define	Not define	Not define
Japan	Mandatory & voluntary	Product	Outside of the list	5%	-4.1%
European Union	Mandatory	Process	Meat and animal products	0.9%	0%
China	Mandatory	Process	Outside of the list	0%	0.9%
Malaysia	Mandatory	Process	Meat raised with GMO grains, refined foods, such as oils, and corn syrups	3%	-2.9%

Appendix B

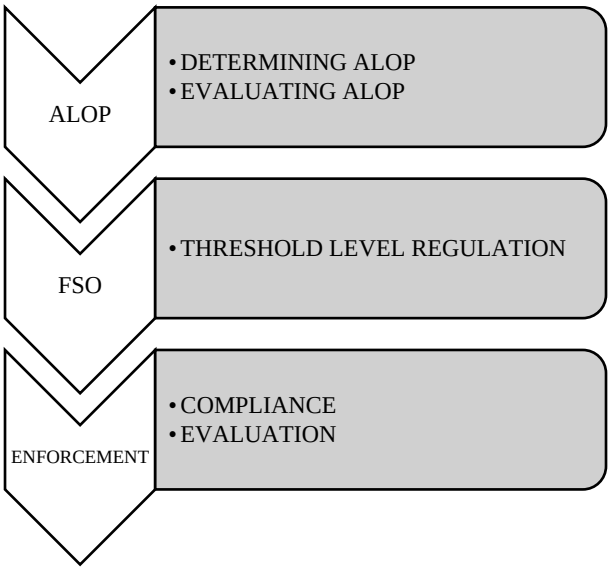

Fig. 1 General Framework of FSO/ALOP (Wahidin D. & Purnhagen K., 2016)

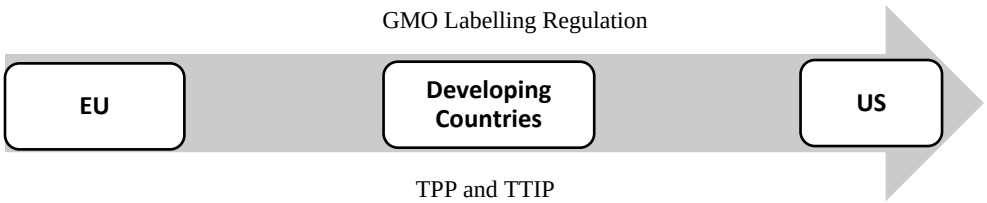

Fig. 2 Influence of Mega FTA towards GMO Labelling Regulation in Developing Countries