# Sectoral and Structural Poverty Syndrome in Irrigated Agriculture in Indonesia

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## INTRODUCTION

It is very interesting to recall the suggestion of the Center for Rural and Regional Development Studies of Gadjah Mada University (CRRDS-GMU) to the Minister of Agriculture years ago to change the official name of the Department of Agriculture (DOA) of this republic to the Department of Agronomy. This suggestion was raised in a national seminar before the DOA Minister as a serious criticism due to the fact that the overall efforts of DOA at that time was strongly concentrated on production-oriented programs; and it was not very surprising that the country successfully achieved self-sufficiency in rice in 1984. However, such development progress was not very well accompanied by meaningful progress in human development of the farmers as primary producers.

Many more empirical criticism have also been forwarded by CRRDS to the government knowing the fact that the government followed too many development policies that were very insensitive to the socioeconomic needs of the people. To illustrate a few, among other *socioeconomically insensitive policies* were TRI, BPPC, food monopoly, rice biased development policy in agriculture, and many farmers' insensitive institutional development policies.

It was an irony considering the case of the TRI (people's sugarcane intensification) program. Through a very intensive study conducted right after the issuance of Presidential Instruction on TRI, documented as INPRES No. 09/1975, the Center recommended the government to abolish that program as soon as possible due to socioeconomic unsuitability of the program to the farmers. The same study, conducted by the Center twenty years later, produced just the same recommendation on that issue to the government, but such a recommendation was never taken into proportional consideration. However, such policies: TRI, BPPC, monopoly, etc., were abolished after the issuance of the IMF Letter of Intent (LOI) during the crisis.

The country's irrigation development was not an exception. This sector had been very strongly positioned to support the rice-biased agricultural development for the sake of food self-sufficiency. Radical reformation of the national irrigation policy that has been well

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drafted and socialized strongly indicates the need for having a more comprehensive and socially sensitive development policies. Otherwise agricultural sector would be dampened more deeply into its sectoral and structural poverty in the *next crisis*.

## THE INDONESIAN CRISIS: A REVIEW<sup>1</sup>

In the aftermath of the Asian financial crisis, it is now nationally accepted that agricultural sector of Indonesia has been impoverished within the country's development model. Economic growth has been selected by the country's development planners as the primary development priority, joining other countries in adopting what has been called the "Asian development model." This model has successfully improved the living standards of many countries but with very limited attention to the need of attaining the *growth-equity-sustainability*<sup>2</sup> objectives of the country's development.

Development progress of Indonesia has presented a typical case of the *successful* economic development model of a country with a very authoritarian and interventionist state. During the past decade, Indonesia made rapid and remarkable economic growth with the help of strong government-oriented policy thrust. The successful economic progress has functioned to legitimize the government dependent economic development under the authoritarian regime.

During the first month of the crisis, the International monetary Fund (IMF) was still forecasting 3 percent of GDP (Gross Domestic Product) growth for Indonesia in 1998–1999. Moreover, the Vancouver Conference of APEC was predicting even higher GDP growth of 6 percent. And the World Bank President, James Wolfensohn was still very optimistic by stating his belief to the Jakarta Post that the Indonesian economic crisis was over. Only after few months of his optimism, he finally accepted that his optimism was completely misleading.<sup>3</sup>

There was no prediction at all that the Indonesian economy would be seriously hit by a currency drop from Rp 3,200 per US Dollar before the crisis to its minimum level of Rp 17.000 per US Dollar, in December 1998. Such optimism could be very well understood, due to the promising statistics of the Indonesian macroeconomy before the crisis<sup>4</sup> (tables 1 and 2).

<sup>&</sup>lt;sup>1</sup>Major part of this review is adopted from Mochammad Maksum 2001. Economic Crisis and its Human-Social Cost in Indonesia. Paper presented at an international seminar on: Civil Society Response to the Asian Crisis in Three Countries: Indonesia, Korea and Thailand. Seoul, Korea, April 20-21, 2001

<sup>&</sup>lt;sup>2</sup>The critical triangle as cited by Mochammad Maksum. 1997. The Critical Triangle of Agricultural Development. In Maksum, M. et al. (eds.) 1997. People Based Sustainable Agricultural Development for a Global World. P3PK-UGM.

<sup>&</sup>lt;sup>3</sup>He was saying to the Jakarta Post that he was not alone in thinking that 12 months before Indonesia was on a very good path. There was no prediction at all then, he said, of an 80% drop in the Indonesian currency. Read more in Mann, Richard 1998. Economic Crisis in Indonesia: the Full Story.

Year	GDP Growth	Population growth
	(%)	(%)
1970	7.5	2.32
1975	5.0	2.32
1980	9.9	1.98
1985	2.5	1.98
1990	7.4	1.98
1994	7.5	1.69
1995	8.2	1.69
1996	7.8	1.69

Table 1. Annual growth rate of GDP and population, 1970-1996.

Source: Central Bureau of Statistics of Indonesia.5

Table 2. The number of poor population in Indonesia, 1976-1999.

Year	Number (millions) of			Percentage of	
Teur	Rural poor	Urban poor	Total poor	Poor population	
1976	44.2	10.0	54.2	40.08	
1979	38.9	8.3	47.2	32.30	
1980	32.8	9.5	42.3	28.56	
1981	31.3	9.3	40.6	26.85	
1984	25.7	9.3	35.0	21.64	
1987	20.3	9.7	30.0	17.42	
1990	17.8	9.4	27.2	15.08	
1993	17.2	8.7	25.9	13.79	
1996	15.3	7.2	22.5	11.35	
1998	31.9	17.6	49.5	24.2	
1999	32.3	15.6	48.0	23.4	

Source: Recalculated from the Central Bureau of Statistics.<sup>6</sup>

<sup>&</sup>lt;sup>5</sup>Cited from SUHARDJO. 1998. Country Paper on Food and Agriculture Policy in Indonesia. Presented in the First Regional Experts' Workshop on Food and Agriculture Policy. Los Banos, Philippines, June 23-24.

<sup>&</sup>lt;sup>6</sup>Cited from various series published by the Central Bureau od Statistics (CBS) of the Republic of Indonesia. This poverty statistics, according to DILLON, H.S left approximately 50 million people classified as near poverty community which is very fragile to any poverty line changes. Read Dillon. 2001. New Paradigm in Poverty Alleviation Program in Indonesia. Presented in a Half-Day Seminar on Poverty Alleviation, at the Center for Rural and Regional Development Studies (CRRDS) Gadjah Mada University, June 18, 2001.

The Asian financial crisis is undoubtedly the one single event in 1997 creating the most destabilizing impact in Asia. The economic and growth performance of the so-called Asian 4: Thailand, Indonesia, Malaysia and the Philippines, were suddenly challenged by the onslaught of the financial debacle that originated by the depreciation of the Thai Baht, which was soon followed by the Indonesian Rupiah, Malaysian Ringgit and the Philippines Peso. Such contagion has also spread even to Hong Kong, Korea, Singapore and the Russian states.<sup>7</sup>

Compared to the crisis faced by other Asian countries, the crisis faced by Indonesia is unique in several aspects. The uniqueness can be seen in the multidimensional nature and the extent of the crisis. The latter has placed Indonesian rupiah comparatively the most affected local currency by the Asian crisis (table 3).

Currency	Exchange ra	% Change		
Currency	1 July, 1997	24 January, 1998	, o chunge	
Indonesian Rupiah	2,432.00	14,800.00	-83.6	
Malaysian Ringgit	2.52	4.58	-44.9	
Philippine Peso	26.37	43.50	-39.4	
Singapore Baht	1.43	1.76	-18.8	
Thai Baht	24.53	54.00	-54.6	
Korean Won	888.00	1,744.00	-49.1	

Table 3. Rates of depreciation of Selected Asian Currencies.<sup>8</sup>

The crisis in Indonesia actually began months before the Asian crisis began. The Indonesian macroeconomy at that time was disturbed by serious natural calamities. Forest fire destructing large forest area and very long drought destroying agricultural production could be considered as the preliminary crises of the country. The former has also disrupted both the national and regional economies as it decreased strongly the flow of foreign tourists and foreign capital to the country.

Before the country fully recovered from the natural crisis, Indonesia faced the financial crisis with several other Asian countries. Indonesia, which for decades had enjoyed a robust economic growth suddenly plunged itself into deep economic crisis which washed away almost all the achievements that the country had gained until then. Indonesia, which before the crisis had achieved an average of annual GDP growth rate of above 7 percent in 1996, suddenly had to face negative growth rate of its national economy.

<sup>&</sup>lt;sup>7</sup>Manalili, Nerlita M and Luis Santiago, Jr. in their paper: The Implication of the Asian Financial Crisis on South East Asia-the Case of the Philippine Food and Agricultural Sector, moreover elaborated a little about possible conspiratorial move from the west with a political agenda to punish the Asean for accepting Myanmar to its ranks. But they claimed further the contagion has spread much more than the Asean.

<sup>&</sup>lt;sup>8</sup>Source: Montess, Manuel F. 1998. Currency Crisis in Southeast Asia. Updated Edition. ISEAS Publication. Stamford Press. Pte. Ltd.

While Indonesia was in the middle of facing the impacts of the economic crisis, the country suddenly entered into its political crisis. Although several macroeconomic indicators recently showed the progress against the crisis, there is no reason to claim that the Indonesian crisis is completely over. People may hope that the country stability would be very significantly determined by the final result and the quality of the electoral process.

To summarize: there are two dimensions of the Indonesian crisis, the short-term and the long-term. The short-term condition is attributable to the result of the Asian crisis characterized by the massive out-flow of foreign capital from Indonesia and the rest of Southeast Asia, following the floating of the Thai Baht on July 2, 1997. For the case of Indonesia, this out flow has been made even worse by the failure of business sector in paying foreign debt due to unproductive investment decision.

The Indonesian crisis was an event waiting to happen very long before it was precipitated by the Asian crisis. Aside from other minor causes including natural calamities, this collapse has its roots in a development model imposed on the country over the last three decades by the Indonesia's development planners of the Soeharto authoritarian government and the World Bank. The element of this model, which has been criticized by many development experts of the country, basically had four main roots, namely: (i) the adoption of the top-down development model; (ii) foreign capital and foreign input based development; (iii) industry biased development; and (iv) rice biased development in agriculture.<sup>9</sup>

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Social cost of such main roots was very high at the expense of the domestic resource-based sector, including agriculture. The first root, the strategy which can be described as the 'top-down development model,' was pushed by an alliance between the military elite and its technocratic partners in order to gain legitimacy for the ruling regime by delivering economic growth. By this approach, therefore, local potentials, natural resources capacity, and local community needs have never been taken into serious consideration.<sup>10</sup> The adoption of this development model has resulted in a more serious social cleavage with potential social conflicts and collective violence which could be easily observed in the country nowadays.<sup>11</sup>

<sup>&</sup>lt;sup>9</sup>Read Maksum, Mochammad. 2001. Economic Crisis and its Human-Social Cost in Indonesia Presented at an International Seminar on: Civil Society Response to the Asian Crisis in Three Countries: Indonesia, Korea and Thailand. Seoul, Korea, April 20-21, 2001.

<sup>&</sup>lt;sup>10</sup>It is clearly elaborated in MAKSUM, Mochammad, 1998. *Ringkihnya Ketahanan Pangan National Kita*. (The Fragility of Our National Food Security). Paper presented at the CRRDS-GMU monthly Seminar, August, 1998.

<sup>&</sup>lt;sup>11</sup>About collective violence could be read further in Mohtar Mas'oed, M. Maksum and Moh Syuhada (eds). 2001. Kekerasan Kolektif: Kondisi dan Pemicu. (Collective Violence: Condition and Precipitation). P3PK-UGM. And read also Maksum, Mochammad. 2001. Sampit: Konflik SARA, Politis atau Marjinalisasi Lokal. Press-Release Material. P3PK-UGM, March 8, 2001.

Sectoral poverty of agriculture has also resulted from the second root, which can be regarded as 'foreign-based development.' To make foreign input and imported capital goods cheaper in order to make import-dependent industrial enterprises more feasible, some policy measures were selected. The most crucial policies adopted during this development period were monetary policies that tended to overvalue local currency. This *rupiah overvaluation*, coupled with some fiscal policy measures that made import of raw materials cheaper, made both local raw material and local product relatively very expensive *vis-à-vis* the imported commodity. Again, these policies directly penalized natural resource intensive industry (NRI) of the country. To illustrate the condition, it was fresh in mind, that producing a grain of rice and a drop of animal feed domestically, during that period, were much more expensive than importing both, while the present limitation to import these two strongly indicates part of the economic collapse. Such a *currency overvaluation* has made the import of raw material, which shared more than 70 percent of total import value, possible (table 4).

Being the third root, 'industry biased development model' adopted by the regime amplified the effectiveness of the first and the second roots. It was not coincidental if the industrial sector selected by the regime was not the locally Indonesian based industry. The regime, in order to legitimize its supremacy, selected capital-intensive industry (CII), skilled

Year	(	Commodity grouping		
	Consumer good	Raw material	Capital good	
1993	1,146,10	20,034.80	7,146.90	28,237.80
	(4.06)	(70.95)	(25.31)	(100.00)
1994	1,430.18	23,133.57	7,419.70	31,983.50
	(4.47)	(72.33)	(23.20)	(100.00)
1995	2,350.45	29.586.56	8,691.73	40,628.74
	(5.78)	(72.82)	(21.39)	(100.00)
1996	2,805.93	30,469.65	9,652.93	42,928.50
	(6.54)	(70.98)	(22.49)	(100.00)
1997	2,166.26	30.229.54	9,283.98	41,679.78
	(5.20)	(72.53)	(22.27)	(100.00)
1998	1,970.47	19,581.00	5,785.40	27,336.87
	(7.21)	(71.63)	(21.16)	(100.00)
1999	2,468.30	18,475.00	3,060.00	27,336,87
	(10.28)	(76.97)	(12.74)	(100.00)

Table 4. Data on import distribution value based on commodity economic group (in million US\$ and %).<sup>12</sup>

Note: Values in parenthesis indicate corresponding percentages.

<sup>&</sup>lt;sup>12</sup>Source: percentage calculation based on <u>http://indag.dprin.go.id/indo/perdag/exim></u>

labor-intensive industry (SLI) and high technology intensive industry (HTI), instead of choosing natural resource- intensive industry (NRI) and unskilled labor-intensive industry (ULI). Basically that choice was clearly misleading knowing the fact that these last two industrial sectors, NRI and ULI, have been the economic sectors dominating the non-petroleum and non-gas foreign earnings for a very long period. Many indicators showing the industrial bias at the expense of NRI and ULI are presented by unfair credit distribution (table 5).

Economic sector	Credit	Credit
	absorption (%)	problem (%)
Industry	37.8	80
Services and real Estate	26.2	75
Trade	21.7	50
Agriculture	6.7	n.a.
Others	6.6	n.a.
Total	100.0	

*Table 5. Sector credit absorption and default rate as of September 1998 (Based on Bank Indonesia estimate).*<sup>13</sup>

The theoretical base of the three roots was developing and fighting for a competitive advantage in facing liberalized global market during the twenty-first century. However, developing such advantage by penalizing the sectors naturally having comparative advantage, such as NRI and ULI, was a very unreasonable strategy. Competitive advantage should have been developed without destroying the already endowed comparative advantage of the economy.<sup>14</sup>

By considering the 'rice biased agricultural development' as the fourth root, the writers do not mean that this root was the least damaging policy. It has to some degree the same damaging impact on agricultural development. This rice-centered development had some negative impacts on agricultural development. Among other impacts are: (i) its productive approach has left the farmers remain poor; (ii) input dependency of rice farming made rice sustainability questionable; (iii) rice biased agricultural policy left almost no incentive for producing other agricultural commodities; (iv) non-rice economic development, including R&D, was very minimal; (v) production diversification was not encouraged; (vi) more MNCs dependent of non-rice production system; and (vii) food security profile tends to depend on a single staple food, which is rice, instead of diversified staple foods as previously practiced

<sup>&</sup>lt;sup>13</sup>See further in Chafrany, Gabriel. 1998. Fokuskan Prakarsa Jakarta pada Sektor Pertanian dan Ekspor (Concentrate the Prakarsa Jakarta Fund for Agriculture and Export). Kompas, September 17, 1998 p.3.

<sup>&</sup>lt;sup>14</sup>Read further in Maksum, Mochammad. 1998. *Pembangunan Pertanian Berbasis Ketahanan Pangan*. (Food Security Based Agricultural Development). Paper presented at the Seminar on the Structural Change of Agricultural Development. Organized during the 34th Anniversary of the faculty of Agricultural Technology, GMU.

by Indonesians. In turns, due to sectoral mal-development, agricultural sector including fishery and forestry subsectors hardly gain any global trade advantage during the crisis.<sup>15</sup>

Agriculture is in trouble in Indonesia, but it is a crisis that is predominantly man-made through, for example the main roots above-mentioned, not a crisis that significantly stemmed from drought and forest fire, although the contribution of them could not be nullified. The combined effect of several factors have been mentioned, forest fire, severe drought, and the financial crisis amplified by socio-political crisis, pushed half of Indonesia's 203 million people below the poverty line by the end of 1998 and left 7.5 million people in Indonesia facing acute food shortages.<sup>16</sup>

Unlike the production estimate issued by the Indonesia Central Bureau of Statistics, FAO Mission more extremely projected that rice production for 1998 was 47.5 million tons of paddy, 3.6 percent down from the previous year's harvest, 6 percent above the 1996 harvest, and 11 percent below the official target. Consequently, Indonesia which fought hard to achieve self-sufficiency in rice production in the 1980s, faces a record food deficit of approximately 3.5 million tons for the marketing year 1998/1999, which ends on 31 March 1999.<sup>17</sup> In addition to rice as the staple food, Indonesia had to import 4 million tons of wheat during the same period (table 6). This deficit, combined with decreasing purchasing power of the nation due to the crisis, has drastically downgraded Indonesia into a country group classified as the Low Income Food Deficit Countries (LIFDCs).<sup>18</sup>

Year	Harvested area	Yield	Production	Growth	
	(ha)	(Q/Ha)	(ton)	(%)	
1995	11,438,764	43.49	49,744,140	6.65	
1996#	11,569,729	44.17	51,101,506	2.73	
1997#	11,140,594	44.32	49,377,054	-3.37	
1998#	11,730,325	41.97	49,236,692	-0.36	
1999	11,963,204	42.52	50,866,387	-3.31	
2000+	11,608,281	44.09	51,179,412	0.62	
2001*	11,413,784	43.08	50,080,787	-2.15	

Table 6. Production growth of paddy rice in Indonesia 1995-2001.

*Note*: + Preliminary Figures;\* First Forecast; # Including East Timor. *Source*: Central Bureau of Statistics, Indonesia.

<sup>17</sup>Ibid.

<sup>18</sup>Read Mission Report on Indonesia of the FAO Special Program for Food Security (1998).

<sup>&</sup>lt;sup>15</sup>Export development of agricultural sector showed minimum growth in 1997 and 1998, while some industries in this sector showed even negative growth. When local currency depreciated, this negative or minimum growth of domestic based sector should have not been the case if sectoral development is normal. See Appendix tables 2 and 3.

<sup>&</sup>lt;sup>16</sup>FAO. 1998. Draought and financial crisis leave Indonesia facing record food deficit. http://www.fao.org/ NEWS/GLOBALWATCH/GW98 10-Ehtm.

It has been globally accepted that food security is not food self-sufficiency. Food security has been globally defined as the access by all people at all times to enough food for an active healthy life. Four key elements, therefore, could be properly derived from this definition, mainly: (i) *availability*, (ii) *reliability*, (iii) *accessibility*, and (iv) *quality*. By the word availability, food security requires that food must be available, and the word reliability means that food supply should be stable both inter-temporally and inter-spacially. The third element, accessibility, tells us that food security should insure that all households have access to food either through their own production or through sufficient purchasing power, while the term quality means that the food should be in a socially *suitable and acceptable* quality.<sup>19</sup> Based on this understanding therefore, food insecurity can be logically defined to be the failure of availability, accessibility, reliability, or some combination of them, of healthy food.

The food security status of Indonesia before the crisis was characterized by significant proportion of calorie and protein deficient households. The current condition of serious food deficit, coupled with the fact that the nation is currently facing financial deficit and limited purchasing power at both the government and the household levels shows that the food security status of Indonesia is much worse than that during the years before. Some portion of the population has been reported as having acute food insecurity.

It must be clear in mind, that food insecurity was not the sole impact of the Asian crisis. Limited purchasing power of the nation due to currency depreciation has made the import of raw materials, which share over 70 percent of import value previously reported, remarkably low. In turn, this will reduce the absorptive capacity of industrial sector towards employment. Evolutionary movement of labor force from modern sectors to traditional one and from employee status to self-employed strongly indicates the impact of the Asian crisis on employment.

Among many other impacts, to mention a few, are: hyper-inflation, sky-rocketing price indices, increase in number of poor people, unfavorable change in trade balance and decrease in export earning of several dominant industries. Unfavorable change in trade balance would not have happened if the industrial choice had not been misleading, while the decrease in export earning of dominant industries would have never been experienced if the development of the NRI and ULI had been *implicitly* encouraged. Shifting the development strategy towards improving the competitive advantage of the NRI and ULI, seems to be the only solution of the country to survive during any future economic crisis. It is expected that with domestic resource-based industries, the competitive advantage could be very well developed through industrial development approach to progressively catch the global market tomorrow.

#### STRUCTURAL POVERTY IN IRRIGATED AGRICULTURE

An intensive workshop in structural poverty conducted in Yogyakarta, 1999<sup>20</sup> poverty, defined as absolute or relative inability of people to meet their basic needs, was classified into:

<sup>&</sup>lt;sup>19</sup>Derived from HEKS (Swiss Interchurch Aid). 1998. Petition and Recommendation of the International Conference on Food Security organized by HEKS in Bacolod City, the Philippines, July 19-24, 1998.

<sup>&</sup>lt;sup>20</sup>That workshop was conducted by the Center for Rural and Regional Development Studies (CRRDS) of Gadjah Mada University in cooperation with KIKIS, Percik and AUS-Aid. December, 1999.

(i) natural poverty; (ii) cultural poverty; and (iii) structural poverty.<sup>21,22</sup> Natural poverty in this case was defined as the poverty due to natural constraints such as: sickness, age, disability, and other natural problems, and cultural poverty was understood as that due to cultural problems such as: laziness, consumptive habit, indisciplinary habit, and the like. Whereas, structural poverty was defined as that due to man-made or structural problems, such as: pricing policy, inequitable distribution of asset, input availability, etc.

By comparing the three kinds of poverty incidence, structural poverty was considered by the workshop as the most important to notice due to the fact that this kind of poverty has very significant impact on marginalizing the people, both in absolute and relative terms, with many possible consequences. Furthermore, for the case of Indonesia this marginalization has resulted in the displacement of the local people to become what is called as the internally displaced people (IDPs) in their region. Collective violence that could be easily observed in Indonesia nowadays is one among social impact of ill-structural treatment at the community level<sup>23</sup>.

Sectoral poverty in agriculture as has been elaborated in the previous discussion could be considered as structurally affecting the incidence of structural poverty at the grass-root level, including irrigated agriculture. Though there is no figure differentiating the poverty level in irrigated agriculture, it is very reasonable to assume that it has significant contribution to poverty figures in rural areas, especially in Java.

The basic problems connected with structural poverty incidence are classified as: (i) power relation; (ii) institutional infrastructure; (iii) constraining policies; (iv) environment; and (v) cultural constraints.<sup>24</sup> For the case of irrigated agriculture, every single point of the problems is elaborated in table 7.

<sup>&</sup>lt;sup>21</sup>Read: Revrisond Baswir. 1999. Pembangunan Pedesaan dan Penanggulangan Kemiskinan. Paper presented at the Workshop on Structural Poverty Alleviation in Irrigated Agriculture. CRRDS-GMU.

<sup>&</sup>lt;sup>22</sup>Sectoral poverty in irrigated agriculture has in fact structurallu happende also during the colonial era in solving the food shortage. This can be read in Yasmo Eumora. 2001. The Food Shortage and Javanese Society: From the Ends of 1910s to 1920. in Lembaran Sejarah. Volume 3. No. 01.

<sup>&</sup>lt;sup>23</sup>Read: Mohtar Mas'oed, Mochammad Maksum and Moh Syuhada. 2000. Kekerasan Kolektif: Kondisi dan Pemicu. (Collective Violence-Condition and Precipitation). P3PK-UGM. Yogyakarta.

<sup>&</sup>lt;sup>24</sup>This classification is well elaborated in KIKIS and AusAID. 2000. Agenda Keadilan dan Pemberdayaan Rakyat: Dialog Nasioonal tentang Kemiskinan Struktural. Jakarta. Seven focal points are: irrigated agriculture, urban poor, small scale industry, upland agriculture, forest community, labor community and fishery focal point.

No	Basic problems	Observed problems
1	Power relation	• Top-down development
		• Low bargaining power in input and output markets
		• Input dependent farming
		• Low profitability
		• Unclear right on production inputs (water)
2	Institutional infrastructure	• Government oriented rural institutions
		• Village Unit Cooperative (KUDs) functioning more in favor of input companies and local capitalist
		• Low credit availability, bank plecit is more favorable
		• Farmer union is wrong representation of the farmers
		• Low agriculture and irrigation research
3	Constraining policies	• Industry biased economic policy
		• Rice-biased agricultural development
		• Pricing policy in favor of urban community
		• Capitalist-oriented export policy
		• Production-based agriculture and irrigation
4	Environment	• Water availability, reliability and equity
		• Higher input dependent of agricultural land
		• High land conversion
		• Lower carrying capacity
		• Higher population pressure and rural dependency of the economy
5	Cultural constraints	• More fragmented land
		• Women's role is limited
		• Subsistent oriented farming

Table 7: Basic problems connected with structural poverty in irrigated agriculture.

## **IRRIGATION-RELATED FARM INCOME**

It is globally accepted that farm income is normally connected with farm relative position, in terms of irrigation. Socioeconomic condition of the society varies as well, though it does not necessarily vary parallel with irrigation.

In Glapan Irrigation system, as in many irrigation systems, water is very unequally distributed and is characterized by excessive use of water in the head-area, while the tailarea is strongly marked by unavailability of water. Structural imbalance of water distribution in irrigation systems under observation indicated diverse socioeconomic impacts on the community. Consequently, agricultural income varies depending on access to irrigation water. Cropping intensity, farming intensification level, commodity choice and other agricultural practices in the downstream area are significantly much poorer than that in the upstream area. Though farm income has been positively related to water availability in these areas, overall socioeconomic condition does not necessarily have the same pattern. In anticipating poor irrigation water availability, the downstream community has been more innovative in creating alternative sources of employment and income, as compared to those in the upstream area.

Unlike the Glapan system agriculture, agricultural practice in Kalibawang scheme presented a contradictory profile of farm income. Table 8 shows clearly this contradiction. A simple survey involving120 farmers of the head, middle and tail areas of the Kalibawang scheme shows that rice farming in the middle irrigated area has the highest income, followed by the tail and the head areas. These differences could be attributed to the fact that the efficiency in input use among three irrigation parts is remarkably different due to water availability. Provided by excessive water supply, the head area, which is located in a relatively hilly area experienced serious leaching in fertilizer and other chemical input use as compared to other parts.

Socioeconomic dynamics in this scheme was also very interesting to notice. Being constrained by poor availability of irrigation water, the tail-end community has been able to significantly mobilize their efforts in intensifying nonirrigated farm activities, such as, intensive gardening and animal husbandry. Though better income condition is still dominated by the middle area community, proportional contribution of various farming activities is remarkably different among areas.

	Low-land	Housing garden	Animal (%)	Aquaculture	Total	Total value (Rupia)
Head	45.07	33.06	20.22	1.65	100	3,787,381
Middle	77.20	7.69	10.79	4.32	100	7,115,389
Tail	47.11	24.31	27.63	0.94	100	4,426,301

Table 8. Percentage distribution of average household farm income across head, middle and tail reaches of the Kalibawang Irrigation System.

#### **CONCLUDING REMARKS**

Structural poverty of agriculture has been the most important social consequence of the economic development model of the country that was very strongly concentrated on its capital accumulation strategies with the strong support of state building measures. Natural resource and labor-intensive industries have been marginalized, but supporting the other sectors was discriminatively selected by the regime. In turn, structural poverty incidence in this sector escalated, both in absolute and relative terms.

The progress of poverty alleviation programs in Indonesia has never been very promising due to the fact that many of them were conducted very politically without prior understanding on the poverty incidence itself.

Structural poverty could be considered as the most important problem to consider. Agriculture and irrigation development in this country have never been very influential in alleviating poverty. These two sectors have been among the sectors marginalized within the economic development model of the country.

Paradigmatic changes have been well started in these two sectors, however, the potential influence of their development, to some extent, will be very much dependent on our understanding of structural poverty incidence on irrigated agriculture. Otherwise, potential impact of this sectoral development would never be optimally realized. Significant contribution of the irrigation sector would be very much dependent on the sectoral progress in agriculture. We may hope that agriculture and irrigation development have a very effective role in alleviating poverty, as far as irrigated agriculture is concerned.

Knowing the facts that the income structure might remarkably differ among areas within a single irrigation scheme or irrigation system, intensive observation and study connected with the area potential and dynamics are required to be able to come up with better agenda and policy measures of irrigation intervention. Otherwise, the local fitness of new policy agenda would be very poor and might create much more serious social problems.