

**SME clusters in Indonesia:
An analysis of growth dynamics and
employment conditions**

Report to the International Labour Organization
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Acknowledgements

Late 2001 the International Labour Organization requested an appraisal study in selected small and medium-scale enterprise (SME) clusters in Indonesia. The purpose of the study was to gain insight into the dynamics of clusters that were nationally, and to some extent internationally acknowledged to be performing well. Most of the clusters have been studied earlier by both Indonesian and international researchers. This allowed us to study the trajectories of change before and since the economic crisis of 1997/98.

Fieldwork for this study was carried out in February and March 2002 in Jakarta, West Java and Central Java. In West Java, the Institute for Technology Transfer for SMEs (ITTS) in Bogor was responsible for data collection and reporting. Lia Emiria Mustika, Wahyu Adi Nugroho, Supardi BS Mihadjo, Feisal Ardhi and Agus Priyanto executed the fieldwork in Jakarta and West Java. Brahmantio Isdijoso was responsible for the supervision of the fieldwork and coordinated the publication of the case study reports in Bahasa Indonesia. In Central Java, data collection and reporting was executed by the Center for Micro and Small Enterprise Dynamics (CEMSED) in Salatiga. Petrus Wijayanto, Setia Candrajati, Tunjung Prihantoro and Suryanto executed data collection. Sri Sulandjari supervised the fieldwork and edited the field reports.

Henry Sandee of the Vrije Universiteit Amsterdam was responsible for the overall supervision of the study and prepared the final report.

We would like to thank David Lamotte of the International Labour Organization for providing critical comments on an earlier draft of this report, which was presented during a roundtable discussion in the UN Building in Jakarta on 23 August 2002. We thank all participants for their reactions and comments, which helped us to improve the paper.

Henry Sandee

Amsterdam, 28 October 2002

Preface

Small and medium – scale enterprises (SMEs) receive ample attention in Indonesia. Government agencies and international organizations have recognized the importance of SMEs in post-crisis recovery strategies. In recent years, particular attention has been paid to SME clusters that are frequently defined as agglomerations of small firms operating in the same subsector. The Asian Development Bank (ADB) and the Japan International Development Agency (JICA) have acknowledged the potential contribution of clusters in fostering the development of the SME sector. The ADB has produced a policy paper that summarized best practices in cluster development, while JICA is executing a pilot project to identify strategies to upgrade clusters in selected subsectors.

So far, discussions on SME cluster development in Indonesia have focused on entrepreneurs, networking among firms, technology upgrading, and business development services. This report wants to contribute to ongoing discussions by focusing on how various SME clusters evolve through time. In addition, the report brings employment conditions in clusters to our attention. So far, employment has received little attention in the discussion on SME development in Indonesia. Little is known about the impact of technology upgrading, penetration of new markets, etc. on the employment conditions. This report is a first attempt to put employment in SME on the research and policy agenda.

Case studies showed that clusters, which may be spread out over several villages, create a substantial amount of jobs. Most of the jobs have piece rate wage systems implying that entrepreneurs will be able to reduce their wage bill whenever demand is low. Our cases suggest that wages in SME clusters are above minimum wage levels in bigger firms though these findings need to be controlled for education and skill levels.

This study was conducted by the Institute for Technology Transfer for SMEs (ITTS) in Bogor, the Center for Micro and Small Enterprise Dynamics (CEMSED) in Salatiga, and the Economic and Social Institute

(ESI) in Amsterdam, The Netherlands. Mukda Sunkool of the ILO office in Jakarta and David Lamotte of the South-East Asia and Pacific Multidisciplinary Advisory Team (SEAPAT) in Manila provided backstopping and comments on earlier drafts. The roundtable meeting in Jakarta on 23 August 2002, during which a draft of the paper was presented, brought together stakeholders interested in SME development, from the Indonesian and international community.

Table of Contents

Acknowledgement.....	3
Preface	5
1. INTRODUCTION	9
1.1 METHODOLOGY.....	10
1.2 THE IMPACT OF THE ECONOMIC CRISIS.....	11
2. CASE STUDIES	12
2.1 CERAMICS IN PLERED, PURWAKARTA, WEST JAVA ...	12
2.2 METAL CASTING IN SUKABUMI, WEST JAVA.....	15
2.3 RATTAN HANDICRAFTS, CIREBON, WEST JAVA	19
2.4 FOOTWEAR, BOGOR, WEST JAVA	23
2.5 GARMENTS, PULOGADUNG, EAST JAKARTA	26
2.6 TEXTILE CLUSTER IN PEKALONGAN, CENTRAL JAVA	29
2.7 FURNITURE IN JEPARA, CENTRAL JAVA.....	32
2.8 METAL CASTING IN CEPER, KLATEN, CENTRAL JAVA	35
2.9 BRASS HANDICRAFTS IN BOYOLALI, CENTRAL JAVA	39
2.10 TILE PRODUCTION IN KARANGGENENG, BOYOLALI CENTAL JAVA.....	42
3. SYNTHESIS, CONCLUSIONS AND POLICY ISSUES	46
3.1 HISTORY.....	46
3.2 SPECIALIZATION AND COLLABORATION IN SME CLUSTERS	46
3.3 PRODUCER-DRIVEN VIS-À-VIS BUYER-DRIVEN CLUSTER DEVELOPMENT PROCESSES.....	47

3.4	EMPLOYMENT, WAGES AND HOME WORKERS	48
3.5	SUPPORT	49
3.6	FUTURE WORK AND RESEARCH.....	50

I. Introduction

Small and medium-scale (SME) clusters in Indonesia are important economic enterprises in Indonesia. Clusters may be defined simply as geographic concentrations of firms that operate in the same subsector. For the purpose of this study an SME cluster is defined as a sectoral grouping of mainly micro and small-scale firms. Such clusters may encompass a limited number of larger firms. A substantial part of employment in the manufacturing sector is concentrated in clusters within small firms. The majority of clusters consist of very small enterprises that produce for nearby markets. Such enterprises rely chiefly on unpaid family workers and incidental use of paid laborers. These clusters are frequently referred to as micro-enterprise or dormant clusters or 'klaster yang sedang tidur' with little change in technology and markets (Weijland 1999, ADB Policy Paper No.9, 2001).

There are however also a considerable number of SME clusters that are much more dynamic and characterized by strong productive employment growth, technological upgrading and widening of markets. Since the economic and financial crisis of 1997/98 a substantial number of these dynamic clusters have been able to either penetrate or expand within export markets. Evidence is emerging about the factors that contribute to successful cluster development before and during the crisis. This paper consolidates evidence about selected successful SME clusters, paying attention to the dynamics and employment conditions within.

In Indonesia, considerable attention is paid to small enterprise development. Through this work, significant insights have been gained into prospects and constraints to SME development. In addition, progress has been made regarding design of technical and financial support programs, business development services, and the policy environment for small and medium enterprises. However, surprisingly little is known about employment conditions in SMEs in both clusters and dispersed small firms. There is still confusion about the quality of

jobs in small business vis-à-vis larger establishments. Likewise, little is known about the impact of small business growth on employment conditions. The impact of technological change on small enterprise workers is not yet clear.

Recently, policy interest in SME clusters in Indonesia has grown considerably. Both the Ministry of Industry and Trade and the State Ministry for Cooperatives and Small Enterprise Development have strengthened their programs for the development of clusters. International agencies, such as the Asian Development Bank, Japan International Development Agency, and the International Labour Organization have promoted SME cluster development. Both the ADB and JICA have commissioned studies on best practices in SME cluster development and supported pilot projects aimed at formulating effective policy support packages. These studies have identified factors that contribute to the success of clusters. Their focus has been especially on the development of firms in clusters. This study concentrates on successful or dynamic SME clusters in Indonesia, identifying success factors of cluster development with the intention of contributing to the discussion that has been initiated by ADB and JICA. In addition, this study reviews labor conditions in dynamic clusters, as well as assesses and compares labor conditions within and among SME clusters.

The 1997/98 crisis severely affected SMEs and their workers. However, there is no systematic information about how workers in small firms fared in comparison with their colleagues in larger units.

1.1 Methodology

This paper is based on fieldwork that was carried out in ten dynamic clusters in West and Central Java during February 2002. The Institute of Technology Transfer for Small Enterprises carried out fieldwork in West Java while the Center for Small Enterprise Dynamics (CEMSED) was responsible for data collection in Central Java. A rapid appraisal method was used to collect information. Researchers from both institutes visited each cluster for two days using a checklist to gain insight into cluster dynamics and employment conditions. The main issues addressed were:

- History and dynamics of the clusters — The research aims at understanding the trajectories of development of selected clusters. Although the development of technologies, markets, and collaboration amongst producers is important, the role of government agencies and NGOs in the development trajectory of the clusters is also considered
- Employment situation in the clusters — This section examines the employment conditions in the selected clusters, through wage levels, wage differentiation, payment systems, etc. In addition, data on the social benefits (other than wages) is presented, and assessment is made on how wages in selected clusters compare with those in larger neighborhood firms.

1.2 The impact of the economic crisis

An assessment of the impact of the economic crisis on firms and employment conditions in the selected clusters will be presented. The main question being, has the crisis opened up new opportunities on export markets due to the decline of the Rupiah exchange rate?

Researchers received information from various sources. In most clusters, the researchers had already developed a network consisting of producers, traders, officials, etc. who provided detailed information.

Dynamic clusters that had experienced technological upgrading and which had expanded were examined. Some clusters contained firms with larger workforces than in most clusters in Indonesia. Clusters that had been studied before were purposely selected by both institutes so that insight into cluster dynamics and employment conditions through brief field visits was made easier. The clusters represent a variety of economic sectors in which SMEs are prominent. Previous research in these clusters had concentrated mainly on firm characteristics and firm dynamics. This study will update knowledge on firms in selected clusters and add new information about workers and employment conditions.

2. Case studies

2.1 Ceramics in Plered, Purwakarta, West Java

2.1.1 *History and current condition*

This cluster has been in existence since the beginning of 1900. Originally, producers concentrated on manufacturing household utensils. Since the 1960s, production has become more diversified with more attention given to the manufacture of ceramics and specifically handicrafts. Production was boosted in the 1980s due to the introduction of new techniques that allow production of painted ceramics with traditional and modern designs. Late 2001 the cluster included some 125 enterprises and offered employment to 1250 workers. The size of enterprises ranges from 4-30 workers. The majority of output from Plered is being exported.

Ceramics are made from clay that is collected from nearby pits. Subsequently, clay is mixed to make it smoother for manufacturing ceramics. After molding the products, they are painted and fired in kilns. There have been both successful and unsuccessful attempts to improve the kilns as firing ceramics is crucial for determining the quality and price of output. There are a substantial number of producers; especially recent start ups that do not have access to their own kiln for firing ceramics. Such firms can only function in clusters, as they need the services of neighboring firms which are willing and able to rent out their kilns.

2.1.2 *Links to markets and consumers*

This cluster is an example of a buyer-driven development process in which traders play a key role in deciding composition of output, amounts produced, designs, marketing, etc. There are a few producers who own a local shop that allow sales locally, especially to domestic tourists who visit the cluster on Sundays and public holidays. Proximity to local shops is also very important to gain access to orders from traders

who often do not want to visit production sites but who place their orders with the owners of the shops. Subsequently, these shop owners either manufacture the products themselves or contract the job to other producers. Subcontracting in the ceramics cluster implies that molding and printing products are contracted while leading firms are still responsible for painting and firing output. This occurs especially in times when demand exceeds the capacity of firms that are strategically located and which obtain a large number of orders.

In 1998, more than 80 percent of the output of Plered was exported. Participation in trade fairs and exhibitions has played a role in penetrating export markets. Gradually foreign buyers have taken over the role of domestic traders in exporting Plered ceramics. Recently, the export performance of the cluster has declined drastically. The reasons for this are, the growing competition from other clusters in Java, declining access to high quality clay pits, absence of upgrading of technological capabilities, and local anxieties between domestic producers, domestic traders, and foreign buyers.

2.1.3 Dynamics and change agents

The cluster was characterized by significant growth before the crisis. Foreign buyers have played a key role in the export of Plered ceramics. Buyer-driven development has been the key to the dynamics of the cluster. However, high dependency on buyers is another factor of current problems in the cluster that have caused lower sales and profits. During this period of instability and demand fluctuations, producers and domestic traders haven partially lost the capability to react proactively.

There have been attempts in Plered by the government to establish a cooperative that was to play a role in reducing production costs by joint purchase of clay and joint marketing. The cooperative was not successful and so was disbanded. Government agencies have also provided a common service facility to provide the local producers with access to expensive equipment, training and information. The facility is no longer serving the local business community instead, it has become a separate unit competing with entrepreneurs in the cluster. State

enterprises have also been active in the Plered cluster within the framework of the government–managed foster–parents (Bapak–Angkat) support programs. State enterprises have paid for study tours for small-scale producers and provided training on how to form an association. So far, there are no signs that such an association will be established.

In conclusion, domestic traders have been important in linking the cluster to foreign markets during the early stages of export. Subsequently, dependency of foreign buyers has expanded with these buyers playing key roles in the marketing strategy and patterns of the cluster. Government support, directly or through state enterprises, was aimed at promoting collaboration among small producers by the establishment of a cooperative and association. These attempts have not been effective.

2.1.4 Employment

Most of the enterprises in the cluster employ less than 30 workers. It was expected that this cluster would be able to export more during the crisis. However, as discussed earlier, foreign demand declined along with employment at 15 percent. More than 20 percent of the workforce originated from outside the Plered area. Most of the workers came from areas that are known for their ceramic production. In the past, entrepreneurs had to travel to other ceramic producing regions to recruit new workers. Currently, the majority of the workforce consists of young male workers. Since the crisis, the involvement of female workers has increased. In 2002 more than 30 percent of the workers involved in molding ceramics were women. The main reason being that wages for women, on average, were 25 percent lower than those for males.

Most workers are piece rate workers and their wages are dependent on their output. Consequently, labor mobility in the ceramics cluster is high with workers moving back and forth between enterprises dependent on the distribution of orders. Wages in the cluster range from Rupiah 20,000 to Rupiah 25,000 per day. Monthly wages are on average Rupiah 600,000, which is above the official minimum wage levels

for West Java. Labor contracts are flexible and usually not enforced. There are however, many unwritten rules and benefits that accrue to workers especially during profitable times. However, even during the crisis, most of the workers received two meals a day as well as Rupiah 1,000 pocket money.

Most workers follow the same career path in the cluster. They start out by doing the finishing of the ceramics after the firing. The next step is the painting of products while molding is considered the most prestigious and best-paid job.

The downturn in Plered has also resulted in the decline in employment opportunities. However, the decline of the number of workers is significantly smaller than the decline of turnover suggesting that producers are highly reluctant to release workers. The piece rate payment system works also to the advantage of entrepreneurs, as it becomes possible to have access to a workforce at very low costs.

2.1.5 Constraints and challenges

Participation in export markets requires high standardization of product quality and the ability to regularly upgrade products. The present poor performance of the cluster on export markets suggests that it has not been able to successfully fulfill export requirements. Consequently, the leading role of Plered is gradually being taken over by other clusters that have proven to be more flexible to market changes.

The main challenge for the Plered cluster is to stimulate participation of (foreign) buyers, and in its aim for further adjustment and development, buyers will be important to provide insight into new market opportunities.

2.2 Metal casting in Sukabumi, West Java

2.2.1 History and current condition

This cluster is situated in the Cibatu village in the Sukabumi regency. The cluster is a typical example of a metal casting cluster that has

gradually expanded its product range. Presently, it manufactures agricultural equipment, household articles and products for the Indonesian military. An important output concerns samurai swords exported to Japan. In addition, selected firms in the Cibatu concentrate on production of spare parts and inputs for large firms in the Jakarta area. The cluster encompasses two distinct sites. The government has developed one site that is presently being used by twelve small entrepreneurs. Another site is firmly rooted in village history and economy. Presently, it encompasses eighteen producers with employment of approximately 1,000 workers. There is however, much variation in the size of the workforce among enterprises. Many of them can be classified as micro enterprises which employ 3-6 workers and which concentrate on the manufacture of household goods and basic agricultural equipment. However, the cluster contains firms that have more than 80 workers with separate production lines and which are well embedded in the export trade.

2.2.2 Links to markets and consumers

Traditionally, small producers in the cluster have been very active in the marketing of their products to nearby markets and cities. Presently, however, most production takes place based on orders and traders play a key role in linking (overseas) demand to firms in Cibatu. This is especially true for the handicrafts (samurai swords). Increasingly, marketing of the clusters' output is driven by buyers. Part of the handicraft output is being exported; Japan being an important export market. Field data suggests that the profit margins of handicraft output have declined even though total sales have increased. An increasing number of local firms are involved in subcontracting production relationships and they concentrate on the production of parts and inputs for bigger firms.

The crisis has had a negative influence on this metal casting cluster. Local evidence suggests that the turnover in the Rupiah has decreased with more than 20 percent in the period 2000-2002. A closer look reveals that export sales have gone up since the crisis while sales to domestic consumers have declined drastically.

2.2.3 Dynamics and change agents

This cluster is characterized by dependency on buyer-driven development processes: buyers play key roles in the design of products, determining which products will be made, markets outlets, etc. This is true for both the domestic and export trade. The cluster has not been able to adjust to the new economic environment because of the crisis. The number of small firms at the two sites within the cluster has seriously declined since 1997. Traders and buyers have not been able to find new market outlets since the crisis.

Buyers, big firms and traders are the main agents of change in the Cibatu cluster. All agents present new designs and determine orders. National and international companies such as Astra, United Tractor Engineering, Komatsu, and Sanwa have placed orders in the cluster on a regular basis. Most of these companies have also played a role in upgrading the skills of entrepreneurs and workers.

Government agencies have provided technical support through the provision of a common service facility (Unit Pelayanan Teknis) and technical training. The facility started promisingly but it was not maintained adequately and currently functioning below expectations. The government of Indonesia has promoted greater participation of large private enterprises in SME development through foster-parent (Bapak–Angkat) subcontracting schemes. ASTRA has been one of the main actors for the development of the cluster through its various companies by providing venture capital, loans, grants, and technical trading, skills development and support to technological upgrading. Reports on the impact of ASTRA support is mixed. ASTRA has not been very important in providing orders to the clustered producers and marketing remains a major problem in the cluster with a lack of orders causing major distress.

There have been government attempts to establish a cooperative to facilitate access to credit and inputs. This however, has not been successful due to bad management and it went bankrupt.

2.2.4 Employment

Most of the enterprises in the cluster provide 3-6 jobs. However, there are a few firms that are much bigger and the largest enterprise in the cluster offers 60 jobs. Enterprises that aim at domestic markets are gradually downsizing in terms of workers. Development of the workforce in export-oriented enterprises is very different with most exporters gradually employing more workers.

Most workers in the smaller establishments in Cibatu originate from the village itself or surrounding areas. Almost all workers and entrepreneurs are male. The origin of workers in the larger enterprises is somewhat different with many employees coming from other districts within the Sukabumi regency.

Almost all workers are employed on piece rate contracts so no orders means no payment. Workers are therefore more interested in working for big firms in the cluster. The dependency on piece rate wage payments has increased workers' mobility in the cluster and workers frequently move between firms. There is no evidence of workers remaining with a specific firm for more than 5 years.

Piece rate payments systems in Cibatu are between Rupiah 10,000-20,000. In addition, workers receive an extra daily allowance for meals, cigarettes, etc. adding up to Rupiah 4,000 per day, which in effect, increases the annual average wage by about 10-15 percent.

Labor mobility in the cluster is high. Skilled workers move easily from one firm to another and firms compete with each other by offering higher wages, lunch packages, benefits in case of sickness, etc. Noticeably, high labor mobility was a constraint to the provision of training facilities. Employers found it too risky to invest in upgrading their workforce.

During the economic crisis, a number of workers in the domestic metal-casting firms lost their jobs. Evidence suggests that they received little or no social security or social benefits. During the crisis, most entrepreneurs were faced with a drastic decline in orders, so could not consider social benefits for retrenched workers. The existing workers do not receive monthly bonuses for meeting production targets.

2.2.5 Constraints and challenges

The industry cluster is very much dependent on buyers and orders. The development of the Cibatu cluster is driven by demand, which makes it impossible to produce for stock. Firms in the cluster do not have a joint strategy to search for new orders outside their present networks.

The cluster has improved its position on export markets since the crisis as a consequence of the depreciation of the Rupiah. There is scope to further strengthen its participation in the export trade. Government agencies may stimulate meetings between producers and buyers and promote the cluster through participation of producers in trade fairs. Domestic demand is likely to increase in the future. The challenge is to anticipate orders from domestic buyers while making use of experience and skills from in the export trade.

2.3 Rattan handicrafts, Cirebon, West Java

2.3.1 History and current condition

Tegalwangi is a well-known rattan handicraft cluster located along the trunk road Cirebon-Jakarta. Since the 1930s the village has been known as a rattan handicraft cluster. Presently, the cluster which is located in the Ciomas district, is spread out over fourteen villages. By late 2001, the cluster contained 925 enterprises and offered employment to 52,000 workers. More than 90 percent of enterprises in Tegalwangi employ less than 20 workers while the remainder operate with more workers.

Products made include chairs, cupboards, tables, toys, etc. Both traditional and modern designs are made. There are a large number of enterprises in Tegalwangi that concentrate on the production of semi-finished products with the finishing done by other firms. Most of this work is performed through subcontracting.

The cluster has developed rapidly since the crisis. This is mainly due to the expansion of the export trade. Meanwhile, domestic market production has stabilized. Many firms and workers have gone through

a readjustment period to participate in the export trade. Many newcomers in the export sector concentrate on the production of semi-finished products leaving only the finishing jobs for experienced exporters.

2.3.2 Links to markets and consumers

More than 90 percent of output is exported. Domestic and foreign buyers play a decisive role in both production and marketing. There are some foreign traders who have erected large-scale production units in the cluster and who contract parts of the production process to smaller units. Several foreign buyers established joint ventures with domestic producers. In some cases, the domestic counterparts were able to use their joint venture as a starting point for the development of their own export business. There are only a few small and medium – sized enterprises that produce for stock and sell their products to urban markets in West Java and Jakarta.

2.3.3 Dynamics and change agents

The cluster has growing significantly since the crisis, profiting from the depreciation of the Indonesian currency. New export opportunities have emerged. Buyers, domestic and especially foreign, play an important role in determining the trajectory of change in Tegalwangi. The industry is more oriented towards export markets compared with the pre-crisis years. In 2000, exports from the cluster recorded 40 containers per day. This required upgrading of domestic – oriented firms and workers so that they were able to fulfill the quality requirements, standardization, and time schedules associated with export market production.

Buyers and big firms in the cluster provide a range of business development services to smaller producers. Provision of such services takes place through subcontracting which is a highly recommended for small domestically oriented firms which want to get involved in the export trade. Female home workers are also important in the cluster. Most export firms work together with networks of smaller firms to which specific parts of the production process are subcontracted.

There have been attempts by the government, in collaboration with a well-known NGO, to establish a cooperative that would provide access to expensive equipment for finishing to small producers. In addition, the cooperative was to play a role in reducing the dependency of producers on buyers by organizing collective marketing. The cooperative did play a role in offering affordable services to small producers. However, equipment was not well maintained and there were no plans and budgets for repairs and upgrading. Presently, this common service unit is no longer available. A state enterprise involved in rattan manufacturing has been active in the cluster through the government-sponsored foster-parent (Bapak-Angkat) subcontracting scheme. This scheme is also no longer functioning because small producers find it more beneficial to participate in private trade networks. Presently, the government is preparing new initiatives to promote further development of the Tegalwangi cluster. Attention will be given to participation in international seminars, standardization of quality, which is essential for successful participation on export markets, and more intensive use of the Internet to identify business opportunities. Provincial and local governments have formulated an integrated support package for the development of this rattan cluster.

2.3.4 Employment

As mentioned, the rattan cluster is spread throughout several villages and it provides employment for more than 50,000 workers. Although the majority are regional workers, there has been an increase of craftsmen from Jepara, Central Java, (a well-known wooden furniture cluster). Most workers are male aged 25-44 years. There is a small number of females but there is no sexual division of labor. The majority of workers are paid according to the piece rate system. It is also an important strategy for employers to reduce production costs and make optimal and flexible use of the large workforce in the cluster. Many employers in Tegalwangi pay only part of the piece rate wage to workers on a monthly basis, while the remainder of the wage payment takes place on special occasions only such as Idul Fitri, weddings, or funerals. For some entrepreneurs such delayed payment of wages is an important source from which working capital can be financed. Normally, workers

do not receive interest for such 'forced savings' although this did occur during the period of high inflation in the wake of the crisis.

As mentioned above, wages depend on output. Take home payments for skilled workers range from Rupiah 20,000-30,000 per day. For semi-skilled workers, wages are less but still far above the official minimum wage in the region. In general, most workers in the Tegalwangi cluster receive monthly payments that exceed those received by employees in nearby large garment and footwear industries. In addition, many workers in the industry become entrepreneurs of small establishments later in their career. Career opportunities in the cluster are much better compared with large firms.

Job security in the cluster is influenced by high labor mobility due to payment of piece rate wages. Many employers are reluctant to provide social benefits to their workers because of the frequency of movement between firms.

The crisis has contributed to the transformation of the workforce within the cluster in relation to the export market. Skills upgrading of workers has subsequently received attention whilst wages for workers in the export industry have increased.

2.3.5 Constraints and challenges

The cluster has performed well since the crisis, penetrating new export markets, with the use of domestic (cheap) inputs being an asset. The development of the export market is highly dependent on foreign buyers that do not only buy the products but also provide a range of business development services. There appear to be two main constraints/challenges to the further development of the cluster which may have a detrimental impact on export performance. In the first place, most rattan inputs originate from Kalimantan and Sulawesi. Local processing of rattan is high on the agenda of provincial governments as a strategy to promote their own industry in the era of deregulation. This has resulted in price increases for Tegalwangi producers. In the second place, labor flexibility in the cluster is high with workers moving easily between firms. A negative impact has been, that entrepreneurs are

reluctant to invest in their workers, which hampers skills upgrading and so lessens their competitive position in export markets.

2.4 Footwear, Bogor, West Java

2.4.1 History and current condition

The Bogor regency has a long tradition in small-scale footwear in clusters. The early beginnings in the 1920s saw many workers from large-scale footwear firms in Jakarta return home and set up home-based industries. An important source of demand, during these early years, was subcontracted orders from large firms in Jakarta and Bandung.

Presently, the cluster is spread out over 14 villages in the Bogor regency. Specialization exists among villages, mostly in sandals, children shoes, sport shoes, etc. By 2001 the cluster consisted of 3800 establishments and offered work to more than 30,000 workers. On average, a small firm in the cluster employs between 5-10 workers.

The cluster does not only contain shoe-manufacturing enterprises but also various suppliers as well as a number of showrooms.

2.4.2 Links to markets and consumers

Presently, the trajectory of development of the cluster is buyer-driven with wholesalers determining what will be produced, the amount and quality. This domination of buyers in production decisions has emerged gradually whereas in the past, the producers themselves played leading roles in marketing their output. These wholesalers are aware of trends in consumer preferences both inside and outside Indonesia and, subsequently, place orders with producers.

In general, the Ciomas cluster produce output of a lower quality, serving lower income groups compared with the well-known Cibadayut cluster near Bandung.

Most of the output of the cluster is marketed through wholesalers in the Jakarta area. Some of the wholesalers have been able to sell the products abroad, such as Africa, Central America and Saudi Arabia, but

most of the output is sold domestically. The industry depends on 'bon putih' where wholesalers require small producers to obtain their inputs from selected suppliers. In this case, wholesalers will pay suppliers directly, while small producers receive a receipt (bon putih) that allows them to get the necessary inputs from suppliers. The cluster uses both imported and imitation leather.

The cluster is characterized by the existence of multi-tier subcontracting linkages with specific jobs in the manufacturing of shoes performed by selected firms and artisans. Family networks are important in such subcontracting patterns in Ciomas with many jobs being contracted to enterprises headed by relatives.

2.4.3 Dynamics and change agents

Businesses in the cluster have increased from 755 units in 1997 to 3800 units in 2001. This indicates that the industry has been able to exploit new market opportunities since the crisis. This is due to more sales in domestic markets as output from Ciomas is a cheaper substitute than the more expensive products from clusters such as Cibadayut. During the crisis many consumer groups economized on the fulfillment of basic needs. The cluster has been able to accommodate lower budgets by substituting real leather for cheaper, imitation types. Total sales have also increased because of the depreciation of the Indonesian currency, making shoes from Ciomas more competitive on the international market.

As mentioned above, wholesalers are very important for the development of the cluster. They provide credit, inputs (bon putih system) and take the lead in marketing output. They are the main change agents in the cluster.

Also in this cluster there have been government attempts to establish a cooperative. The aim was to increase the bargaining power of small firms vis-à-vis wholesalers. These attempts have failed for various reasons including reluctance among small producers to work together on a long-term basis. In addition, wholesalers have intensified the use of the 'bon putih' to regain their strength and they have also lowered

prices of some inputs. During the economic crisis the 'bon putih' was beneficial to small producers as it reduced their need for access to credit to finance working capital.

Government agencies have been very active in the provision of technical support. At the time of gathering data for this report, various villages belonging to the cluster had participated in sixty training sessions. In general, these sessions were brief and aimed at improving the skills of entrepreneurs and their workers. Unfortunately, there is little evidence to suggest whether the sessions contributed to the dynamics of the cluster.

In addition, several state enterprises were invited to provide technical and financial support to clustered enterprises. In most cases, the support was delivered once, with no continued long-term state enterprise involvement in the development of the cluster.

2.4.4 Employment

Employment in the clusters increased continuously before and since the crisis. In recent years, employment increased by more than 8 percent annually. Interestingly, all workers (more than 30,000) originated from the Ciomas area, 70 percent being male and 30 percent female. All female workers were younger than 25 years while a minority of the male workers was older. Thus the industry has a young workforce that is characterized by low educational attainments and a high incidence of school dropouts. Women are only active in the first stages of shoe production.

Workers were paid on a piece rate basis. In the Ciomas cluster, labor flexibility was high: more than 75 percent of the workforce is likely to move to another enterprise within 5 years. Wages are between Rupiah 20,000- 30,000 per day for skilled workers, which is above the minimum wage levels for West Java. In addition, high labor movement sees a reluctance among entrepreneurs to invest in upgrading the skills of their workforce. The crisis wage increases in the industry have been limited for skilled workers. High labor mobility has also had a negative impact on occupational health and safety standards. In general,

entrepreneurs in small firms do not invest in workers' skills and do not provide them with social protection. Working in the small-scale shoe sector is considered a difficult job that one does not continue with for a long time.

2.4.5 Challenges and constraints

The cluster concentrates on production of low quality output for low-income consumers. Since the crisis demand for cheaper shoes is high and there are many new market opportunities for the cluster. In addition, the depreciation of the Indonesian currency opened new business opportunities in the export market. Much of the current boom in the industry cluster is based on the fact that it has been able to produce cheap output in a period of economic distress. In this period, little attention has been paid to technological upgrading that should lead to production of better products. The challenge is to look beyond the current boom which is based on declining purchasing power and focus on the new export opportunities based on low prices.

2.5 Garments, Pulogadung, East Jakarta

2.5.1 History and current condition

This cluster is located in an industrial estate that has been constructed by the city government of Jakarta. This estate includes garments, furniture, metal casting and handicraft producers. In 2000 there were 245 garment establishments in the cluster. The industrial estate was originally meant for small producers already active and holding all the necessary licenses. The estate offers lower rent for production sites compared with nearby privately – run sites in Jakarta. Some of the producers have also a shop (kios) where they sell their products. Most of the shops are strategically located near the entrance of the industrial estate.

A wide range of garments is produced in the clusters such as children clothes, school outfits, clothes for the armed forces, etc. A large number of the garment producers in the estate come from the Pekalongan

regency in Central Java. In addition, a substantial number of workers originate from this regency.

2.5.2 Dynamics and change agents

Technology in garment production like equipment for designs, cutting, sewing, and packing in Pulogadung, East Jakarta has not changed. Producers in the cluster try to adjust to changes in consumer preferences and changes. For example, producers noted that in 2001 specific jeans and sport shirts became very popular, so adjusted their product mix for the market demand. Imitation of famous brand names is profitable, but of increasing legal concern to producers.

The cluster is characterized by growth in turnover but employment was significantly higher before the crisis. The cluster is mainly aimed at domestic markets and it has been able to adjust to the changes in consumer preferences for cheaper clothes.

The cluster sells its output to retailers rather than wholesalers. Consequently, producers have much more power in determining products, designs, amounts, etc, compared with their counterparts in the various distinct clusters discussed above. Small shops on or near the industrial estate play an important role in marketing their output. Small producers want to avoid selling to wholesalers because it will have a negative impact on their profit margins.

There are a limited number of small producers who have been able to export their garments. In this case, the buyers became more important in determining the production process and development patterns.

This cluster is located in an industrial estate that was erected by the government. Also in this cluster there have been attempts by the government to establish a cooperative to improve access to credit and promote joint marketing. This initiative failed so this cooperative no longer operates. The government has also provided training and information. Training and information focused partially on the possible negative consequences of ongoing violation of copyright. There have also been attempts to stimulate the participation of producers at exhibitions, but the cluster concentrates on basic, cheap products that

are not popular at exhibitions.

There has also been an initiative by the local producers to develop a forum/business membership organization. This provides information to producers on government support facilities, market opportunities, and skills development. This is a very recent initiative and its impact is not yet clear. Experienced and well-respected community producers, run the center and charge fees for their business services.

2.5.3 Employment

The garment cluster consists mainly of small firms employing 3-10 workers. With the rate increasing slowly before the crisis, firms employed workers on a large scale. The cluster currently relies on male workers.

In contrast to the other clusters profiled in this report, workers in this garment cluster are paid fixed wages, which depend on specific orders. This industry is not working for specific buyers. Its development is much more producer-driven and production for stock takes place on a large scale. As mentioned earlier, many of the entrepreneurs originate from the Pekalongan area in Central Java, which is also true for the workers. More than 90 percent of the workforce is from Pekalongan and the cluster can be viewed as a Central Java community in Jakarta. Many workers are relatives of the producers, which have direct impact on the nature of the labor relations and conditions. Workers receive more social benefits than in other clusters. In particular, workers receive more financial and non-financial support from the employers in times of illness and accidents. In addition, workers receive better financial support at retirement than their colleagues in other clusters. The reason for this is the close Central Java social network that exists between employers and their workers.

In addition, producers assist workers in saving funds, which are sent back to Pekalongan to support the household that has remained behind. The close link between workers and producers implies also that workers' mobility is low with most employees remaining loyal to one firm for years before they return home.

Wages in the cluster are higher compared with those of employees in large-scale garment factories. Highly skilled workers in the cluster may earn more than Rupiah 2 million per month while the average wage in the large factories does not exceed Rupiah 700,000 per month. Wages in the cluster are fixed with no additional payments.

2.6 Textile cluster in Pekalongan, Central Java

2.6.1 History and current condition

This textile cluster has a long history and involvement with Javanese, Arab and Chinese-Indonesian producers and traders. A wide range of products is manufactured in the cluster such as batik, sarong, carpets, embroidery, shirts, etc. By 2000 the statistical office in Pekalongan had registered 18,650 textile establishments offering employment to more than 131,000 workers spread over 22 villages. Specialization amongst villages means that each one concentrates on the manufacturing of specific products. Most enterprises in the cluster are small and offer employment to few workers.

The overall cluster resembles a complex network of medium and small firms that rely on family workers. Such firms have a core workforce that operates machinery (reeling and weaving) while a range of specific and labor-intensive tasks are contracted to home workers. Women and children feature prominently among the home workers.

2.6.2 Links to markets and consumers

The crisis has stimulated the participation of foreign buyers in the further development of the export trade. Presently, 40 percent of total output is being exported. The crisis, influenced changes in the cluster output structure with producers concentrating on cheaper products for the depressed domestic market. Domestic marketing is the responsibility of wholesalers (grosir) that sell the textile products to outlets throughout Indonesia. For example, wholesalers supply chain stores such as Matahari and Robinson. In addition, some of the leading producers from Pekalongan have their own market outlets (counters)

in the main cities. The export trade makes use of the services of wholesalers and foreign buyers. In both cases, much of the production of the firms in Pekalongan is buyer-driven with wholesalers and traders playing a decisive role in designs, amounts and quality of output. The export network encompasses many countries with Africans amongst the steady buyers of Pekalongan products.

The number of firms has increased 29 percent since 1998 while employment has grown by about 20 percent. The industry remains characterized by the existence of small firms while the growth of (export) orders (since the crisis) has caused more workers to start their own establishment while firms are making wider use of (cheaper) home workers.

2.6.3 Dynamics and agents of change

Both domestic buyers/wholesalers and foreign buyers have played an important role in the development of the industry. The cluster includes a group of strong local entrepreneurs who are active in both production and marketing. Interestingly, the crisis has not resulted in the transformation of production towards export markets but, in contrast, domestic markets have become more important due to the ability of the cluster to adjust its production patterns to demand changes. In general, local traders/wholesalers and foreign buyers are the key agents of change in the cluster.

There is collaboration among producers to standardize prices, product quality, employment conditions, etc. Producers conduct informal meetings specifically to discuss issues that are of importance to the development of the cluster. There is no formal association or cooperative. This cluster is compact and trust among producers and workers is high. This has also contributed to the development of multi-tier subcontracting networks throughout the cluster.

Government support has concentrated on the provision of technical support and the erection of a local wholesale market to promote textile production from Pekalongan. Some local small firms, which meet domestic and foreign buyers, use the market. Various state enterprises

are also active in the cluster and have established trade links with selected small firms. There have also been attempts to establish a cooperative. A women's cooperative assists female home workers to gain access to small amounts of working capital. Funds have been made available by state enterprises and government banks through the social safety net programs.

2.6.4 Employment

The cluster is very important for employment generation in the Pekalongan regency. It is estimated that, 130,000 workers are active in the industry. However, this is likely to be an underestimation as the cluster encompasses a large number of home workers (*sanggan*) who participate in production through subcontracting networks. Recent growth of employment appears to be a direct result of the increase in home worker networks.

Wages are generally paid according to piece rate systems. Skilled workers may earn between Rupiah 20,000-25,000 per day. A comparison of small and large firm working conditions in the cluster showed that both wages and working conditions are better in smaller units. It should be taken into account though that this comparison does not take into account daily working hours and does not control age and education. It appears that young workers start their career in the bigger enterprises. Subsequently, once they have gained basic skills, they tend to move to smaller units that offer further opportunities for skill upgrading and higher wages. Social benefits are limited especially for the majority of female workers. Male workers receive some support when they are sick or in case of festivities but this is much less so for females.

Presently, weekly incomes for home workers are about Rupiah 150,000. Child labor is very common in the cluster and children are very prominent in the many household (homework) production units. In addition, there are many school dropouts who participate in household production units. Women dominate the workforce in the cluster. Estimates are that some 80 percent of all workers are females.

2.6.5 Challenges and constraints

The Pekalongan textile industry is an example of a small industry cluster that has been able to adjust and grow since the crisis in spite of the fact that some of its inputs are imported. It has been able to adjust by increasing the use of home workers who do not have access to benefits that would accrue in a steady workforce. Furthermore, development of a local market has been an asset to meet and negotiate with foreign buyers. A challenge for the cluster is whether it will remain having access to cheap home workers during the years to come, especially when the Indonesian economy continues to improve.

2.7 Furniture in Jepara, Central Java

2.7.1 History and current condition

Furniture production in Jepara is another example of a small and medium clustered enterprise that is spread out over large number (14) villages in the regency. Furniture production in Jepara has a long history that dates back to pre-colonial times. In the 1980s and 1990s the industry profited from the growth in domestic consumer demand that made quality furniture more accessible to the growing Indonesian middle class. In this period, the industry became well known throughout Indonesia and leading producers set up representative offices in the cities. In Jakarta, a number of Jepara producers set up their own small cluster in the Klender area.

The industry received a boost through the 1986 devaluation and the 1997 depreciation of the Indonesian currency. This contributed significantly to the improvement of the competitive position of Jepara furniture in the world market. The growth of the export trade required important adjustments in the cluster such as technology upgrading, switch to modern designs, and more importantly, a switch from production for stock to participation in buyer/order-driven marketing channels. The export industry also stimulated the emergence of subcontracting networks in the cluster with specific parts of furniture production being contracted to specialized small firms and craftsmen.

The number of exported containers increased from 200 to 2000 per month during 1996-2000.

Recently, the industry has suffered a range of problems in the export market, causing a 40 percent decline in exported containers in 2001/2002. Meanwhile the domestic industry is gradually recovering but it has not been able to compensate for the export trade decline.

*2.7.2 Dynamics and change agents**

Since the crisis the number of production units in the cluster has increased from 2,500 to 3,500. The majority enterprises are small units but there are also more than 100 medium -scale production units that employ close to 100 workers. There are intensive subcontracting networks and the production of certain export items may involve more than five different subcontractors. In the same period, employment has increased from 38,000 to 57,000 workers. Recently, the decline in export sales has adversely affected the industry.

There are many reasons for the current poor performance of the export industry. First, quality control has not received sufficient attention during the period of rapid expansion. Consequently, foreign traders have shifted their attention to other furniture clusters inside and outside Indonesia. Second, overcrowding and the somewhat unfavorable location of the Jepara cluster have motivated some producers to try new businesses elsewhere which has strengthened other furniture clusters in Central Java. Third, the IMF agreements have allowed the export of wood logs consequently, prices of inputs for the Jepara industry have risen significantly.

In the year 2000 Jepara furniture was exported to 68 countries. Foreign buyers have played an important role in the development of the export market. Many of them have established their own factories in the Jepara cluster mainly through joint ventures. These buyers have been able to link demand in the West to the production networks in the cluster. In addition, there are also a limited number of domestic producers that have access to export trade networks. The export industry is very much a buyer-driven industry in which production depends exclusively on orders. Buyers are important for technological

upgrading processes, creating and financing new production units in the cluster with power-driven equipment.

Direct government support has played a limited role in the development of the industry. Government policy to develop the nearby Semarang harbor to make it ready for container transport and improve local infrastructure has been of greater significance. Also in this cluster there have been attempts to establish a cooperative to improve access of smaller firms to wood. This has not been successful. There are regular complaints too about the negative role that government plays through its control and bad management of wood supplies. Teak and mahogany wood is frequently being sold illegally and insufficient attention is paid to replanting, leading to future depletion. In addition, recent deregulation policies have increased the need for local governments to strengthen the local tax base. The Jepara furniture industry has become an important cash flow.

2.7.3 Employment

The Jepara furniture industry provides much employment opportunities for workers in the more than 100 villages in the regency. With the expansion of the furniture industry, demand for workers has increased rapidly since the crisis. New workers have very little experience in furniture production often with an agricultural background. Recently, the Jepara cluster saw an outflow of workers (and entrepreneurs) taking up positions in emerging furniture clusters elsewhere in Central Java.

The industry is characterized by multi-tier subcontracting relationships with a large number of home workers performing specific tasks in the production process. Women are involved both as factory workers and home workers. Wages in the cluster are high for skilled workers who may earn more than Rupiah 35,000 per day while semi-skilled workers earn between Rupiah 10,000-20,000 per day. Wages for women are 20 percent lower than men. There are also a number of bigger firms in the cluster with power-driven machinery operating production lines. Wages are lower than those of skilled craftsmen. In general, however, wages in this furniture cluster are far above the minimum wage levels in Central Java.

As workers become older and gain more skills, they tend to move from the bigger firms to smaller ones. This is especially true for male workers. Recently, groups of skilled male workers migrated to different furniture clusters in Central Java that offered better wages. Entrepreneurs are aware of these trends but there is no evidence to suggest that they are trying to meet the challenge by offering better wages and employment conditions.

2.7.4 Constraints and challenges

Jepara is presently in an economic decline, while nearby furniture clusters in Central Java show better performance. The current problems in Jepara are caused partly by the fact that the cluster has grown too rapidly and to the detriment of quality production. There are complaints about quality standards. Skills of many new workers in the industry are not sufficient to fulfill the demands of the international buyers. In addition, the rapid growth of the cluster has caused infrastructural problems (roads, telecommunications) forcing buyers to look elsewhere. Local governments have also contributed to the present problems by their increasing rent seeking behavior.

Jepara is in need of consolidation. It can no longer rely on its low production costs, which, in the past, made it a successful participant in world markets. Upgrading of technological capabilities is important so that it can find new markets and compete with the new furniture clusters developing in Central Java and elsewhere.

2.8 Metal casting in Ceper, Klaten, Central Java

2.8.1 History and current condition

Ceper is a well-known cluster in Indonesia. An active cluster during the colonial period and with a long history producing cooking utensils for local and nearby markets, it has been subject of several studies. In the 1950s government agencies contributed to the transformation of the cluster by ordering agricultural tools. The government package included technical training, donation of equipment and financial support.

The cluster encompasses a variety of metal casting firms ranging from household enterprises that produce basic utensils for local markets to larger firms that work exclusively on orders from national firms such as the railway and international car-manufacturing firms. There is multi-layered subcontracting in the cluster and larger firms may make use of the services of smaller establishments when needed. Large firms in the cluster own all the equipment needed for metal casting and production. Smaller firms can rent specific services from either larger firms or make use of a common service facility (Unit Pelayanan Teknis) that was established by the government.

Presently, Ceper concentrates on the production of both final and intermediate products. Final products include household equipment and agricultural tools while main intermediate products are components for large firms (subcontracting). By late 2001 the cluster counted 332 production units that together employed 3875 workers. The cluster is spread out over several villages in the Batur district of the Klaten regency.

2.8.2 Links to markets and consumers

Small producers sell directly to nearby markets. Through years of experience they have obtained insight into the product mix that can be easily sold in those markets and they are aware of demand fluctuations during the year. Small firms work together in a cooperative (Batur Jaya) in order to sell their products over a wider area.

The larger firms are embedded in buyer – driven production and marketing chains and their main concern is promotion (lobbying) of their capabilities to buyers. The crisis has been very beneficial for the cluster and in particular the bigger firms involved in subcontracting networks. Imports of spare parts and components have become very expensive therefore, the demand for domestic inputs, albeit of lower quality, has increased.

Some buyers have established their own production facilities in the cluster to have better control of product quality and production standardization. Ceper does not participate directly in the export market. However, a range of components from Ceper is used for the

manufacturing of exported items such as furniture, construction materials, and sewing machines.

2.8.3 Dynamics and change agents

In the beginning of the crisis Ceper fared well and employment opportunities expanded. In 1998 total employment was estimated at more than 5,000 workers. Most of these were older men than in the other clusters. By 2001 the number of workers had decreased to 3875 workers. Evidence suggests that this decline was partly due to the increase of unregistered home workers and which has also been evident in other clusters. The crisis has contributed to a restructuring of employment conditions in small enterprises while 'at home' work appears to be reducing the cost of production. It seems that the additional comparative advantage of Ceper has gradually decreased.

In the same period, we note the expansion of other metal casting clusters in Java such as Tegal and it seems that Ceper has not been able to keep its markets. The recent downturn of demand for Ceper products has caused a switch back from electricity driven equipment to 'traditional equipment'. The former is more precise and facilitates the production of high quality standardized output but it has become too expensive under present market conditions.

The government has been actively promoting the cluster. It has provided technical and financial support and, in particular, it has developed a common service facility offering access to expensive equipment for small producers. In addition, the government has stimulated state enterprises to become actively involved in the development of the cluster through the foster parent (Bapak-Angkat) scheme. There is also a state-sponsored cooperative of small producers that is more successful than in other clusters. This cooperative manages the common service facility that facilitates access to expensive equipment. This facility is most popular among the smaller enterprises that cannot afford to purchase a wide range of (expensive) equipment that is necessary to run metal casting firms competitively. The relative success of the cooperative appears to be that, it serves a real purpose: access to equipment.

2.8.4 Employment

Men dominate the industry and most of them come from the Klaten regency. Wages for workers range from Rupiah 6000-10,000 per day while many of them are paid according to piece rates. Unskilled workers have an average take home pay of about Rupiah 320,000 per month, which is above the official minimum wage. Most of the bigger firms (more than 100 workers) have their workers pay for social benefits such as health insurance and retirement. As mentioned earlier, more intensive use of home workers by the smaller firms in the cluster is becoming popular. This method pays according to piece rates and avoids having to pay for social benefits. Most small firms provide some benefits, such as financial support in case of sickness, to their most experienced workers. One of the reasons for this is to avoid workers moving to competitors. Another reason is that many skilled workers are relatives of producers.

Before the crisis 10 percent of the labor force were women involved in administrative jobs and collecting scrap metal used by the smaller firms. Since the crisis women's involvement in the industry has increased to fulfill a higher demand but at low wage costs. Women are presently also involved in several manufacturing activities and by 2001, 15 percent of the workforce were females. Wages of women workers are usually 20 percent lower than males.

2.8.5 Constraints and challenges

The cluster is currently facing problems and has not been able to maintain its good performance. The domestic market has stagnated while its participation in the export market depends on dynamics of demand for other products such as furniture, sewing machines, and components. Recent attempts at technological upgrading, introduction of electricity-driven equipment, have been aborted due to high costs and erratic demand. More intensive use of home workers is a much-used strategy to reduce the cost of production. Recent developments indicate a 'low road' development strategy in which producers aim at cost reduction to remain competitive. An alternative would be opting for a 'high road' strategy that would involve technological upgrading

and that requires the participation of buyers.

2.9 Brass handicrafts in Boyolali, Central Java

2.9.1 History and current condition

This cluster has a long history and its origin can be traced back to pre-colonial times when a member of the royal family of Yogyakarta (with a number of artisans) moved to the village. The cluster is located in the village Cepogo on the slopes on the Merbabu Mountain in the Boyolali district of Central Java. In the 1980s the producers in the cluster switched from production of kitchen utensils to brass handicrafts. Young and well - educated producers were the main pioneers in this technological change process. They learned about this new technology from producers in Yogyakarta. This required a change of inputs, adjustments in the production process and a search for new markets. The producers in Cepogo triggered off the innovation adoption process themselves by following training sessions with skilled craftsmen in Yogyakarta. The main input of the modern industry in the cluster is copper, which is imported and reaches Cepogo via traders in Solo and Semarang. The traditional industry uses scrap material. The modern industry has been severely affected by the crisis because of the sharp devaluation of the Rupiah and the subsequent imported copper price rise. Presently, there are 400 active enterprises in the cluster that employ 1,100 workers.

2.9.2 Links to markets and consumers

Traditional products are sold through the local village market in Cepogo. Traditional producers manufacture for stock and bring their daily output (kitchen utensils) to the market where it is sold to collecting traders. This market has existed for decades. Producers visit the market to purchase new scrap material for the next days' production. Modern producers work on orders only. They have been active however in promoting their products through participation in exhibitions in Java and Bali. Their promotion strategy has been successful and part of the brassware decorations at Cengkareng airport come from the Cepogo

cluster. The cluster has developed a marketing network for its modern products that spans major cities in Indonesia (hotels, offices, etc.).

The industry is also exporting some of its output. It communicates with foreign buyers through fax and email. The role of brokers has become more important since the crisis. Brokers buy modern products in the cluster that are not collected by those who ordered them. They buy at a discount and take care of the marketing. Some of the modern producers in Cepogo are subcontractors to larger firms in the Juwana cluster also in Central Java. These large firms are active in both domestic and export markets.

2.9.3 Dynamics and change agents

The cluster expanded quickly during the 1980s and 1990s. The number of modern firms grew moderately but these firms made wide scale use of subcontractors. It was quite common that more than 100 traditional craftsmen were temporarily employed by modern firms to assist in fulfilling specific orders. If orders decreased the subcontractors would return to production of traditional utensils.

At the beginning of the crisis, copper prices rose 400 percent, which caused turnover within the cluster to decline more than 90 percent. Total employment declined from 5,000 to 1,100 workers. Modern production came to a standstill while traditional production decreased.

There exist associations of both traditional and modern producers that are mainly active in provision of inputs. Since the crisis the associations are no longer active. The government has also been providing a range of technical and financial services to the cluster. New equipment was donated and producers were invited to participate in trade fairs. A major breakthrough in the innovation process was the initiative of producers to seek additional training in Yogyakarta. State enterprises such as Garuda, PT Telkom and Pertamina ordered products within the framework of the foster parents (Bapak-Angkat) program. These state enterprises have also donated equipment to the (modern) producers.

2.9.4 Employment

The majority of enterprises in the cluster work only with family labor. Child labor in the industry is not an issue because the production process is very demanding and not suitable for children. Due to the crisis, employment in the cluster decreased. Because many were involved on a part time basis, the decline in demand forced them to return to jobs in agriculture. Workers came from the Cepogo area and from neighboring regencies in Central Java, with 95 percent being male. Wage payments were at a piece rate basis, which means that payment was made on the number of items produced. Wages for skilled workers are Rupiah 20,000 per day, while unskilled workers earn Rupiah 10,000 per day.

The industry is known for its poor working conditions for example, brass handicrafts are produced in high pollution levels. Some employers offer protective measures but these are not always used by the workers.

Steady workers and home workers are preferred by enterprises because of their flexibility since the number of orders will determine the composition of the workforce.

2.9.5 Constraints and challenges

The industry is highly dependent on imported inputs and adversely affected by price increases. In 2002, the industry stabilized. Producers are gradually adjusting to the new environment while input prices are also stabilizing. Producers are discovering a new product mix for the post-crisis situation. Many producers lost their access to the export market during the crisis because they could not get their working capital financed and difficulties with letters of credit. The industry may need to diversify its use of inputs as well as aim to penetrate new domestic market segments. The producers have recently established a showroom in the village but it may also be necessary to do the same in the big cities.

2.10 Tile production in Karanggeneng, Boyolali Central Java

2.10.1 History and current condition

This roof tile cluster has been subject to long term research. The cluster has been in existence for many decades producing traditional, low-quality, tiles for households in neighboring towns and villages. In 1987 local producers adopted the hand press technology that uses mixers and hand operated presses to produce tiles of high quality, which can be sold to the wider market throughout Central Java.

The cluster is spread out over the village Karanggeneng that is located along the highway Semarang-Solo. The cluster contains 130 enterprises that together generate 1000 jobs. Many enterprises consist of family labor only, while a limited number is bigger. The largest enterprise in Karanggeneng employs 34 workers. Its production is spread out over two sites and it operates seven presses. In addition this leading enterprise has rented another 13 presses to other producers in the cluster to which its subcontracts a substantial part of its orders.

Producers relied on orders with production of tiles, to meet the need/demand of the consumer. The production of press tiles has provided access to institutional consumer markets, such as government projects and housing estates. During 1987-1998, producers in the cluster switched from traditional to press production techniques.

The competitive position of this roof tile cluster, like many of its counterparts, is highly dependent on access to good quality clay and firewood at reasonable prices. However, both are getting scarce due to the semi-urban location of Karanggeneng and consequently, there is concern for its future prospects.

2.10.2 Links to markets and consumers

Traditional tiles were made for stock as there was only a very limited range of products and market demand was highly predictable. Now that all producers have switched to press production, the industry has become more dependent on orders. This means that producers have

to be more actively involved in promoting their products to government agencies, building materials shops and housing construction projects. Some producers use brokers who work for them on a commission basis. Brokers scan the market and introduce potential buyers to producers in the cluster. They receive 8 percent of the product price. Producers want to sell directly to consumers and by 2001, these orders accounted for 35 percent of total sales.

2.10.3 Dynamics and change agents

In recent years, the number of tile clusters in the Boyolali regency has declined drastically. Clusters that were previously producing traditional tile are now out of business. Tiles production is now much more concentrated in a limited number of clusters while the demand for press tiles is reaching increasingly lower income groups.

Successful adoption of press technology in Karanggeneng required collaboration among pioneer adopters to share the high costs associated with the purchase of new equipment. Technological change in roof tile clusters needs substantial investments as part of the new equipment package (the clay mixer) is indivisible, this means that adopters only, require its services for a limited number of hours per week. In some cases, common service facilities (Unit Pelayanan Teknis) established by the government provide access to such technology. The Karanggeneng cluster is an example of joint action by producers to overcome the constraints of the high cost of technology.

Producers in this cluster have dominated innovation adoption and penetration of new markets. The process of penetration and expansion of new markets has been much more producer-driven rather than buyer-driven. The key to technological change has been learning by visiting. Groups of producers from the Karanggeneng tile cluster visited more advanced tile clusters in 1987 and this has been beneficial towards the introduction of innovation networks that encompass suppliers of technology, innovators, and press tile traders.

The crisis has been beneficial for the cluster. Prices of output can be increased while cost of input and wages did not increase to the same extent. During the early years of the crisis demand shifted from urban

to rural areas and local producers resulting in many farmers in Central Java doing well and, subsequently, taking an interest in upgrading their dwellings.

Government agencies have been active in the cluster by facilitating access to formal credit. Technical training has not been provided. The government has also played an important role by assisting tile producers to gain access to clay pits. Presently, the government has made a clay pit available, 7 kilometers from the cluster. Funds from the social safety net program (JPS) have been used to establish self-help groups that receive technical support from nearby universities. The group operates a revolving credit fund and has organized field trips to the highly developed cluster in Jatiwangi, West Java.

2.10.4 Employment

Traditionally, the cluster employed both male and female workers with gender division of tasks in the production process. Technological change has initially caused an outflow of female workers while women have gradually been able to regain some of their production positions. Both male and females are paid according to piece rates while men's take home pay is generally higher than that of women. Wages in the cluster are Rupiah 5,000-10,000 per day dependent on tasks.

The crisis has not caused a decline in employment opportunities in this cluster. Demand has shifted towards more rural areas. Since 2000 there is evidence of further growth in the number of workers in Karanggeneng.

Work in tile clusters does not offer career opportunities for workers, as is the case in metal casting and furniture clusters. Therefore, many workers leave when they reach a certain stage. There are limited opportunities for skills upgrading and movement to better jobs in the cluster. Occupational safety and health is a problem especially for workers who fire kilns. Many workers in the Karanggeneng clusters are relatives of the producers and this has a positive impact on benefits such as financial compensation in times of illness or festivities.

2.10.5 Constraints and challenges

Tile production in rural Java is challenged by access to inputs: clay and wood. Both are becoming increasingly expensive and producers spend considerable time in safeguarding their access to these inputs. Action by the government to support small producers in gaining better access to these crucial inputs is not common.

Improvement of infrastructure and growing demand for higher quality tiles have made it easier to concentrate on tile production. A challenge for these clusters is to diversify production. Profit margins on roof tiles are low, but much higher on ceramics. There have been attempts by producers to introduce ceramics in their product mix but these have not been successful. In addition, there have been unsuccessful attempts to glaze tiles in order to achieve a better quality output.

3. Synthesis, conclusions and policy issues

This section provides a synthesis from the findings of the 10 case studies presented earlier. In addition, the synthesis will compare findings with recent studies being undertaken by the Asian Development Bank and the KRI /JICA cluster project in Indonesia.

3.1 History

These cases as well as those studied by ADB and JICA illustrate that dynamic SME clusters have a long history and that they have developed gradually. The clusters are business communities in which producers and workers belong to families, which are firmly rooted in local economies. In some cases, clusters are linked to other business communities, which are situated in other provinces. The latter may be an important source for recruitment of new entrepreneurs and workers in dynamic clusters. An example of this was, the garment cluster in East Jakarta that is located in an industrial estate created by the Indonesian government. It has been relatively successful which is often not the case for such estates. Its success may be due to the fact that many entrepreneurs already knew each other prior to moving to the estate.

3.2 Specialization and collaboration in SME clusters

The dynamic clusters that were studied do not only consist of small firms, but also include bigger firms, small firms and home workers. These are linked through networks. Bigger firms play a key role in the development of such networks through subcontracting specific stages of the production process, while remaining in control of marketing output. In dynamic clusters, there is specialization among different tiers of firms and home workers. Pronounced inter-firm specialization and linkages among different types of firms characterize successful clusters. Such linkages are frequently not confined to the locality of

the cluster but may include bigger firms and buyers which are located elsewhere. Government attempts to link clustered producers to bigger firms and buyers have been undertaken within the framework of the foster-parent (Bapak-Angkat) scheme. Many of the clusters that were studied have participated in this program. Unfortunately, we did not come across many cases in which the foster-parent scheme has played an important role in the development of the cluster. In many instances, the scheme has led to non-sustainable linkages between big firms/traders and establishments in the cluster, suggesting that linkages were not of mutual interest.

The case studies showed that in most clusters the government has attempted to organize small producers through a cooperative. The intention was that a cooperative would be an asset strengthening the competitive position of clustered producers by jointly buying inputs, sharing the use of equipment, collective marketing, etc. In principle, such forms of collaboration are important for cluster development and in dynamic SME clusters there are networks of producers who work together. However, government-initiated cooperatives have not been successful and many of them have since disbanded. There appear to be at least two reasons why such cooperatives often fail. Firstly, there is often a lack of ownership and participating producers do not feel responsible for maintaining facilities and adjusting structures to changes in the market. Secondly, successful networks are often managed by leading firms or buyers. Both have often not been included in the establishment of the cooperative that, consequently, bypasses key contributors in the cluster development process.

The ADB cluster development policy paper adds that government efforts to promote cluster development through cooperatives and technical assistance have frequently failed because they did not succeed in activating the clusters' self-organization potential.

3.3 Producer-driven vis-à-vis buyer-driven cluster development processes

Prof. Hubert Schmitz was a key participant in the JICA workshop on SME clusters that was organized in March 2002. In addition, Sandee

and Ter Wengel (2002) presented a paper on the trajectories of SME cluster development in Indonesia. Contributors noted that producers in clusters focus their attention on the acquisition of raw materials and cost effective organization of production. Attention for both domestic and export market penetration receives much less attention and discussion among clustered small entrepreneurs. This reflects the importance of buyer-driven production processes and the limited role that SME producers play in such change processes. However, the case study on tile production shows that producers can have effective participation and that learning by visiting is a very effective instrument of promoting change. This is especially true for larger firms in clusters that promote the upgrading process. Although buyers are frequently the initiators in cluster transformation processes there are also cases in which the producers are directly involved.

Buyers, including traders, do not only play important roles in the upgrading of the marketing process such as the penetration and expansion of export markets, but also in the upgrading of production processes (business development services).

There is also evidence to suggest that dynamics in SME clusters are producer-driven. In these cases, it is often the bigger firms in clusters that take the lead. This is illustrated by the study on the Karanggeneng roof tile cluster. Schmitz refers to such firms as local lead firms that become the key actors in cluster upgrading processes. Evidence from JICA, ADB and this study suggest that producer-driven development processes do not occur frequently but that substantial involvement of buyers is often the case, especially for penetration of export markets.

3.4 Employment, wages and home workers

All case studies showed that clusters create a substantial amount of jobs. Clusters may be spread out over several villages and some create thousands of jobs. Most of the jobs have piece rate wage systems so that entrepreneurs will be able to reduce their wage bill whenever demand is low. However, wages in SME clusters are above minimum wage levels in bigger firms though these findings need to be controlled

for education and skill levels. Furthermore, wages in SME clusters, especially dynamic clusters, should not be associated with pockets of poverty where workers receive very low incomes.

In addition, employees receive some social benefits such as support in times of illness. However, it seems that in many clusters there are at least two mechanisms at work that frustrate the improvement of social benefits for workers. First, labor mobility is high in many clusters with workers moving from one firm to another on a regular basis. This limits the willingness of entrepreneurs to finance provision of benefits to workers. Second, in the wake of the crisis, small firms are making more use of home workers in order to reduce production costs. There are good opportunities in clusters to do this as distances are close and more than one entrepreneur may employ home workers. Women are paid less than men for the same jobs. In some clusters, the percentage of female workers has increased in recent years suggesting that cost reduction has been important to reduce production costs. It is also evident that both workers and entrepreneurs pay very little attention to occupational health and safety.

3.5 Technical support to SMEs

Most case studies suggest that government support has not triggered cluster growth. This has been due to the contribution of producers and buyers. Governments play the role of accommodating the growth process which is set in motion by the private sector. For example, in the case of the Jepara furniture industry the government has accommodated the growth process by improving the physical infrastructure that threatened to hamper its expansion.

Government support to strengthen cooperatives has often proven to be ineffective and or unsustainable. Business associations do not as yet, play an important role in cluster development. This does not mean that joint action among producers is not an issue for cluster development. However, it does mean that forms of joint action are informal and ad hoc, and it may not be relevant to 'formalize' them through cooperatives or business associations.

SME clusters are important for employment generation. The case studies have shown that some dynamic SME clusters create thousands of jobs. Wages in dynamic clusters appear to be favorable for skilled workers. Social benefits and occupational health and safety standards are poor for all workers. In many clusters, there is upward mobility in the sense that workers move to smaller, more specialized, establishments when they become older and gain more skills. This is particularly true for male workers. Upward mobility opportunities for female workers are limited and it seems that many of them stop working in dynamic clusters after they have reached a certain age.

3.6 Future work and research

The majority of clusters in Indonesia can be typified as dormant clusters located in rural areas. Such clusters consist mainly of micro enterprises that are characterized by the use of traditional technology. In such clusters, working conditions do not differ between household enterprises. Workers remain on the job for a long time. Many of them take over the establishments from their parents.

This report focused on dynamic clusters in which small and medium-scale enterprises feature prominently. Such clusters play an important role in overall SME exports. These clusters encompass firms belonging to different size classes with diversified employment structures. The clusters are characterized further by employment mobility within clusters. It is also evident that labor mobility between clusters that belong to the same sub sector. Upward labor movement is a career path for male workers. It seems that many males learn their skills in bigger firms and they subsequently move to small establishments or even become home workers. Such mobility appears to be much less important for women.

Putting labor mobility on the SME research agenda is a priority, acknowledging that the present jobs are fixed and not subject to change. This study has shown that this is certainly not true for clusters of small enterprises. Insight and classification of such career paths is also relevant for a discussion of working conditions. These conditions change over time as workers gain access to other jobs in the cluster.

In recent years, many SME clusters have been able to improve their access to foreign markets. Buyers have played an important role towards improving access. A more substantial participation in export markets requires more standardization in production methods and quality control. These cases suggest that this trend has contributed to outsourcing of skilled jobs to subcontractors while leading firms concentrate on finishing.

This report has concentrated on a preliminary assessment of the dynamics and employment conditions at the cluster level. Next it will be necessary to ascertain differences in dynamics and working conditions among firms in clusters. In particular, very little is known about the relationship between productivity of firms and job quality. This will also have to be policy relevant. Many support programs aim at raising firm productivity through training, credit, technology upgrading, etc. Useful lessons can be learned from an assessment of existing differences in productivity and job quality among clustered firms.

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