Chapter 4

Biofuel Market Outlook for Integration: Case of ASEAN

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The above demand/supply analysis shows the limitations of the market of individual countries and the region. This limitation is expected to be mitigated through the integration of the market. This section addresses the benefit of the integration in terms of potential increase of biofuel market. Although the advantage of integration of market seems clear from the point of regional demand and supply, the reality is much more complex because the prerequisites of market integration must be considered, which include regional common standards and meeting different objectives for biofuels, and so on. In this chapter, the complexity is analyzed from the point of potential increase of the biofuel market from integration to the impact of competing objectives in policies.

Firstly, the magnitude of the benefit from integration against market isolation is estimated. Next, the factors to reduce the barriers to market integration are analyzed.

Analysis 1: What is the benefit of market integration or cost of non-integration? Case of ASEAN major four.

In Chapter 3, we showed the potential of the market of the 16 countries if integrated. But if the market cannot be integrated, the market equilibrium cannot surpass demand or supply. Therefore, the maximum potential of the market of each country without import and export is the smaller number of either demand or supply. This constrained market potentials of bioethanol and biodiesel are calculated as such in the upper bar "Integration Benefit" of the graph shown below. The benefit is the difference between the integrated potential and the constrained potential by border.

The formula for the estimation of the gap between markets with and without borders is as follows.

Sum of the market constrained by the national border

$=\Sigma$ Min (country demand, country supply)

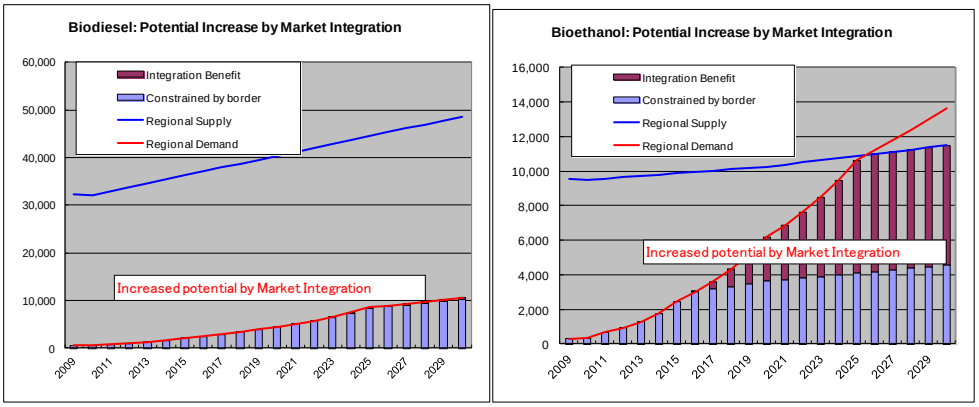
Market of the sum of the four countries

=Min (Σ country demand, Σ country supply)

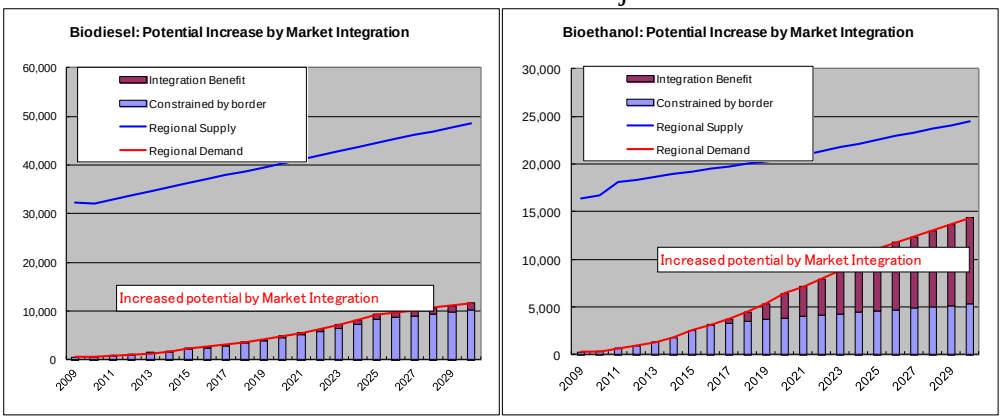
The Figure below shows the increased potential by market integration for the cases of ASEAN 4 countries (which including Indonesia, Malaysia, the Philippines, and Thailand), ASEAN 10 countries, and Asia 16 countries. The benefit for market potential increases as the market expands from ASEAN 4 countries, ASEAN 10 countries to Asia 16 countries. The pattern also changes. The benefit for bioethanol is especially large for the case of ASEAN 4 countries, while the benefit for biodiesel does not appear until the market expands beyond ASEAN region. The magnitude of increased potential will reach to double the original maket scale by 2030 for both bioethanol and biodiesel.

Figure 3.1-1 Increase of Market Potential by Market Integration (ktoe)

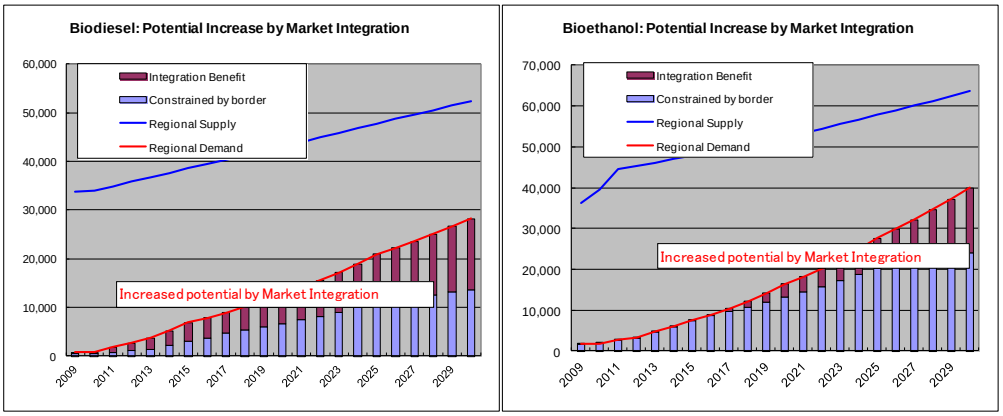
Case of ASEAN 4 Countries



Case of ASEAN 10 Major countries



Case of Asia 16 Countries



Analysis 2: What polices could lead to market integration?

Even common standards for biofuels are established in the region, the integration of the market still depends on the intention of each individual country (whether the country wants to open the market or not). In the case of biofuels, a government's intention on market integration with foreign countries is shaped by the drivers and objectives of biofuels promotion in the country. In Asia, the objectives for the utilization of biofuels include: 1) energy security, 2) trade balance, 3) economic development, 4) rural development, 5) agricultural development (job and income for farmers), and 6) climate change mitigation (Zhou, 2009).

The priorities of the drivers and objectives to promote biofuel production and consumption may vary from country to country depending on the individual country's endowment of energy resources and social and economic development circumstances. For oil importing countries, like Philippines and Thailand, energy security, trade balance, and economy are the critical drivers behind government's support for biofuel utilization. For energy producing countries like Indonesia and Malaysia, objective such as agricultural development becomes critically important.

The integration of the markets therefore has to meet various interests of different countries. For example, one critical element is the economic value of biofuels. If biofuels cannot compete with other fuels such as gasoline and mineral diesel, trades across national borders would be difficult. Moreover, the integration of the market can have a negative impact on one objective, but positive impact on another and the degree of the impacts may differ by country depending on the extent of the market integration. For example, in the Philippines, biofuels are perceived as alternatives to

oil products and the Philippines Biofuel Act of 2006 was intended to promote local production but not imports in the future. On the other hand, the less populated Malaysia has huge potential for biodiesel export while the domestic demand is limited. The primary intention of Malaysian government's move on biofuels is to promote export rather than domestic consumption.

What is the optimal level of market integration to fulfill the interests of different countries to the maximum? In fact, this is the subject of framework of regional trade resulted from negotiations among countries. The issue of trade is beyond the scope of this study.

The method of market integration is export and import. Most countries can achieve the objectives mentioned above through export. However, the export potential is limited to only a few countries. Therefore, the imbalance will make market integration be very difficult even if there are regional benefits. The issue lies in the conflict of national and regional interests.

How can we bridge the gap between national and regional benefit? The key is on the collective benefit. One example is the agenda of East Asia Summit of 2007 hosted by the Philippines. The Summit is a response to the increasing crude oil price. One of the purposes of the summit is on the feasibility of replacing imported oil and oil products with regional biomass and biofuel. The message is clear that the key is the price. If biofuel could be produced at lower cost than those of oil products from the middle East, the oil importing countries will have strong incentive to import biofuels, although this may not directly contribute to the industry development or job creation.

In the light of the collective interests of ASEAN countries and their historical responses to energy prices, the most practical action to cooperate is, as mentioned above, to reduce the cost of biofuel production. Analysis 1 showed that the huge potential of market creation by regional market integration. To release the potential cooperative effort for biofuel productivity need to be strengthen.

Conclusion

Total bioethanol demand in the 16 countries is projected to reach 49425.3ktoe in

2035 while the total supply potential is estimated to be 69986.4ktoe in 2035. Total biodiesel demand in the 16 countries in 2035 is projected to be 37,479.2ktoe and the total supply potential is estimated at 56,867.2ktoe. The results indicate that the region as a whole holds enough potential to fulfill all the countries' biofuel targets. However, the conclusion is under the precondition that biofuels be traded cross countries.

When look at the demand and supply potential of bioethanol and biodiesel by country it could be observed that the country with large biofuel demand in the future not necessarily has sufficient potential of supply, and vise versa. Under the market isolation scenario, the national market size can not surpass the minimum of supply and demand. In this case, the region's bioethanol and biodiesel consumption in 2035 would be 16,720ktoe and 26,296ktoe respectively. The differences of biofuel consumptions under market integration and market isolation suggest that a regional integrated market for biofuel trade across countries would help to maximize the region's biofuel consumption, which means maximize the substitute of oil products.

However, the process of establishing a regional integrated biofuel market is very complex. The prerequisite include a regional common standard for biofuels as well as a framework meeting individual country's various interests. Because of the higher cost compared with oil products, national biofuel market is currently policy driven, which makes it extremely challenging to further open domestic biofuel market. However, previous studies suggest that if the price of biofuels goes below that of oil products, barriers in cross country biofuel trade will be reduced.