

# PROCEEDINGS

2<sup>nd</sup> International Conference on  
Adaptive and Intelligent Agroindustry (ICAIA)

September 16 - 17, 2013

**IPB International Convention Center  
Bogor - Indonesia**



Organized by:



Department of Agroindustrial  
Technology



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2<sup>nd</sup> International Conference on Adaptive and Intelligent Agroindustry (ICAIA)  
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### Organized by :

Departement of Agroindustrial Technology, Faculty of Agricultural Engineering and  
Technology Bogor Agricultural University

George Mason University, Fairfax, Virginia, USA

Indonesian Agroindustry Association (AGRIN)

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## **WELCOMING ADDRESS**

**Prof. Dr. Ir. Nastiti Siswi Indrasti**

Head of Agroindustrial Technology Department  
Faculty of Agricultural Engineering and Technology  
Bogor Agricultural University

**On**

**Second International Conference on Adaptive and Intelligence Agroindustry (2<sup>nd</sup> ICAIA)**

Bogor, September, 16 – 17, 2013

Assalamu'alaikum Warohmatullahi Wabarokatuh  
In the name of Allah, the beneficent and the merciful,

Distinguish Guest, Ladies and Gentlemen

Let me first thank you all for accepting the invitation to participate in this 2<sup>nd</sup> International Conference on Adaptive and Intelligence Agroindustry (ICAIA). In particular I would like to thank Rector of IPB (Institut Pertanian Bogor/Bogor Agricultural University) Prof. Herry Suhardiyanto for supporting this event as part of the series academic event in celebrating the 50<sup>th</sup> Anniversary of Bogor Agricultural University.

In fact, the idea of organizing this conference was the continuation of the International Workshop on Computational Intelligence and Supercomputing Technology for Adaptive Agroindustry held by the Department of Agroindustrial Technology, Bogor Agricultural University last year.

Professor Kenneth A De Jong from George Mason University, US has successfully conducted joint international research with some staff from the Department of Agroindustrial Technology and Department of Computer Science, Bogor Agricultural University. The research aims to develop an integrated and intelligent system (namely SMART-TIN©) for the design of adaptive agroindustrial system in order to achieve a sustainable agroindustry that can mitigate global climate change and at the same time secure food, water, energy and natural medicine supply.

We are certainly proud to have been able to assemble this event in IPB, Bogor. The range of participants and audience at this conference is precisely something I would like to stress. The main goal of the conference is to provide an effective forum for distinguished speakers, academicians, professional and practitioners coming from universities, research institutions, government agencies and industries to share or exchange their ideas, experience and recent progress in Adaptive and Intelligent Agroindustry.

Distinguish Guest, Ladies and Gentlement,

Global climate change is the most challenging problems for us today and in the near future. This global change in our climate can lead to the shortage of the food, water, bioenergy and natural medicine that will affect the quality of human life. Many studies indicate that the threat of food, water, bioenergy and natural medicine crisis due to global climate change still worries our society. This problem can be solved by the development of agroindustry, i.e. an interrelated value chain entities from farming, to agro-processing industry and then to the end-customers. In fact, the design of agroindustry is complex and involves many factors and large data bases and more importantly, needs a good intelligence to process data and information to good decisions. Therefore, the way to design and manage agroindustry should be improved in order to meet the design objectives.

Agroindustries consume quite significant amount of energy on one side, on the other side they generate sizable amount of industrial wastes and its utilization as a captive energy resource is a kind of potential. Based on our study, a plywood industry with the production capacity of 200.000 m<sup>3</sup>/year could generate 32 percentage of solid waste. If this amount of waste used as an energy alternative, it may result on the saving of 131.037.768.597 rupiah per month. Similar to plywood industry, sugarcane industry with the production capacity of 480 ton per hour could generate 154 ton per hour of waste (bagasse) and this amount of waste contribute to the saving of energy consuming by 19.250 Kwh. Recent study we conducted, indicated that cassava starch industry may contribute to a significant amount of waste. It has also potential usage as an energy resource. Based on our study the conversion of its waste into energy will contribute to the saving of energy usage of 4100 liter biogas per ton material.

The three industries mentioned is only examples of how potential the role of agroindustrial waste as an alternative resource in replacing the conventional energy resource as its presence will be significantly

reduced. The new, incremental energy contributions that can be obtained from waste biomass will depend on future government policies, on the rates of fossils fuel depletion, and on extrinsic and intrinsic economic factors, as well as the availability of specific residues in areas where they can be collected and utilized. All of these factors should be in detail examined to evaluate the development of the industrial waste contribution. Hope this conference will also discuss this issue in more detail as it is an important matter for all of us. We should no more think just how to produce high value product but it is also necessarily important how to keep our live in good quality by understanding following old saying...” only when the last tree has been cut, only when the last fish has been angled, and only when the last river has been polluted, then we realized that we could not eat money”.

I do not to take up any more of your time with these opening remarks. Let me simply thank you once again for sharing your thoughts with us. Here’s wishing every success for the conference. May Allah bless all of us.

Thank you for your kind attention,  
Wassalamu’alaikum Warohmatullahi Wabarokatuh

## AGENDA of 2<sup>nd</sup> International Conference on Adaptive and Intelligent Agroindustry (ICAIA)

Time	Activities	Room			
<b>Day 1 (16 September 2013)</b>					
08.00 – 09.00 (60')	Registration				
09.00 – 10.00 (60')	Opening Ceremony <ul style="list-style-type: none"> <li>• Welcoming Address: Prof. NastitiSiswiIndrasti (Head of Dept TIN, Fateta, IPB)</li> <li>• Conference Opening: Prof. HerrySuhardiyanto(Rector of IPB)               <ul style="list-style-type: none"> <li>○ ABET Certification announcement and short ceremony</li> <li>○ Launching International Double Degree Master Program in Innovation and Technopreneurship in Cooperation with University of Adelaide, Australia</li> <li>○ Soft-launching Master in <i>Logistik Agroindustri</i> (Agroindustrial Logistics)</li> </ul> </li> </ul>	Ballroom			
10.00 – 10.45 (45')	Opening Speeches: Prof. IrawadiJamaran (Agroindustry Guru, IPB: 25') Prof. Eriyatno (Industrial and System Engineering, IPB: 20')	Ballroom			
<b>Session 1</b>					
10.45 – 11.15 (30')	Keynote Speech Dr. YandraArkeman (IPB)	Ballroom			
11.15 – 12.00 (45')	Keynote Speech Prof. Kenneth De Jong (George Mason University, USA)	Ballroom			
12.00 – 13.30 (90')	Lunch Break				
<b>Session 2</b>					
13.30 – 15.15 (105')	Moderator: Prof. EndangGumbiraSa'id (IPB) Invited Speakers (1-4) (4 x 20 minutes) Discussion (25 minutes) Tentative Schedule: Prof. Kim Bryceson (Australia), Prof. SyamsulMa'arif (IPB), Prof. KudangBoro Seminar (IPB), Prof. HaruhiroFujita (Japan)	Ballroom			
15.15 – 15.45 (30')	Break				
15.45 – 17.30 (105')	Moderator: Prof. Marimin (IPB) Invited Speakers (5-8) (4 x 20 minutes) Discussion (25 minutes) Tentative Schedule: Dr. Gajendran (UK), Prof. Noel Lindsay (University of Adelaide), Dr. KuncoroHartoWidodo (UGM), Prof. UtomoSarjonoPutro (ITB)	Ballroom			
<b>Day 2 (17 September 2013)</b>					
08.00 – 08.30 (30')	Registration				
08.30 – 10.15 (105')	Moderator: Prof. KudangBoro Seminar (IPB) Invited Speakers (9-12) (4 x 20 minutes) Discussion (25 minutes) Prof. Egum (IPB), Prof. Marimin (IPB), Dr. AgusBuono (IPB), Dr. HeruSukoco (IPB)				
10.15 – 10.30 (15')	Coffee Break				
10.30 – 12.30 (120')	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%; vertical-align: top;"> <b>Parallel Session 1</b>            Moderator: Prof. Fujita            (7 paper @ 15 minutes)            Discussion (15 minutes)         </td> <td style="width: 33%; vertical-align: top;"> <b>Parallel Session 2</b>            Moderator: Prof. Ono Suparno            (7 paper @ 15 minutes)            Discussion (15 minutes)         </td> <td style="width: 33%; vertical-align: top;"> <b>Parallel Session</b>            Moderator: Prof. Suprihatin            (7 paper @ 15 minutes)            Discussion (15 minutes)         </td> </tr> </table>	<b>Parallel Session 1</b> Moderator: Prof. Fujita (7 paper @ 15 minutes) Discussion (15 minutes)	<b>Parallel Session 2</b> Moderator: Prof. Ono Suparno (7 paper @ 15 minutes) Discussion (15 minutes)	<b>Parallel Session</b> Moderator: Prof. Suprihatin (7 paper @ 15 minutes) Discussion (15 minutes)	
<b>Parallel Session 1</b> Moderator: Prof. Fujita (7 paper @ 15 minutes) Discussion (15 minutes)	<b>Parallel Session 2</b> Moderator: Prof. Ono Suparno (7 paper @ 15 minutes) Discussion (15 minutes)	<b>Parallel Session</b> Moderator: Prof. Suprihatin (7 paper @ 15 minutes) Discussion (15 minutes)			

12.30 – 13.30 (60')	Lunch Break	
13.30 – 15.00 (90')	Open Discussion (Open Forum) with Prof. Kenneth De Jong Topic: Foundations and Applications of Genetic/Evolutionary Algorithms	Ballroom
15.00 – 15.30 (30')	Conference Closing	Ballroom
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# Study Of White Crystal Sugar Distribution System In Indonesia

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## ABSTRACT

From 33 provinces in Indonesia only 9 provinces that have white crystal sugar mills, only three of the nine provinces that surplus. Provinces that lacked sugar filled from the provincial surplus or import. Sugar import provisions set out in Kepmendag. No. 19/M-DAG/PER/5/2008 about amendments Kepmenindag. No. 527/MPP/Kep/9/2004 about the Import Sugar. While the sugar trade between islands arranged through Kemenperindag. No. 527/MPP/Kep/9/2004. This regulation provides that type of sugar that may be traded between islands, the goal is to fulfil the needs of non-sugar producers regional, however, because of Indonesia's vast territory and scattered in the islands led to the cost of transportation and distribution to be expensive. This leads to high prices and sugar is not available, and eventually many sugar illegal trading occurs mainly in Kalimantan, Riau and Aceh. Another effect is the seepage of refined sugar for household consumption. This problem arises because the distribution of sugar is controlled by a group of businessmen. Therefore it is necessary to compensate the agency gets state mandate to maintain price stability and supply of sugar as mandated by Law No. 18 in 2012. Along with the system it is necessary for the effective distribution and transportation, such as cutting the distribution chain; the port's white crystal sugar import should be the nearest port to the area that needs the white crystal sugar and minus the white crystal sugar regions preferably filled by surplus areas nearby.

**Keywords:** white crystal sugar, import, distribution

## 1. INTRODUCTION

Indonesia's history has been recorded as the country's second largest sugar exporter in the world, precisely 1931. But now the 3rd largest importer in the world. This is because the national sugar production decreased due to the reduced amount of sugar industry, the shrinking of sugarcane plantations and decreased productivity. On the other hand the demand continues to increase in line with population growth, increased social welfare and the amount of food and beverage industry.

In 2012 the national sugar production of 2.4 million tons, while the household needs of 2.5 million tons, so the shortfall must be covered by imports. Imports were also made to meet the needs of the industry at all cannot be met by domestic production. In 2012, imports of raw sugar for industrial needs of 2.4 million tons.

The imbalance between supply and demand causes prices fluctuations often occur because the product is often not available in the market. Other causes include sugar distribution system is not optimal to reach all areas of the country especially the Indonesia's eastern and the border lines. As it is known that most of the sugar industry is in Java island, Lampung and sugar imports also enter just the major ports in Java island.

As a national strategic commodity in the list 9 staples, then it is the duty of government to ensure the product is available and can be purchased at affordable prices throughout the country. As the mandate of the Food Law that food distribution is done to meet the food supply distribution throughout the territory of the Republic of Indonesia on an ongoing basis (Law No. 18 Th 2010). Therefore this paper aims to examine the pattern of distribution of sugar to look for a solution where the problem is and suggest improvement solutions. With the scope of the discussion only on the distribution pattern of white crystal sugar.

## 2. METHODOLOGY

The framework in this paper is originated from problems of availability and price of white crystal sugar that nearly every year brings a problem, especially in the border areas between countries is an expensive product prices and consequently illegal trading occurred almost throughout the year. As one food commodities, where sugar is the responsibility of the government. For the stages to be carried out by descriptive analysis the following matters:

- Analysis of the policy (the policy of white crystal sugar trade system, a policy of white crystal sugar trade between islands)
- Institutional and Infrastructure Policy
- White crystal sugar distribution system analysis

## 3. NATIONAL PORTRAIT OF SUGAR INDUSTRY

The distribution of the national sugar industry up to now still concentrated in P. Java (48 Units), Lampung (6 units), Medan (2 Units), Gorontalo (1 unit), South Sulawesi (3 units). Of these three only the surplus area: East Java, Lampung, and Gorontalo. It is seen that the concentration of the sugar mills in Java and partly just Lampung, in P. Java is also the largest found in East Java is 31 pieces. The amount of production and the need by province is as follows.

**Table 1.** Number of Production by Province and Sugar Consumption Levels in 2011

Province	Production (Tons)	Consumption (Tons)	Surplus (Tons)
North Sumatera	47.122,0	144.323,1	-97.201,10
South Sumatera	52.232,1	82.826,0	-30.593,90
Lampung	708.396,3	84.582,6	623.813,70
West Java	91.820,6	478.628,3	-386.807,70
Center Java	187.344,5	359.997,9	-172.653,40
Yogyakarta	27.945,5	38.436,9	-10.491,40
East Java	1.051.642,1	416.629,0	635.013,10
South Sulawesi	21.938,4	89.322,6	-67.384,20
Gorontalo	39.817,7	11.563,5	28.254,20

Source: Kementan, 2012.

Of Table 1 shows a surplus for the 3 provinces are as follows: Province East Java amounted to 635. 013,10 tons and Province Lampung amounted to 623.813,70 tons and Province Gorontalo at 28.254,20 tons. The excess will be used to cover some of the shortcomings of other provinces either have sugar factory or not.

Until now there is no mechanism or standard rules, that excess sugar in a province just to the nearest provincial deficit. On the other hand according to Rosalia (2013), East Java government to ban sugar outside of the province. This condition can threaten food security and competitive price of sugar will not hurt farmers and sugar mills.

## 4. TRADE POLICY CONCERNING NATIONAL SUGAR

As a strategic commodity, then the sugar will always be in control of the government such as price, number of supply and distribution. Wayan and Ernawati research results

(2008) showed that the factors that affect the price of sugar was a farmer benchmark prices (HPP) as the base price, the price of sugar import, and distribution of sugar itself.

#### **4.1 Inter-Island Trade Policy**

Because not all produce sugars and sugar make it easier for distribution in accordance with the use and or utilization, the Ministry of Commerce issued regulations KemenperindagNo. 334 / MPP/Kep/5/2004 about similar changes in previous regulations governing inter-island trade.

Provisions contained in this rule are allowed sugar traded between islands:

- White crystal sugar production in the country;
- Refined crystal sugar production in the country is derived from sugar cane;
- Refined crystal sugar production in the country is derived from raw crystal sugar / raw sugar.

Sugar traded between islands is prohibited except by PGAPT (Inter Island Registered Sugar Trader):

- White crystal sugar that comes from imports;
- Crystal sugar refined from imported

This provision guarantees that the distribution of sugar between islands in order to meet the needs of the sugar on the island that does not have sugar industry or a minus. While the ban is aimed at avoiding misuse sugar import permits to meet specific needs. That is an area that needs the sugar shortage and local government do you apply apply for sugar imports for the region.

Trade between the island can be done by traders at any level so that there is competition. However, still there is no prohibition for white crystal sugar from imported and refined sugar from imported traded by those who had no sign of recognition as an inter-island traders. The other thing to keep refined sugar should only be for the industry.

#### **4.2 Sugar Import Policy**

Since 1976 Indonesia national sugar producers are unable to meet domestic demand for both domestic and industrial sectors. Therefore the government has allowed the import of sugar. Policies and provisions for sugar imports is Permendag. No. 19/M-DAG/PER/5/2008 about the fifth amendment Permenperindag. No. 527/MPP/Kep/9/2004, where such provisions are as follows:

A sugar that can be imported is a raw crystal sugar (Raw sugar), refined sugar (sugar Refine) for industrial consumption and white crystal sugar (Plantation White crystal sugar)Implementing import:

- Raw crystal sugar (raw sugar) and refined crystal sugar can only be imported by a company that has gained recognition as an importer of sugar (IP) sugar..
- Raw Sugar (Raw Sugar) and refined sugar (Refinet Sugar) Sugar imported by IP is only in use as a raw material for the production of industrial process owned by IP Sugar and prohibited trade or transferable.
- Refined sugar industry results owned by IP Coarse Sugar sourced raw materials such as Raw sugar imports can only be sold or distributed to industry.
- White crystal sugar can only be imported by companies that have received designation as a Registered Importer Sugar (Sugar IT) with the following provisions:
  - Beyond the Future:
    - 1 month before the sugarcane milling season,
    - Sugar cane milling season.
    - 2 months after the sugar cane milling season.
  - If the price of white crystal sugar at the farm level reached in the HPP (farmer benchmark prices)
  - If the production or supply of white crystal sugar in the country is not sufficient.

The provisions of the above, in addition to import sugar to meet domestic needs as well as to maintain price stability. So that the import will be done if there is a shortage of supply and the domestic industry if the base price was set by the government exceeds HPP.

Associated with distribution problems that cause costly and sugar prices are not available in the eastern Indonesian regions and borders, in this rule that there is no provision for the needs of the import-deficient areas should go directly to the nearest customs area. This causes sugar imports often get into port in P. Java. This will take time and continued distribution cost to get to these areas.

Decision mechanisms related imports, during the determination of the volume of sugar imports and the import time by food Stabilization Coordination Team Principal, which is coordinated by the Coordinating Minister for the Economy and Regulation No. Menkoperekonomian. KEP-50/M.EKON/10/2010. While the price monitoring is done through The Food Commodity Market Monitoring System (SP2KP). The system is a Web-based information system that provides information commodity prices both at the provincial, national and international.

## **5. SUGAR DISTRIBUTION POLICY**

### **5.1 Establishment of Sugar Distribution Authority (Bulog) Before Being A Public Company**

Sugar distribution can not be separated from other food distribution, the agency that handles the availability of food has been around since the Dutch. Until the pre-1998 distribution of food commodities including sugar can not be separated from Bulog (National Logistics Agency), the agency tasked to manage sugar in 1971, as a guard buffer stock. Beginning in 1980, Bulog gets the task of helping supply to maintain price stability in the level of consumer and producer based on the general policy of the government through a Presidential Decree. No. 39/1978. At that time Bulog warehouses were built throughout Indonesia.

Bulog task continues to grow with the release of Presidential Decree No.. 50/1995 Bulog where Bulog gets mandate for price control and manage the supply of rice, sugar, wheat flour, soybeans, feed, and other foodstuffs. However, this task does not last long as the Presidential Decree. 45/1997 dated 1 November 1997 Bulog task only narrowed the price control and manage the supply of rice and sugar, and was soon under pressure from the IMF through a Letter of Intent which was signed on January 15, 1998 only handle authority Bulog rice. This is reinforced by the publication of Presidential Decree no. 19/1998 dated January 21, 1998.

Aware of the strategic role of Bulog then through Presidential Decree No. 29/2000 dated 26 February 2000 on Bulog, Bulog has the task of carrying out the general duties of governance and development in the field of logistics management through inventory management, distribution, control the price of rice and logistics services business in accordance with the legislation in force. However, the next task should refer to the applicable law through Presidential Decree. 166/2000 which Article 40 states that Bulog has the task of carrying out government duties in the field of logistics management in accordance with the legislation in force, and through the Presidential Decree. 103/2001 Bulog return duties and functions as the Presidential Decree 26/2000, as LPND and responsible to the President.

### **5.2 Establishment of Sugar Distribution Authority (Bulog) After Being A Public Company**

Now has become Perum Bulog (Public Company) since January 20, 2003 in Government Regulation No.. 7 of 2003 which was later revised to No. PP. 61 of 2003. Housing is considered the most appropriate legal entity after a study conducted by independent agencies.

Although Bulog has not received a specific mandate to deal with the sugar, but on November 3, 2008, Perum Bulog, BRI, PTPN, RNI, signed a memorandum of understanding to form alternative sugar distribution, the distribution of inefficient sugar so

it can be reduced trade margins (Bulog.co. id, 2008), and in that year also has distributed as much as 255,000 tons of sugar sugar PTPN and PT. RNI (Santosa, 2009). In this case Bulog as sales agent sugar PTPN and PT. RNI. This pattern continues until the agency today. Bulog is also a commercial sugar importer and marketed through sub-Divre Division and throughout Indonesia.

Bulog role in the stabilization of prices and distribution is still considered the most effective because it has a long experience and have the network, the most extensive distribution facilities are: 26 regional divisions (Divre), 101 sub-divre, logistics offices in 30 locations, and warehouse storage reaches 463 locations throughout Indonesia. This is evident from the results study Prastowo et al (2008) that the price of sugar is relatively stable prior to 2008 because of the role of Bulog. Therefore on July 26, 2012 President instruct Bulog revitalized in order to handle the stabilization of commodity prices for food and supplies not only rice but also soy, sugar, and meat. And now Bulog has gained the import quota for all three commodities.

### 5.3 Infrastructure Policy

Indonesian logistics conditions are the worst in ASEAN (Laos was not included), it is seen from the logistics performance index reports that in 2012 Indonesia ranks 59 under the Philippines and Vietnam, as shown in the following table:

**Table. 2** Logistics Performance Index Asean countries and China in 2012

No.	Country	Ranking	Score	% Highest Performance
1.	Singapura	1	4,13	100
2.	Malaysia	29	3,49	79,8
3.	Thailand	38	3,18	69,6
4.	Philiphina	52	3,02	64,8
5.	Vietnam	53	3,00	64,1
6.	Indonesia	59	2,94	62,2
7.	China	26	3,52	80,5

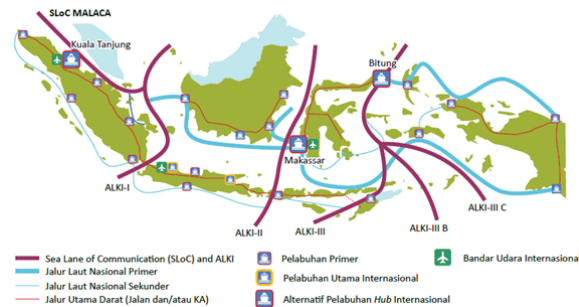
Source: Logistics Performance Index (LPI) and 2012

LPI indicators such as the level of fees and charges as well as the quality of ports, airports, roads, rail, warehousing and agency. Indonesia realizes that, therefore, through MP3EI (Master Plan for the Acceleration and Expansion of Indonesian Economic Development 2011-2025), Presidential Regulation No. 32 Th. 2011, Indonesia intends to conduct inter-island connecting both physically through the bridge and through the means of transport. The one that will be addressed is the seaport. In the proposed harbor plan a strategic port 25 are:

1. Lhoukseumawe
2. Pel. Belawan
3. Pel. Dumai
4. Pel. Tj. Pinag
5. Pel. Pekanbaru
6. Pel. Batam
7. Pel. Gulf Bayur
8. Pel. Long
9. Pel. Palembang
13. Pel. Tj. Gold
14. Pel. Tj. Perak
15. Pel. Banjarmasin
16. Pel. Kupang
17. Pel. Benoa
18. Pel. Samarinda
19. Pel. Makassar
20. Pel. Balikpapan
21. Pel. Bitung
22. Pel. Cud
23. Pel. Jayapura
24. Pel. Ambon
25. Pel. Sliding

- 10.Pel. Banten
- 11.Pel. Tj. Priok
- 12.Pel. Pontianak

his port is spread evenly throughout Indonesia, as shown in the following figure:



**Figure 1 :** Concepts and Port Gate International Airport in the Future (MP3E1, 2011)

This plan is very well linked to the distribution of goods, including the distribution of food commodities, namely sugar. This is due to its status as a strategic port which means it could be a port of export import is possible to import sugar directly into the goal area in need without going through the port in P. Java. This pattern is in addition to accelerating the delivery time will also save costs.

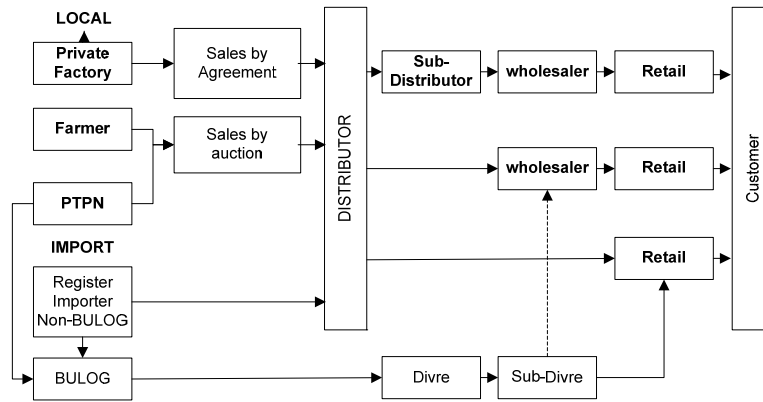
## 6. DISTRIBUTION PATTERN OF WHITE CRYSTAL SUGAR

After the end of the monopoly of Bulog in the sugar distribution of sugar distribution patterns are as follows:

- White crystal sugar produced by the state-owned sugar mills auctioned openly partly fixed and partly owned by the sugar mills. Likewise, the farmers of the sugar obtained from the results. The bidders are the distributor of sugar. Sugar is owned by state-owned sugar mills subsequently distributed by Bulog through cooperatives.
- White crystal sugar from private sugar mills sold to distributors. From the distributor or sub-distributor to wholesalers, from wholesalers to reseller and final consumers.
- While sugar imports, from importers to distributors, sub-distributors or wholesalers, new retail customers. Meanwhile, if by Bulog white crystal sugar directly to wholesalers, retail, new consumers.

White crystal sugar distribution pattern is illustrated in Figure 2.

Distribution patterns will impact on commodity prices, the chain length distribution of the many parties that take profit margin, resulting in a more expensive price. The longer the chain of distribution can also lead to uncertainty of supply to end consumers because many people will take advantage when commodity supplies are limited (e.g.Hoarding). Therefore, cooperation with some cooperative sugar mills in order to cut the chain of distribution.



**Figure2** :Distribution patterns of white crystal sugar  
(Source: Business Competition Supervisory Commission 2010, adjusted 2013)

Associated with the distribution of sugar in East Java is known as Samurai 9/9 Dragon, which is a large group of businessmen who control the sugar capital, new players will be very difficult to get into the business, their tenure started from the purchase of sugar at the factory (Rosalia, 2013). The results Prastowo et al (2008) also mentioned the existence of the dominant role of the 8 companies that dominate the distribution and supply of sugar, because they are a direct buyer of sugar mills and farmers as well as a registered importer. Institutions involved in the distribution of sugar among Perum Bulog, Koperasi Induk Koperasi Pedagang Pasar dan Asosiasi Penyalur Gula dan Terigu (APEGTI).

## 7. CONCLUSIONS AND RECOMMENDATIONS

### 7.1 Conclusion

Based on the descriptive analysis above, in order to cope with the frequent occurrence of price volatility and scarcity of sugar in the border area of eastern Indonesia in particular, it can be concluded:

- There is a disparity in the volume of sugar availability between regions.
- Import of sugar most directly to areas not requiring imported sugar.
- Mechanisms for the determination of sugar imports sugar shortage areas not applying properly.
- Agencybulog could again be stabilisator price and availability of sugar in Indonesia.
- Sugar distribution system is controlled by a group of large employers

### 7.2 Suggestion

To overcome the shortage of sugar in eastern Indonesia and the border area is advised:

- Direct import of white crystal sugar shipped through ports nearest imports.
- Keep the system made the determination that imports of sugar-based IT.
- To save on transportation costs only surplus areas to deficit areas nearby to fill shortages.

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