



International
Labour
Organization

Skills Gap Analysis in Aceh

**From Reconstruction to Sustainable Growth
through Skills Development**

Discussion Paper

Kazutoshi Chatani
for the ILO EAST project

August 2010
ILO Jakarta Office

ILO JAKARTA OFFICE

Menara Thamrin, Level 22
Jalan M.H. Thamrin, Kav. 3
Jakarta 10250
INDONESIA

Tel : +62.21.391.3112

Fax : +62.21.310.0766

E-mail: jakarta@ilo.org

Website: <http://www.ilo.org/public/english/region/asro/jakarta/>

Skills Development Strategies in Aceh- From reconstruction to sustainable growth through skills development is a product of staff of the ILO. The findings, interpretations and conclusions expressed herein do not necessarily reflect the views of the ILO or the constituents it represents. The ILO does not guarantee the accuracy of the data included in this work. The boundaries, colours, denominations and other information shown on any map in this work do not imply any judgment on the part of the ILO concerning the legal status of any territory or the endorsement of acceptance of such boundaries.

Foreword

The International Labour Office started to work in Aceh as part of the post-Tsunami reconstruction efforts. It has since reoriented its activities in the province towards support to youth employment – with the Education And Skills Training project – and labour intensive work – with the Local Resource-Based Road Works in Aceh and Nias project. Along the implementation of these activities, the need for a coordinated approach to the provision of skills training in the province became apparent. While the post-Tsunami efforts have included many successful projects, there is a need for skills development strategies to align the provision of skills with the new reality of the Aceh economy. This paper is meant to serve as a basis for the development of such strategies.

This publication supports the efforts of the Government of Indonesia to implement ILO Recommendation 195 on Human Resources Development, 2004 and, in particular, Articles 19 and 20: “Members should, in consultation with the social partners, and taking into account the impact of data collection on enterprises, support and facilitate research on human resources development and training, which could include: ... (e) identifying, measuring and forecasting the trends in supply and demand for competencies and qualifications in the labour market” and “Members should use the information obtained through research to guide planning, implementation and evaluation of programmes.”

While policymakers, skills training institutions, workers and employers organizations need to plan for future skills demand, there are no available methods that allow for exact quantitative forecasts of the skills needed in the market. While precise forecasting has not yet been achieved, some countries such as the United States, Australia and European Union member states have developed advanced systematic assessments of future skills demand with the help of reliable statistical data and industry involvement. For this paper, due to data availability constraints, and the large size of the Indonesian informal economy, the author adopted a qualitative approach to a skills gap analysis.

The innovative aspect of this approach is to combine an analysis of major economic and policy trends – and their impact on skills demand – with a look at the informal economy, through field research based on community consultations. In developing this approach, the author made substantial efforts to conceive an analytical framework that allows the identification of gaps between skills in demand (in both the formal and informal economies) and skills training provided (through formal and informal channels). The underlying assumption is that the provision of skills training that is directly relevant to the needs of the market will significantly improve the employability of trainees and their access to Decent Work.

The most notable contribution of this report is the recommendation to align skills training with the skills demand that arises from the regional mid-term development plan and the momentum of economic growth in the province. Though this is a simple concept, the skills gap analysis highlighted the challenges that would arise in establishing such coordinated policy objectives that involve numerous public and private institutions.

We hope this paper will be useful to policymakers, employers, workers and skills training institutions in Aceh in developing appropriate skills development strategies and training programmes, complementing other ILO work in capacity building for vocational training institutions. The ILO Office for Indonesia and Timor-Leste remains committed to assisting the Government of Indonesia, provincial authorities and social partners to develop the human capital that will lead the country to prosper.



Peter van Rooij
Director
ILO Jakarta Office



Patrick Daru
Chief Technical Advisor
ILO EAST project

Contents

1. INTRODUCTION.....	1
2. RESEARCH METHODS AND ANALYTICAL FRAMEWORK.....	2
3. LOCAL ECONOMY AND GROWTH POTENTIAL	7
4. COMMUNITY EMPLOYMENT ASSESSMENT	12
5. LABOUR MARKET ANALYSIS.....	14
6. FOCUS GROUP DISCUSSIONS AND INTERVIEWS	18
7. SKILLS TRAINING SUPPLY	20
8. SKILLS GAP ANALYSIS.....	23
9. RECOMMENDATIONS.....	24
10. CONCLUSIONS	26
BIBLIOGRAPHY.....	27

Abstract:

This paper suggests skills development strategies that are fitted to the local context and conducive to sustainable development of Aceh. The intended readers of the paper include policymakers for regional development and skills development as well as skills training providers. The paper identifies skills that are most likely to be in demand and compares them against the current supply of skills training in order to recognize gaps between demand and supply. The analysis in this paper distinguishes three types of skills demand: market-driven skills demand, policy-driven skills demand and skills demand for livelihood. The study, therefore, combines local economic analysis, development policy analysis and community employment assessment. From the analyses, agriculture-based businesses emerged as a sector with high growth potential. Adding value to products with skills (e.g. food processing, packaging and marketing skills) enables local producers to increase their income, thus effectively reducing poverty and child labour. Based on this analysis, the paper discusses how to effectively fill the gap. The paper recommends: 1) building a network of skills training providers and policymakers for the effective coordination and facilitation of necessary reforms; 2) developing and applying competency standards for key strategic skills; and 3) bringing skills and expertise from outside of the province, preferably with the support of donors.

The ILO EAST Project:

The ILO EAST Project is funded by the Dutch Government with the goal of improving the employability and capacity for entrepreneurship among young women and men through better access to high-quality and relevant educational and training opportunities. It aims to contribute to the elimination of child labour. The geographical areas covered under the project include Papua, West Irian Jaya, East Nusa Tenggara, Maluku, South Sulawesi, and Aceh provinces.

Acknowledgement:

The author acknowledges contributions made by researchers of the Aceh Institute led by Dr. Syafruddin Chan, the Center for Study and Child Protection (*Pusat Kajian dan Perlindungan Anak, PKPA*). Ms. Rosmiati listed skills training courses in Aceh Besar, Sabang and Banda Aceh. Her list is in the Annex of this report. Special gratitude goes to various local stakeholders who participated in focus group discussions or interviews. The author thanks Patrick Daru, Pandji Putranto and Wanda Moennig for their generous support for the research. The author is also grateful for the help of other colleagues who commented on this report including Olga Strietska-Ilina and Sandra Rothboeck and to Oliver Ortis (Intern) for his assistance to the research. Joshua Seidman-Zager edited the report.

List of abbreviations

Names and abbreviation in Italic are in Babasa Indonesia

ADB	Asian Development Bank
<i>Apindo</i>	<i>Asosiasi Pengusaha Indonesia</i> (The Employers' Association of Indonesia)
<i>BAPPEDA</i>	<i>Badan Perencanaan Pembangunan Daerah</i> (Regional Development Planning Agency)
<i>BI</i>	Bank Indonesia
<i>BPS</i>	<i>Badan Pusat Statistik</i> (Statistics Indonesia)
<i>BRR NAD-NLAS</i>	The Executive Agency of Rehabilitation and Reconstruction for Aceh and Nias
GRDP	Gross Regional Domestic Product
ILO	International Labour Organization
IOM	International Organization for Migration
<i>KADIN</i>	<i>Kamar Dagang Dan Industri Indonesia</i> (The Indonesian Chambers of Commerce and Industry)
LFS	Labour Force Survey
MOU	Memorandum of Understanding
OAW	Own-account worker
OECD	Organisation for Economic Co-operation and Development
<i>PKPA</i>	<i>Pusat Kajian dan Perlindungan Anak</i> (Child protection and study centre)
<i>PNPM</i>	<i>Program Nasional Pemberdayaan Masyarakat</i> (National Programme for Community Empowerment)
PPP	Purchasing power parity
Rp.	Indonesian Rupiah
SMEs	Small and medium enterprises
<i>SMK</i>	<i>Sekolah Menengah Kejuruan</i> (vocational secondary school)
UN	United Nations
USAID	United States Agency for International Development

Note: Throughout the report the following exchange rate is applied: 1 USD=Rp. 9,600

1. Introduction

On 26 December 2004, A large earthquake measuring 9.1 on the Richter scale hit the region of Nanggroe Aceh Darusalam (hereunder Aceh), on the northwest tip of Indonesia. The series of tsunamis that followed shortly after the earthquake resulted in floods, which engulfed 221,005 people. Many lost their means of living as their production assets (e.g. farmland, fishing boat) were destroyed or severely damaged. An influx of aid arrived and numerous reconstruction projects were started to re-build the devastated region. After five years, many reconstruction and rehabilitation projects achieved their objectives and Aceh is now in transition to a new phase of development: building a self-sufficient and sustainable economy.

The ultimate objective of this paper is to support regional economic development and poverty reduction by facilitating the transition from reconstruction and rehabilitation to sustainable growth. Keeping this objective in mind, the research focuses on skills development, since human capital forms the foundation for growth and poverty reduction.¹ In essence, this report concurs with the spirit of the Executive Agency of Rehabilitation and Reconstruction for Aceh and Nias (BRR NAD-NIAS). BRR NAD-NIAS closed its office in April 2009 upon its successful completion of the four-year mandate with the following observation:

The rehabilitation of infrastructure, business capital, productive assets and market access alone would not be sufficient to revitalize Aceh's economy. ... The knowledge and skills of the human resources determine the level of productivity and profitability. ... Success in human resources development ... needs to be backed up by material, a training system and qualified instructors. (BRR 2009:24)

This report intends to contribute to the materialization of the aspiration cited above: to revitalize the regional economy and realize the prosperity of Aceh through skills development. As such, it targets policymakers for regional development, skills development and skills training providers both public and private as potential readers. In the following sections, the paper analyzes the economic potential of the region and identifies essential skill areas where additional expertise is required to tap into latent economic growth opportunities. While the study focuses on skills development, it relies heavily on economic and policy analysis to forecast skills demand. This method of skills demand analysis is an experimental attempt of the author, thus it does not necessarily represent analytical methods of the ILO.

A distinct contribution of this report is to recommend policy options backed by a skills gap analysis². The research identifies skills that are necessary to tap growth potential and alleviate poverty, and compares this information with a list of existing skills training programmes in the region. The gap between demand and supply is exactly where skills development policies are most desired. Skills training that is provided in Aceh is, however, not necessarily based on a systematic analysis of skills demand or linked with regional development policies. Since resources are of limited supply, explicit

¹ According to BPS, the poverty rate in Aceh was 23.5 per cent in 2008, which was substantially higher than the national average at 15.4 per cent. An increase in agricultural outputs reduced the incidence of poverty from 28.4 per cent in 2004 to 23.4 per cent in 2008 (BRR NAD-NIAS: 2009).

² Readers are reminded that the skills gap analysis in this paper is experimental as defined by the methodologies and analytical framework in Section 2. Various other concepts and methods of skills gap analysis exist.

policy coherence between economic development and skills development policies would most effectively accelerate the sustainable growth of the region.

The structure of this report is the following. Section 2 illustrates the research methods that are applied to this study. Section 3 provides an overview of the regional economic trends and analyzes opportunities for sustainable development. Based on the analysis, it depicts sectors of the economy in which skills demand may increase in the near future. Community employment assessment results are presented in Section 4, which are followed by a regional labour market analysis in Section 5. Section 6 provides summary results of focus group discussions and interviews. Section 7 depicts skills training supply in the region. A skills gap analysis is presented in Section 8. The report concludes with recommendations and a summary of the key findings of this report in the last two sections.

2. Research Methods and analytical framework

Objectives and the scope of the analyses in this paper

The foremost objective of the analyses in this paper is to identify skills that are currently short in supply but that are: 1) in increasing demand because of the development of specific economic sectors; 2) necessary to realize the regional development plan; and/or 3) helpful in improving the productivity of informal workers and alleviating poverty. In other words, the analyses aim to highlight key skills that are conducive to sustainable growth and poverty reduction. Following the identification of strategic skills that are currently short in supply, the paper explores policy options and institutional frameworks that would effectively align skills training supply to strategic needs of developing the skills.

The scope of the research for this report is confined to the aforementioned objectives. Thus, the report intends to provide direction for strategic skills development policy rather than developing detailed skills training curriculums. Similarly, establishing linkages between identifiable skills gaps and specific competencies as defined by the National Standard Setting Agency (*BNSP*) is also outside the scope of this paper. In addition, the study does not include a thorough scan of skills training in the region in terms of quality and quantity since this is not required to achieve the objectives of the paper. This paper intends to provide a macro overview of the match between skills supply and demand in terms of sustainable economic development. It therefore calls for further research based on the findings of this paper if stakeholders are interested in developing concrete action plans.

Assumptions

The analyses and discussions in this paper presuppose the following points:

1. Growth of an economic sector induces greater skills demand in the sector

When an economic sector expands, an increased volume of business activities induces additional employment, which is equivalent to an increase in skills demand. For example, an upswing in the construction sector would demand more workers with carpentry skills or plumbing skills. An expansion of an economic sector may entail an increase in demand for new and/or more sophisticated skills when the sector shifts from labour-intensive to more capital- and knowledge-intensive modes of production.

2. A particular set of skills, along with other contributing factors, helps the economy effectively tap into economic growth potential

Obviously, the mere existence of economic growth potential does not improve working and living standards of workers and people in the area. Tapping into this potential requires, among other things, a certain set of skills, physical infrastructure, capital and appropriate regulatory framework. Thus, while this paper focuses on skills development, readers are reminded of that skills development is an integral part of a comprehensive regional development plan.

Three types of skills demand

In its analysis, this study establishes three distinct categories of skills demand since appropriate research methods vary depending on the types of skills demand in question. The three categories are market-driven skills demand, policy-driven skills demand and skills training demand for livelihood. In fact, developing countries with large informal economies exhibit patterns of skills demand that are different from those seen in industrialized countries in at least in two ways. First, development plans and industrial policy generate considerable skills demand that may not necessarily be identical to the skills demand observed in the market. Second, skills demand for livelihood differs from that in the formal economy in terms of the scale and diversity of such skills needs. Naturally, meeting such skills demand requires innovative approaches to the provision of skills training. The three categories and corresponding research methods are described below.

1) Market-driven skills demand

Market-driven skills demand stems from actual or anticipated business activities. For example, an increase in output from the chemical industry would entail higher demand for skills in chemical engineering. To take another example, an expected boom in tourism would boost skills demand in tourism-related sectors such as construction, hotels and restaurants in anticipation of higher profits. Understanding the direction in which sectors are developing in the near future facilitates the forecasting of skills demand of this kind. Therefore, analysis of economic sectors, investment trends, business opportunities and untapped local resources, *inter alia*, are necessary in order to forecast market-driven skills.

2) Policy-driven skills demand

Skills demand changes as a result of strategic policy choices. Development plans and industry policies, for example, create skills demand that is indispensable to realizing such policies. Policy-driven skills demand may or may not necessarily relate to the skills demand arising from current economic activities. For instance, if a country designates the IT industry as a strategic sector for development, the government may provide IT training or give incentives to others to supply IT training. Skills demand forecast for this type calls for the analysis of development plans and industry policies.

3) Skills demand for livelihood

Relatively deprived informal workers demand skills that are different in nature and in scale from the skills required in the formal economy. To give an example, a street food vendor may wish to acquire better cooking and food packaging skills that are different from the kind of food processing and packaging skills required in a formal food-processing factory. For another example, a rural household may need skills for embroidery in order to supplement the main source of income, e.g. agriculture, and earn better livelihood. It is believed that meeting skills demand of this type plays an important role in poverty alleviation and reduction. Skills demand for livelihood is commonly observed in developing countries with large informal economies.

Analytical framework

The analytical framework of this study is illustrated in Figure 1. This research applies the appropriate methods that are described below to each type of skills demand as discussed in the previous section. Through this exercise, the paper anticipates skills demand in Aceh in the near future. To complement the skills demand analysis, the paper includes labour market analysis³ to provide context for the regional skills demand. Labour force composition by educational attainment, industry and gender as well as trends in labour productivity and wages affect skills development. In addition, focus group discussions and interviews supplement the analyses by incorporating qualitative information, perspectives of local leaders and stakeholders. These qualitative research methods are also part of the analysis on skills demand for livelihood. The steps illustrated thus far provide insight into future skills demand, but do not, however, yield quantitative information on skills demand because of the methodological limitations that are described later. The paper then turns its focus to the supply side of the skills training. A research partner of the ILO, *Pusat Kajian dan Perlindungan Anak (PKPA)* provided a list of skills training activities in a sample of districts⁴ from the region. A gap analysis between the anticipated demand and the current skills training supply generates useful information where policy interventions are most desired. Based on the gap analysis, the paper draws conclusions and recommendations to narrow the gap.

³ Understanding future trends of skills demand has been a central concern of policymakers and labour market analysts in charge of skills development policies. Several methods and approaches of labour market analysis were developed to this end. This report carries out labour market analysis to capture signals of future skills demand in Aceh. According to Sparreboom and Powell, a set of labour market indicators listed below signals skills demand (Sparreboom and Powell 2009: 4):

- *Employment trends (by occupation, sector, status in employment and geographical area); unemployment trends*
- *Trends and levels of educational attainment/ skills development in the labour force*
- *Wage trends*
- *Productivity trends*
- *Contribution to GDP by different economic sectors/ geographical areas*

The accuracy of skills demand forecast based on this method is contingent on the availability and the quality of necessary data. Even where quality data is available, extrapolating the past trends too far into future increases margins of estimation errors since various factors such as changes in technology and investment influences skills demand. Because of a lack of suitable time-series data for econometric analysis, this paper does not adopt econometric modelling for a forecast of skills demand. For a summary of benefits and limitations of various methods and approaches for assessing future skills demand, see Table 1 in Sparreboom and Powell 2009.

⁴ Aceh Besar, Sabang and Banda Aceh

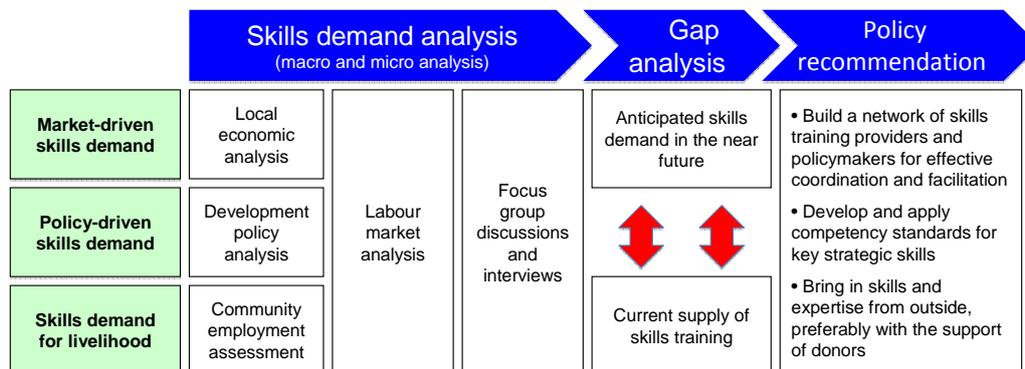


Figure 1: Analytical framework of this study

Research methods

The paper reviews the local economy to forecast market-driven skills demand by looking at features of the provincial economy, growth trends in economic sectors, various factors affecting economic growth, untapped local opportunities and investment climate, among others. The scope and depth of the analysis are confined to the aforementioned areas with the purpose of skills demand analysis in mind. The paper then analyzes skills demand arising from the Regional Medium Term Development Plan. The task in this step is to qualitatively interpret development priorities in terms of skills demand based on the assumption that realizing development plans requires a certain set of skills, along with other factors.

For the community level skills demand analysis, the study adopts the Community Employment Assessment (CEA) that was developed by the Training for Rural Economic Empowerment (TREE) project⁵. Since this type of skills demand rarely appears in macro-level statistics or policy documents, it is essential to interact with local communities in order to gain an understanding of it. Since the CEA provides this interaction through community planning meetings and local surveys, the ILO has used it as the basis for the development of both community-based training and a tool to plan community-based vocational training. This approach to training programme development encourages the participation of women in community meetings, surveys and vocational training. The sequence of CEA activities is the following:

1. Socialization meetings with communities
2. Employment/self-employment surveys⁶
3. Household demand surveys⁷
4. Employment brainstorming community meetings⁸

⁵ For more information on the TREE project, visit: http://www.ilo.org/skills/what/projects/lang--en/WCMS_103528/index.htm [20 April 2010].

⁶ The aim of employment/self-employment surveys is to gain knowledge on potential employment and self-employment opportunities in the local community and nearby areas.

⁷ The purpose of household demand surveys is to assess potential employment or self-employment opportunities that can potentially be used to meet household demands for services and goods.

5. Post-community meeting follow-up
6. Developing and implementing vocational training
7. A tracer study of trainees

TREE projects in Sri Lanka, Pakistan and the Philippines adopted the concept of community-based training and have proven that a simplified, community-based, practical vocational training can promote decent work in local communities (ILO: 2005).

Labour market analysis in Section 5 uses descriptive statistics to illustrate labour market characteristics that affect skills development. Since skills demand analysis draws insights from economic growth by sector, labour market analysis also focuses on employment, wages and labour productivity by sector. It also reviews the educational attainment of the workforce since education determines, to a certain extent, the trainability of the workforce. Focus group discussions and interviews were conducted to gather qualitative information from key stakeholders. Since methodologies of these research techniques are widely available in publications, this section omits the details.

Methodological shortcomings and limitations

There are several shortcomings and limitations to the methods used in this study. First, although skills demand is closely associated with economic growth, this paper does not project economic and employment growth rates for the future because the reconstruction boom after the tsunami caused economic and employment growth trends to deviate considerably from what had previously been observed. Extrapolating the past trends, therefore, merely yields erratic results. As a coping strategy, the paper takes the trends before the natural disaster and various factors affecting them into consideration in the narrative discussion of the future trends upon which the paper bases market-driven skills demand analysis. In essence, the quantitative accuracy of the skills demand analysis in this paper is compromised due to the data issue. Since economic trend projections are seldom precise even where data availability is not an issue, reliance on future economic growth projections compounds the inaccuracy of a skills demand forecast and forces it to operate with a margin of error. A task of greater importance in Aceh, however, is to articulate skills development strategies that would most effectively tap growth potential. For those who need to determine the supply of skills training (i.e. training providers and policymakers in charge of skills development), quantitative information may be crucial in planning (e.g. how many people should be equipped with certain skills). However, precise data is often unavailable, which forces those charged with the planning of training activities to operate with incomplete information.

Second, economic activities from which skills demand originates are subject to uncertainties. Technological innovations, competition in the market and new regulations that influence businesses are examples of factors that add uncertainty to business prospects. These uncertainties inevitably compromise the accuracy of skills demand analysis even if the analysis is based on the best available information. Similarly, policy-driven skills demand faces constraints due to unforeseeable changes in politics in the future. In addition, skills demand may be overestimated if a development plan is too ambitious.

⁸ After survey data is collected and analyzed, survey findings were presented in community meetings. The purpose of this participatory process was to raise awareness and generate ideas of current and potential employment or self-employment opportunities that exist in the community. Through discussion in the meetings, facilitators encouraged community support for youth vocational training and employment.

Third, the paper mentions several skills that will be in demand; however, such skills should be seen as examples since the list is not exhaustive. Once Aceh sets the direction of skills development, the paper recommends a workshop in which stakeholders of skills development and sector specialists discuss more detailed skills development plans and strategies. Sector analysis and value chain analysis may be useful at this stage.

Forth, the analysis of skills training supply in this paper does not rigorously look into the quality of training including the appropriateness of budget allocation, training facilities, equipment and materials used in training courses and the qualifications of instructors. The paper notes that the quality aspect of skills training in Aceh calls for further research to complement this study.

3. Local economy and growth potential

This section provides a brief overview of the regional economic situation that constitutes the context of skills demand, based on which skills development priorities in Aceh will be discussed later in this report. As illustrated in this section, a gradual exit of aid for reconstruction and a decline in gas and oil output are likely to slow down the economic growth of the region. It is, therefore, of importance to identify alternative growth engines and invest accordingly in order to maintain and improve the living standards of the people of Aceh. In comparison to other sectors of the regional economy, the agriculture sector has a relatively high potential for growth and would increase skills demand if it becomes a driver of the economy.

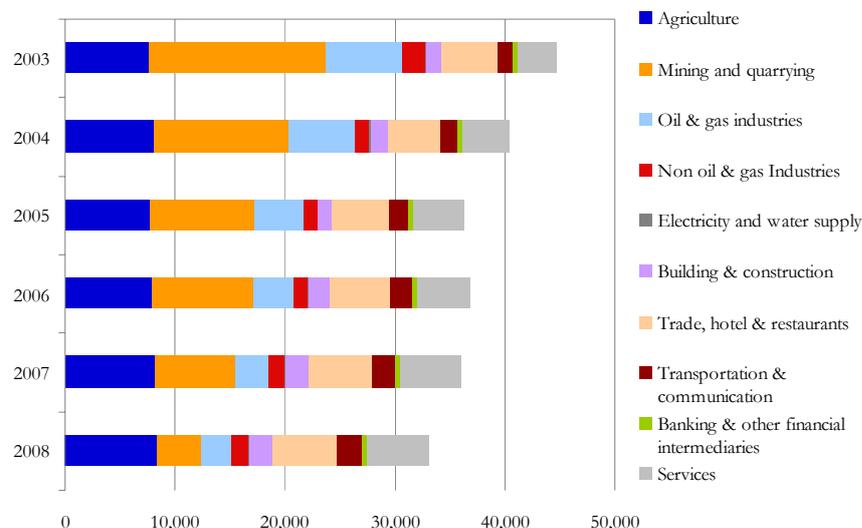
Outlook for local economic sectors

As a result of gas deposit depletion, the gross regional domestic product (GRDP) has been on the decline (see Figure 2). While the output of oil and gas alone used to account for over half of the regional output, the share of these commodities in the GRDP declined to 19.3 per cent in 2008. As a result, gas- and oil- related sectors were met with the same fate. Figure 2 reveals that the oil and gas industries lost about 58.6 per cent of their output between 2003 and 2008. The oil and gas sector supported the local economy by creating related businesses such as fertilizer and cement. Output from these sectors⁹ including the two aforementioned products fell from 1,672 billion Rupiah in 2002 to 944 billion Rupiah.¹⁰ Since mineral fuels and mineral oil products accounted for 96.6 per cent of commodity export values in Aceh in 2007 (see Table 1), net exports have been on a remarkable decline (see Figure 3).

⁹ Sectors including fertilizers, chemical and rubber products, cement and non-metallic quarry.

¹⁰ Valued in the constant market price of 2000.

Figure 2: GRDP in Aceh by industrial origin (Billion Rupiahs, constant prices 2000)



Source: BPS-Statistics of Aceh

Note: figures for 2007 and 2008 are preliminary

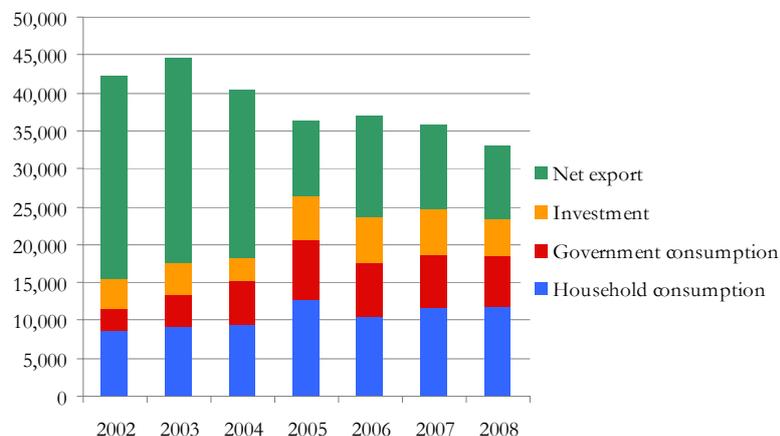
Another factor that has been affecting the regional economy is the gradual exit of aid agencies including The Executive Agency of Rehabilitation and Reconstruction for Aceh and Nias (*BRR NAD-NIAS*), international organizations and NGOs. An influx of capital followed the natural disaster of 2004 for reconstruction and rehabilitation projects. By November 2006, a total of US\$ 5.8 billion was allocated from domestic funds, donors and private NGOs.¹¹ The allocation was sizable in comparison to the GRDP including oil and gas for 2006 which was about US\$ 7.4 billion. A total disbursement for such projects in Aceh and Nias is estimated to amount to US\$ eight to nine billion.¹² This sum inflated some sectors of the regional economy such as construction, trade and services. In fact, the annual growth rate of non-gas and oil sectors was 3.2 per cent before the tsunami (2000-04 annualized average) and 5.7 per cent between 2005 and 2008. Similarly, government consumption and investment swelled between 2005 and 2008. The impact of aid money on the local economy, however, has been diminished as aid organizations complete their missions and exit from the region. As a result, reconstruction-related sectors might stagnate and eventually shrink in the coming years. There are some early signs of a slowdown in the regional economic activities. Non-gas and oil output growth, for example, slowed down to 1.9 per cent in 2008¹³ from the high growth of over 7 per cent that was recorded in 2006 and 2007.

¹¹ Source: BRR. Cited in ADB (2007).

¹² Source: D. Lawrence and L. Tamanni "Investing in Aceh: Quo vadis?", in *The Jakarta Post*, 26 December 2006.

¹³ Based on the preliminary figures released by the local statistics office.

Figure 3: GRDP in Aceh by expenditure (Billion Rupiahs, constant prices 2000)



Source: Bank Indonesia and BPS estimate

Note: Figures for 2007 and 2008 are preliminary. Net exports for 2002 and 2003 include net inter-province trade.

Table 1: Exports by main commodities in Aceh, 2007

Commodities	Volume (kg)	Value (US\$)
Mineral fuels, mineral oil products	3,347,128,339	1,790,639,594
Fertilizers	214,303,757	57,515,451
Cocoa & cocoa preparation	2,000,000	3,388,000
Inorganic chemicals	57,444,471	1,599,418
Animal or vegetable fats and oils	1,000,000	815,000
Organic chemicals	3,000,000	240,000
Fish, crustacean, etc.	4,520	21,048
Wood, lumber and cork	1,050	9,600
Printed book	6,840	3,324
Plastic and articles thereof	3,333	1,743
Apparels	180	955
Live trees and other plants	417	218

Source: BPS-Statistics of Nanggroe Aceh Darussalam Province

Although the overall economic growth forecast is somewhat pessimistic, the agricultural sector is expected to grow steadily and increase its contribution to the regional economy. In fact, growth in the sector increased the GRDP by 6.2 per cent between 2003 and 2008 despite the damage to production assets engendered by the natural disaster. The contribution was higher from services and trade, hotel and restaurant sectors that added 17.7 per cent and 8.0 per cent respectively to the GRDP. The expansion of these sectors, however, was supported by reconstruction and rehabilitation projects that were temporary in nature. In fact, the growth contribution of the services sector stems from expansion of public spending. It is a challenge for these sectors to maintain the growth momentum. Conversely, the reconstruction and rehabilitation projects in the agricultural sector (e.g. reclaiming land, improving irrigation and building fishing boats) should, in principle, have a lasting impact. In addition, this sector has room to increase its output as reconstruction continues: 73,869 hectares of agricultural lands were destroyed by the tsunami, of which 69,979 hectares were reclaimed between early 2005 and early 2009. While 13,828 fishing boats were ravaged, only 7,109 were built or provided¹⁴ since the natural disaster (BRR NAD-NIAS: 2009).

¹⁴ Since the size and holding capacity of these boats are unknown, a simple comparison of the number of the boats may be misleading.

Table 2: Performances of economic sectors (2003-2008, per cent)

	Contribution rate to GRDP	Average annual growth rate
Agriculture	6.2	1.8
Non oil and gas industries	-6.1	-7.5
Electricity and water supply	0.4	12.9
Building and construction	5.4	7.2
Trade, hotel and restaurants	8.0	3.5
Transportation and communication	6.1	8.2
Banking and other financial intermediaries	1.2	6.1
Services	17.7	9.7
of which government services	17.3	10.2
of which private services	0.4	3.3

Source: BPS-Statistics of Aceh

Existing resources and opportunities

Aceh is endowed with natural resources other than oil and gas: fertile land and the surrounding water are rich in marine livestock resources. As perceived by political and business leaders, economic development potential lies in this factor endowment. The western and northern districts produce rubber. The southern districts produce cocoa, coffee and palm oil. Shrimp cultivation is in Pidie and Bireuen. The provincial development agency (Bappeda) also sees agribusiness as high potential sector for growth.¹⁵

Investment

The Aceh midterm development plan for 2007-2012 encourages investment from outside the region. Investment promotion resulted in increasing the interests of foreign investors, which is corroborated by numerous memorandums of understanding (MOU) on investment. Examples of such investment interests include high-tech battery production owned by a German company, a motorcycle assembly plant owned by a Chinese company and power plants owned by a Malaysian company.¹⁶ Realizing investment, however, remains a challenge.¹⁷ The Aceh Investment Promotion Board pointed out potential investors' excessive fear over security and their wait-and-see attitude as a reason for low investment from outside the region.¹⁸ Further efforts to improve investment climate are needed. The provincial government established the Investor Outreach Office with the aim of facilitating and promoting investment to Aceh.

Development policies

The development strategies and industrial policies of the local government also influence the growth of some priority sectors and, as a result, skills demand. For this reason, developing an understanding of policy priorities for growth is essential to effective skills demand analysis. This section examines the skills demand implications of the Aceh midterm development plan for 2007-2012. It is desired that skills development policies accommodate the skills demand arising from the development plan.

¹⁵ Interview with Bappeda on 20 January 2010

¹⁶ Source: *MODUS ACEH MINGGU III, July 2008*

¹⁷ The Aceh Institute counted over 40 MOU for investment, but it observed none of them are realized. Case study interviews conducted by USAID pointed out that "market-distorting regulations and inadequate investments in public utilities" as the most significant constraints on economic growth (USAID 2007: 2). Streamlining regulations and investing in infrastructure appear to be inevitable to attract investment. Potential investors are also concerned about "political risk and lack of legal certainty, in addition to issues relating to human resources and the cost of production" (The Jakarta Post : 26 December 2006).

¹⁸ Interview with Mr. Badaruddin Daud on 19 January 2010

According to the regional planning agency (*Bappeda*), the government of Aceh prioritizes agriculture, fisheries and agribusinesses as the focal points of economic development (Bappeda 2006). In conjunction with this policy focus, the development master plan calls for the expedited revitalization of the agriculture and fishery sectors as well as promoting the food-processing industry. If the government manages to guide economic growth in this direction, Aceh would see robust skills demand from the primary sector and related sectors through backward and forward linkages. An increase in demand would be observed for skills such as diverse agricultural skills, aqua farming skills, civil engineering (e.g. irrigation techniques), mechanics for agricultural equipment and machine repair, various food processing and conservation techniques, knowledge on food additives, skills for quality control, food hygiene, packaging, marketing, transportation and distribution. In addition, expertise on exporting will be increasingly in demand if agricultural producers and food processing companies in Aceh market their products in foreign countries as well as in other provinces.

Capacity building of micro, small and medium enterprises and cooperatives is also listed among the development policy priorities. Based on this policy direction, one can expect that entrepreneurial skills and business development skills will be in demand. Since enterprises that utilize these sizes operate in a variety of sectors, skills demand varies considerably. There are, however, common skills across enterprises and cooperatives such as management skills and skills for financial and digital literacy.

Tourism promotion constitutes an important part of Aceh's development strategies. Indeed, the region is endowed with beautiful natural scenery that would attract tourists if infrastructure were adequately developed and tourism were promoted. Skills demand from this sector includes hotel management skills, tour operation skills, hospitality skills and language skills.

Box 1	
SWOT analysis of the Acehese economy	
Strengths	
<ul style="list-style-type: none"> • Natural resources <ul style="list-style-type: none"> ○ Vast fertile land ○ Marine livestock resources ○ Natural beauty for tourism • Strategic geographical location <ul style="list-style-type: none"> ○ The straight of Malacca as an important shipping lane ○ Proximity to large markets (e.g. Java, Malaysia, Thailand and India) • Large assets in the banking sector • Strong demand in consumption. The current high dependence on Medan for food and commodity supply implies potential market for local producers • Policy independence from the central government 	
Weaknesses	
<ul style="list-style-type: none"> • High dependence on depleting natural gas deposits • Weak business and investment environment <ul style="list-style-type: none"> ○ Corruption and red tape ○ Insufficient investment in infrastructure ○ High cost economy 	

- Legacies of the long conflict and perceived insecurity

Opportunities

- Reconstruction work can induce further expansion of agricultural production
- Development of the food processing industry would increase the value-added of the local products, improving income opportunities for local residents
- Food demand will rise continuously since the regional population is expected to grow
- Improvement in marine infrastructure would create business opportunities (e.g. an international port on Sabang island)
- Educated labour force
- Untapped resources for tourism
- Interest of potential investors

Threats

- Exit of foreign aid and shrinking reconstruction investment
- Potential social unrest due to increasing unemployment and economic hardship
- Natural disaster

Source: various reports (see bibliography) and interviews

4. Community employment assessment

The types of training that are necessary for local communities may not be the same as those developed for formal sector jobs and those developed based on macro analysis of skills demand at the central level. This research project on Aceh, therefore, adopted the methodology for community-based training needs assessment that was developed and utilized by the TREE programme. The Center for Study and Child Protection (*Pusat Kajian dan Perlindungan Anak, PKPA*), an operation partner of the ILO, conducted a community employment assessment (CEA) in six municipalities or districts of Aceh: Sabang, Banda Aceh, Aceh Besar, Pidie, Lhokseumawe and Langsa. Based on the surveys and meetings illustrated above, each community covered under the assessment proposed skills training that would benefit out-of-school youth in their community. These proposals are aggregated and summarized in Table 3.

As shown in the table more than a quarter of training proposals pertain to retail shops and services. This result reflects growing demand for diverse services as a result of the expanding business activities. For example, communities sensed that computer skills would meet the growing skills demand from various business sectors. A general increase in household income appears to lead to higher demand for domestic workers. The combination of low start-up costs and an easily acquirable set of essential skills make businesses that provide the types of services listed in Table X well-suited to local conditions.

Table 3: Vocational training needs captured by CEA

Training needs by sectors	Frequency (share %)
Retail shops and services	102 (27.6%)
Computer operator and photo copy	23
Domestic worker (babysitter)	21
Dress Shop	9
Bridal saloon/makeup	9
Silk screening	9
Coffee shop	5
Stationary shop	5
Consultant	4
Water refill shop	3
Agricultural shop	3
Building material shop	3
Educational center	3
Fishing tool shop	1
Internet shop	1
Perfume and cosmetic shop	1
Ice seller	1
Fuel seller	1
Mechanic	76 (20.5%)
Motor bike and car repairing	48
Welding	27
Car cleaning	1
Sewing and embroidery	69 (18.6%)
Sewing	62
Embroidery	7
Repair	40 (10.8%)
Mobile phone	17
Electronics	16
Computer	7
Carpentry	33 (8.9%)
Furniture	24
Wood design and building	8
Dais	1
Food production and food processing	30 (8.1%)
Cake and bread	16
Tempeh chip making	3
Producing edible mushroom and seeding	2
Chili and water melon	2
Fish shredding	1
Condiment	1
Salted fish and packing	1
<i>Melinjo</i> chip making	1
Coffee powder	1
Jerked meat	1
Chicken	1
Handicraft	17 (4.6%)
Merchandises and handicraft (not specified)	6
Bamboo work	3
Decorated plant	3
Rattan work	2
Earthenware	2
Gypsum Production	1
Others	3 (0.8%)
Brick production	2
Duck feather	1
Total	370 (100%)

Source: ILO commissioned research

Many communities identified sewing as a skill in demand. Indeed, about one out of six vocational training proposals was on sewing. Certainly there is a demand for this skill since tailor-made clothes are often cheaper than ready-made clothes. The large perceived skills demand for sewing, however, might be affected by gender-biases in occupation and the feasibility of implementing training given the availability of equipment and instructors. Generally speaking, shifting from supply-driven to demand-driven skills training requires capacity building of training providers.

The communities also commonly saw mechanic and repair skills as helpful skills. Since the number of vehicles is increasing in Aceh (World Bank: 2009), the demand for auto mechanics is on the rise. Business conditions in the construction sector may influence the skills demand for welding.

The communities did not exhibit a strong demand for food production and food processing related skills. This result differs somewhat from findings of economic potential and development policy analysis in Section 3 as well as the perspectives of political and business leaders that are introduced in Section 6. This was probably reflective of constraints on equipment availability and expertise as well as of a low awareness of business opportunities in food processing. The local communities that were surveyed, however, caught the changes in tastes and saw business opportunities in bread and cake making.

Traditional types of skills such as furniture making and handicrafts are also on the list, though the demand appears rather modest compared to the demand for modern skills. Furniture making accounted for almost half of the proposed skills training in this category. As the population is expected to increase, the number of household will

follow the same trend and the demand for furniture will constantly increase.

5. Labour market analysis

Overview

Aceh has a labour force of about 1.9 million, of which 1.7 million were employed as of February 2009. The unemployment rate in Aceh reached 9.3 per cent, which is substantially higher than the national average of 8.1 percent. The regional labour force grew annually at the rate of 1.7 per cent between 2005 and 2008. Matching the speed of job creation to that of labour force growth remains a challenge in the region. The challenge is particularly pronounced as reconstruction and rehabilitation projects are phased out. For instance, employment absorption by NGOs declined from 7,000 to 2,000, leaving 5,000 well-educated workers unemployed.¹⁹ In addition, the legacy of the conflict facilitates another type of labour market problem: many former combatants of the Free Aceh Movement (estimated to be approximately 12,400 in number²⁰) and militias (6,500) are still unemployed.

Employment by sector

The sectoral composition of employment reflects the characteristics of the regional economy. The share of manufacturing employment in Aceh is significantly lower than the national average: the share was 5.3 percent in Aceh whereas the national average stood at 12.2 percent in August 2008 (see Table 4). If the manufacturing industry in Aceh were further developed, it could employ a substantial number of additional workers. Almost one out of two workers in Aceh is employed in the primary sector. Agricultural employment represents a considerably higher share of total employment in Aceh than in Indonesia as a whole.²¹ Some observers consider this to be a result of the “limited alternative job opportunities in the province” and agriculture to be the employer of last resort (World Bank 2009: 3). This view, however, conflicts with the rising labour productivity in the agriculture sector. After all, comparative advantages of the region lie in agriculture, forestry and fishery. Since the low levels of employment in the trade sector stems largely from the high-cost of doing business in the regional economy, a more enabling business environment would likely have a positive impact on employment creation in this sector. The somewhat higher share of employment in construction and community, social and personal services sectors in Aceh is probably a reflection of hiring effected by reconstruction related investment.

The share of women in employment in Indonesia is low across all sectors of the economy, reflecting cultural gender biases (Table 4). The trade, restaurant and hotel sectors hire relatively fewer women in Aceh than in Indonesia as a whole. Overall, the share of women in employment is somewhat lower in Aceh at 25.3 percent, than in Indonesia as a whole at 27.4 per cent.

¹⁹ Source: a report submitted by the Aceh Institute to the ILO

²⁰ *ibid.*

²¹ The share of agricultural employment in Aceh was 48.5 per cent whereas the national average was 40.3 per cent according to the Labour force survey conducted in August 2008.

Table 4: Employment by sector and gender (per cent, August 2008)

	Sectoral share of employment (gender total)		Women's share of employment	
	Aceh	National	Aceh	National
Agriculture, forestry and fishery	48.5	40.3	25.9	27.2
Mining & quarrying	0.5	1.0	7.4	11.0
Manufacturing	5.3	12.2	34.5	30.2
Electricity, gas & water	0.2	0.2	6.6	7.9
Construction	6.4	5.3	1.4	2.3
Trade, restaurant & hotels	15.6	20.7	25.7	33.5
Transportation, storage & communications	5.5	6.0	9.7	10.4
Financing, insurance, real estate & business services	0.6	1.4	21.8	22.8
Community, social and personal services	17.4	12.8	31.1	30.3
Total	100.0	100.0	25.3	27.4

Source: Labour force survey, BPS

Table 5: Employment and output growth

	Output growth 2007-08 (%)	Employment growth 2007- 08 (%)	Employment in August 2008	Output per employment 2008
Agriculture	2.9	-6.5	786,198	10.6
Mining and Quarrying	-34.2	-36.2	8,660	462.6
Manufacturing	-7.2	9.7	86,762	49.6
Electricity and water supply	18.1	22.2	2,691	34.4
Building & construction	6.3	12.9	103,816	20.5
Trade, Hotel & restaurants	3.1	7.4	252,853	23.4
Transportation & Communication	6.1	6.9	88,842	24.4
Banking & Other Financial Intermediaries	5.6	59.3	9,427	58.4
Services	7.6	6.9	282,749	19.6
Total	-5.3	-0.1	1,621,998	20.4

Source: BPS, author's calculation

*: million Rupiahs, constant prices 2000

Educational attainment of the workforce

One of the most salient features of the labour force in the region is a higher educational attainment than the national average (see Table 6). In fact, more than a third of the labour force in Aceh has at least a high school education and 9.9 per cent has a college education or above, whereas the national average stood at only 29.4 per cent and 7.1 per cent, respectively. Female workers in Aceh boast significantly higher educational attainment: 15.0 per cent of them have a college education or above, whereas only 7.3 per cent of male workers have achieved the same level of education. A well-educated labour force would constitute a comparative advantage of the region vis-à-vis other provinces if human capital were optimally utilized in economic activities. This highlights the importance of a secure and enabling business environment. A skilled workforce is attractive to potential investors.

Table 6: Labour force composition by educational attainment (age 15+, per cent, August 2008)

	Junior high school or below	General high school	Vocational high school	Ccollege	University
Men					
Aceh	64.7	24.4	3.6	2.5	4.8
National average	69.4	16.2	8.2	2.2	4.1
Women					
Aceh	66.4	16.1	2.5	8.0	7.0
National average	72.4	13.2	5.9	4.1	4.5

Source: Labour force survey, BPS

Enterprises and hiring

Seen from the size of enterprises, micro and small size enterprises (MSEs) are the backbone of the local economy and the largest employers of the labour force. The growth of MSEs and their employment capacity is important to fate of the local economy. It is, therefore, vital for the government to provide an enabling business environment for MSEs. Though the growth of the manufacturing sector has lost momentum in Aceh, 92 large and medium-size manufacturing companies operated in Aceh in 2007 (see Table 7). Nearly 40 per cent of these companies were in the food and beverage industry. They employed almost five thousand workers. This segment of the economy may grow if the Aceh government effectively addresses the concerns of potential investors and adopts a strategy of increasing the value-added of local agricultural products. Some businesses related to the gas and oil industries are present, but face decline as gas deposits become depleted. The textile and garment industry is known for its labour intensive production processes, but companies in the industry in Aceh contribute only marginally to labour absorption.

Table 7: Number of establishments and workers in large and medium manufacturing industries in Aceh, 2007

Type of Industry	Number of Establishments	Number of workers
Food, beverages and tobacco	37	4,946
Chemical, petroleum, coal, rubber and plastic products	9	1,605
Paper and paper products, printing and publishing	2	1,151
Textiles, garment and leathers	12	637
Non metallic mineral products, except products of petroleum and coal	16	532
Fabricated metal products, machinery and equipment	10	476
Wood, bamboo, rattan, willow etc., including furniture	6	199

Source: BPS-Statistics of Nanggroe Aceh Darussalam Province

Wages

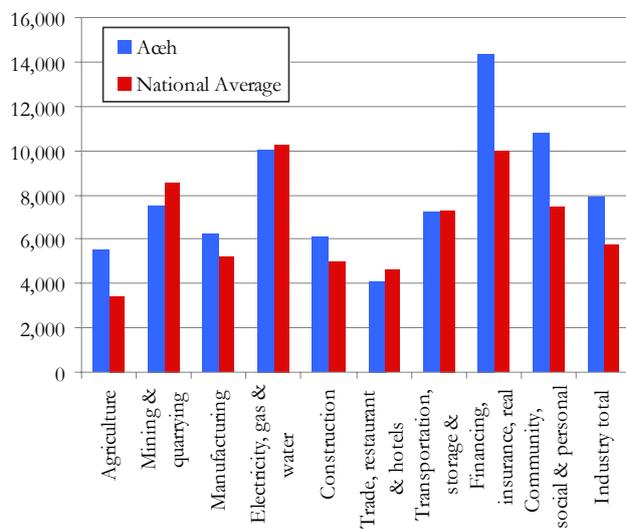
Wage levels are generally higher in Aceh than the national average in most sectors, with the exceptions of the mining and quarry sectors as well as the trade, restaurant and hotel industry. Higher wages in the region are partly a reflection of a high-cost economy and partly a result of reconstruction boom. In the face of anticipated economic downturn, maintaining and improving

wages may require continuous enhancement of productivity. The average regional hourly wage was Rp 7,875 in February 2009 with a substantial Rp 2,122 higher than the national average. The finance and service sectors are high wage sectors in Aceh with large margins in wage differentials between regional and national wages.

The average hourly wages of women are higher than those of men by 3.8 percent (or by Rp. 299) with large fluctuations by industry. In the trade, restaurant and hotel sectors, for example, the average hourly wages of women are 81.8 percent of men's wages. In contrast, women generally earn more per hour than men in the agricultural sector (Women: Rp. 5,984 and men: Rp. 5,519).

The agricultural sector is typically a low wage sector in developing countries, but Aceh is an exception to this general observation. In fact, regional average hourly agricultural wages in Aceh (Rp. 5,519) are comparable to national average hourly wages of all sectors (Rp 5,753). They are 62.3 percent higher than the national average hourly wages for the same sector. It appears appropriate to interpret the high agricultural wages in Aceh as evidence of the comparative strength of the sector. Indeed, Aceh produces exportable commodities such as palm oil, coconut oil, cacao and coffee, which helps sustain the relatively high agricultural wages in the region. Judging from the economic growth and employment forecast by the author, it is desirable that the agricultural productivity and wages be increased in order to assist the smooth absorption of workers from other sectors that are set to stagnate or slow down. Adding value to agricultural and marine products would facilitate this scenario.

Figure 4: Average hourly wages by industry (in Rupiah)



Source: BPS, author's calculation

Productivity by sector

Labour productivity (output per worker) improved in the agricultural sector as a result of an increase in output combined with a decline in agricultural employment. The share of agricultural employment as a proportion of total employment has been on the decline since the natural disaster at the end of 2004: it stood at 59.8 per cent in February 2005 (or 922,363 agricultural workers), declined to 56.7 percent in February 2007 and further down to 50.8 percent (or 876,092 agricultural workers) in February 2009. At the same time, agricultural production increased: the output of the sector was Rp 7,755 billion in 2005, and grew substantially to generate Rp 8,329 billion in 2008. As a result, labour productivity was enhanced by 13.1 percent in this sector between 2005 and 2008. Further gains in labour productivity may follow continuous infrastructure investment in this sector.

Table 8: Annual change in labour productivity (2005-08, %)

Agriculture	4.2
Manufacturing	-17.1
Building & construction	-2.1
Trade, Hotel & restaurants	3.0
Transportation & Communication	18.3
Banking & Other Financial Intermediaries	-11.9
Services	-2.2
Industry Total	-4.6

Source: BPS, author's calculation

Labour migration

Since the region does not generate sufficient employment opportunities for well-trained youth, some skilled workers migrate to other regions or abroad in order to find a job that matches their technical competence. A USAID report noted an ambivalent outcome of technical education and training in the region: "Out-migration is an important pathway for youth workforce with tertiary technical education. Highly educated and technically trained youth are being pulled out of the region, and into other parts of Indonesia and Southeast Asia" (USAID 2007: 3). On one hand, technical education is successful since it equips graduates with marketable skills. On the other hand, the region's investment in skills benefits other regions. Inward migration plays a role in the local labour market. Relatively higher wages attract low-skilled workers from other regions, notably in the construction sector.

6. Focus group discussions and interviews

The Aceh Institute conducted interviews and focus group discussions (FGDs) between March 2009 and May 2009 in three districts of the region: Banda Aceh, Aceh Besar and Pidie. The purpose of the qualitative research was to obtain first-hand information about the current status of employment, opportunities and future prospects of Aceh's economy. The Institute selected interviewees and FGD participants who possessed knowledge and professional experience relating to employment creation and skills development (see Box 1).

Summary of findings

FGD participants saw high growth potential in agriculture, fisheries, forestry and plantations. They shared the view that natural resources that abound in the region constitute an advantage. According

to them, economic development and employment creation opportunities lie in the exploitation of natural resources. At the same time, FGD participants were aware of the weakness of the region in pursuing this scenario of building a natural resources-based economy: low value-added of agricultural, livestock and marine products is a constraint to improving livelihood. They thus focused much of their discussion on trying to identify ways in which more value could be added to these primary products. Based on FGD outcomes, the Aceh Institute reported to the ILO that food processing, packaging and marketing were the areas in which skills development is desired.

The following two cases reported by the Aceh Institute illustrate the need for food processing and marketing skills in the region. Many NGOs and BRR NAD-NIAS helped fishers with overhauling equipment and improving fishponds. Fishers also received boats and other fishing equipment such as fishing nets. The Asian Development Bank (ADB) donated advanced equipment to locate fish (e.g. sonar mapping and fish mapping). Equipped with such advanced technologies on their boats, fishers increased the average size of their catch. The higher productivity, however, failed to benefit them due to their reliance on a small local market. Since supply grew at a faster rate than demand, the price of fish fell.

The same applies to the food processing activities in which many women were engaged. During the phase of reconstruction, many initiatives trained women in the production of food such as nuggets, meatballs and crackers. After the training, some of the trainees started producing food, but soon they encountered a problem: they did not know where to market their products. As a result, the production ran only as long as the capital/loan stayed available. Though there are success stories of women entrepreneurs who benefitted from food processing training (BRR NAD-NIAS: 2009), follow-up training that complements and enhances the benefits of food processing training (e.g. packaging and marketing) would help ensure a longer lasting impact.

Some senior managers of companies who were interviewed by researchers of the Aceh Institute generally held positive prospects for their businesses, despite the anticipated slowdown in regional economic growth. Their optimism was backed by their observation that the local market was not yet saturated. Since the region depends on external supplies, notably from Medan, a nearby large city, they saw opportunities to penetrate into the market with locally produced products and services. In addition to targeting the local market, some looked to external markets. Those who were confident about their business prospects also mentioned the abundant raw materials in the region including uncultivated land. Some senior managers noted that improvement in the skills of the workforce, access to capital, enhanced security in the region, the stability of the supply of electricity and physical infrastructure would unleash the economic growth potential of the province. Government officials and leaders of business associations shared views that were similar to those of the senior managers. They identified agriculture, plantations, fisheries, trade and services as sectors that had potential to grow.

Box 2
Interviewees and FGD participants

a) FGDs

FGDs were conducted four times in each district (Banda Aceh, Aceh Besar and Pidie). Each FGD meeting had eight to ten participants. The first FGD was attended by the heads of relevant government departments such as the department for investment promotion; agriculture, plantation, fishery animal husbandry; mining and energy; manpower; tourism and education. The second FGD was comprised of employees of international organizations, NGOs and community leaders such as International Finance Corporation (IFC), International Organization for Migration (IOM), Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), World Vision, Mercy Corps, Swiss Contact, Muslim Aid, heads of villages and heads of community groups, etc. The third FGD consisted of academics from UKM Center, Management Institute, AISMIF, as well as individual researchers, lectures. Participants from the private sector attended the fourth FGD. The attendees included representatives from KADIN, Event Organizer Association, Association of Construction Entrepreneurs, Chocolate Trader Association and Chocolate Farmer Association.

a) Interviews

The researchers of the Aceh Institute interviewed a total of 108 persons. Broadly speaking, the interviewees were from four groups: business owners, employees, political as well as business leaders and heads of skills training institutions. The first group was comprised of 15 owners of enterprises. The second group was made up of 75 employees including managers. The third group consisted of 12 key decision makers including the Mayor of Banda Aceh, the Regents of Aceh Besar and Pidie, the chair of the Board of Regional Development Planning (BAPEDA) and the head of the Chamber of Commerce (KADIN). The fourth group consisted of six owners and/or heads of public and private training institutions.

7. Skills training supply

Five actors provide skills training in Aceh: vocational high schools (*SMK*), public vocational training schools (*BLK*), non-formal educational institutions, NGOs and companies. This section notes the differences between these actors and looks at the types of training they provide. Though on-the-job training is said to be the most effective method of skills development, this paper excludes corporate training from its skills supply analysis since in-house skills training is usually not accessible for external workers and the unemployed. Because listing all of the training programmes in the region was neither feasible and nor necessary for the purposes of this research, only three districts were sampled. The list of training courses provided by BLKs, non-formal educational institutions and NGOs is placed in Annex 2. The list also indicates the training capacity (i.e. the number of instructors and the maximum number of trainees per year) of each skills training course. Readers are reminded that the list does not include apprenticeship arrangements, in-house corporate training and training courses at SMKs. It does not indicate the quality of training either. Thus, the list needs to be utilized with caution.

SMK is a post-junior high school three-year formal vocational education programme. It falls under the jurisdiction of the Ministry of National Education. There are 107 SMKs in the region as of January 2010. SMKs provide education on a variety of subjects, helping students gain skills ranging from IT and engineering to pastry making. Some courses of SMK are a combination of classroom teaching and apprenticeship. SMKs operate under certain constraints.²² There is a perception among

²² Interview with Drs. T. Rusli Gade on 19 January 2010

parents that vocational education is secondary to general high school education, which biases their choice of education for their children. Students at SMKs tend to be from relatively deprived households. Generally speaking, SMKs are under-funded.

BLKs are governed by the Ministry of Manpower and Transmigration. They provide relatively large-scale training for tasks such as welding and crane operation that require heavy and/or costly equipment. BLKs attract a diverse group of trainees. Some graduates from SMKs continue vocational education at BLKs. Some dropouts from the general education system and unemployed adults also acquire skills at BLKs. The provision of training depends on budget availability.²³

Non-formal educational institutions play an important role in skills development for the general public. As listed in the table in Annex 2, this type of skills training provider outnumbers other types of providers. They are under the supervision of the Ministry of National Education. Community centres and private institutions organize diverse training courses on subjects such as tailoring, embroidery, computer skills and cosmetology. Overall, the financial situations of these institutions are feeble since they rely on government subsidies or tuition payments from participants.

NGOs are also active providers of skills training in Aceh. After the tsunami of 2004, many aid agencies funded local NGOs' activities or implemented skills training projects in partnership with local civil society actors. Training methods and materials are often of international quality as they have been developed based on accumulated experience and knowledge in the world. An issue is the time-bound nature of such training projects.

Box 3

Food processing training by an NGO

Food processing training projects have been making a contribution to improve the livelihoods of local producers in Aceh. They are funded by the Government of Japan and implemented through a Japanese NGO, OISCA International. The skills training programmes provide integrated support to local farmers and fishers starting from the construction of food-processing facilities to the packaging and marketing of the products. For example, they support cacao producers' cooperatives by providing the expertise necessary to build cacao processing equipment and the training to produce a variety of cacao-based products such as cacao butter, cacao powder, cacao cakes and chocolate. Chocolate is marketed in Bali, one of the top tourist destinations, and cacao butter attracted a large international cosmetics company. The advantage of food processing is obvious: 2 kg of unprocessed cacao generates in a local market about USD 4, while processed cacao, for example 500g of cacao butter, which requires 2 kg of cacao, sells at USD 6-8 and other by-products of cacao processing (e.g cacao powder) bring additional income.

The NGO has prepared training programmes on 36 food items. 20 of them are accessible on interactive DVDs and will be available online. They established community-run livelihood support centers where local producers can obtain more information on food processing. Users of the DVD and online training also have the opportunity to participate in actual training through user service programmes. Their effective use of Information and Communication Technologies would enhance the accessibility of knowledge and techniques that can help increase local producers' income.

Tables 9-12 show skills training supply in three sampled districts²⁴ in Aceh. Readers are reminded that the statistics below may not necessarily reflect a full picture of skills training supply in the region and analysis in this section, consequently, needs to be assessed with caution. Nevertheless, sampled

²³ Interview with Pandji Putranto

²⁴ Aceh Besar, Sabang and Banda Aceh.

parts of the region are major districts and the statistics here as well as the skills training map in Annex 2 provide an illustrative picture of skills supply in Aceh, sufficient enough to allow a gap analysis.

The largest skills training providers are private institutions such as non-formal educational institutions and NGOs. In fact, the number of instructors and trainees in private establishments by far outnumber those of public institutions (Table 9). Tailoring and embroidery are the subjects on which skills training is most commonly offered. Every year nearly 2,000 people learn these skills in private institutions, which account for 31.1 percent of training capacity in the sampled districts (Table 10). Training in repair and mechanics is the second most commonly offered. In this area of training, public and private institutions have a roughly equal capacity in terms of the number of instructors and trainees, though the quality and equipment of the training may not be identical. 58.9 per cent of skills training take place in classrooms. A quarter of training combines classroom teaching with on-the-job training (Table 12).

Table 9: Training capacity by types of training provider

	The number of instructors	Training capacity
Government institutions	200	1050
Private institutions	605	5020
Joint	7	260

Source: PKPA, author's tabulation
 Note: Training capacity refers to the number of people that training institutions can actually train per year.

Table 10: Training capacity by category and types of providers

	Government institutions	Private institutions	Joint	Total (%)
Agriculture, fishery and husbandry	30	922	120	1072 (16.9)
Food processing	60	397	140	597 (9.4)
Tailor and embroidery	0	1969	0	1969 (31.1)
Repair and mechanics	770	785	0	1555 (24.6)
Computer skills	20	277	0	297 (4.7)
Handicrafts and furniture making	170	565	0	735 (11.6)
Carpentry	0	50	0	50 (0.8)
Beauty salon	0	55	0	55 (0.9)

Source: PKPA, author's tabulation

Table 11: The number of instructors by category and types of providers

	Government institutions	Private institutions	Joint	Total (%)
Agriculture, fishery and husbandry	2	67	3	72 (8.9)
Food processing	4	32	4	40 (4.9)
Tailor and embroidery	0	236	0	236 (29.1)
Repair and mechanics	144	147	0	291 (35.8)
Computer skills	3	28	0	31 (3.8)
Handicrafts and furniture making	47	86	0	133 (16.4)
Carpentry	0	4	0	4 (0.5)
Beauty salon	0	5	0	5 (0.6)

Source: PKPA, author's tabulation

Table 12: Training venue

	Training capacity	Share (%)
Classroom teaching	3730	58.9
On-the-job training	1045	16.5
Combination	1555	24.6

Source: PKPA, author's tabulation

8. Skills gap analysis

This section examines the gap between current skills training provision and existing and future skills demand in Aceh based on the information and results of analyses in the preceding sections. The table below summarizes the main findings on skills demand (see Table 13). This section matches the information in the table against the skills training supply as illustrated in the previous section.

Table 13: Skills demand in Aceh

Type of analysis	Identified skills (to be) in demand
Local economic analysis	<ul style="list-style-type: none"> • Skills related to agrarian economy (civil engineering for irrigation, maintenance of machines) • Food processing including knowledge on food hygiene, quality control and food additives • Packaging including design • Marketing (including export-related expertise) • Skills in the supporting industries (banking, trade, transport, storage, etc.) • Finance including micro-finance schemes
Policy analysis	<ul style="list-style-type: none"> • Agribusiness (food processing, packaging and marketing) • Tourism (hotel management, tour operation, transportation, hospitality and language skills) • Entrepreneurial skills, business and financial literacy
Community employment assessment	<ul style="list-style-type: none"> • Skills for starting and running retail shop or services • Tailoring and sewing • Mechanics, repair • Handicraft and furniture making
Labour market analysis	<ul style="list-style-type: none"> • Business skills for micro and small enterprises (management, financial literacy, digital literacy) given the high educational attainment of the workforce • Skills to add more value to agricultural products • It is possible that less technical education is necessary in the region since many graduates have to migrate to other regions
Focus group discussions and interviews	<ul style="list-style-type: none"> • Food processing, packaging and marketing • Skills in the supporting industries (banking, trade, transport, storage, etc.)

The analyses revealed that adding value to local agricultural and marine products through food processing, packaging and marketing skills is helpful in increasing the size of the regional economy in a sustainable manner. In the sampled districts, however, food-processing skills training is in short

supply. Packaging and marketing skills, not to mention skills training for food hygiene, quality control and food additives, are not developed in a systematic manner. This paper calls, in particular, for the attention of policymakers and stakeholders to this point.

Skills that would bolster the agrarian economy are another area in which the provision of training appears to be in short supply. Though expertise in agriculture, forestry and fishery is possibly transmitted from experienced workers to relatively inexperienced workers on the job, training is necessary in order to improve productivity (e.g. better use of fertilizer, farming techniques and quality improvement of products).

The financial sector recorded a rapid expansion in the past decade and skills demand from this sector has been high. However, since banks usually provide training to their employees, there is limited or no need for external actors to offer skills training for the banking sector. It is, however, necessary to provide more training on financial literacy for small-scale business owners and entrepreneurs. Microfinance institutions may need capacity building for more efficient operation and client-oriented services.

Skills training for embroidery and sewing is in relatively high supply in the region. It may be that since the region has only twelve medium-sized textile and garment companies that hire 600 to 700 workers in total, there remains ample room for micro businesses to operate in the industry. In addition, local consumers buy tailor-made clothes since they are actually cheaper than ready-made clothes. Skills training for embroidery and sewing help women²⁵ to earn additional income for the household. Yet, it appears appropriate to review the match between the supply and demand for these skills in Aceh.

Though computer skills training is provided in the sampled districts, other skills training that is conducive to starting and running business does not meet the estimated skills training demand in the market. Given that micro and small enterprises are the backbone of the economy and the vast majority of hiring takes place in enterprises of that scale, encouraging and facilitating entrepreneurship as well as supporting productivity improvement of existing enterprises must be an integral part of the skills development policy of the region. Current skills training supply appears to be suboptimal in order to stimulate the growth and development of small-scale businesses.

9. Recommendations

This section introduces some ideas and policy options that would help to narrow the gap identified in the previous section. Narrowing the skills gap would be conducive to achieving the regional development policy goals as well as to increasing the income of local producers. Reduced poverty would lead to a lower incidence of child labour, thus effectively cutting the vicious cycle of inter-generational poverty transmission. This paper emphasizes the need to fill the skills gap relating to agribusinesses since higher productivity in the agricultural sector would reduce the necessity of natural resource exploitation, and simultaneously facilitate an improvement in livelihoods.

²⁵ Tailors are predominantly women in the region.

1. Enhancing a network of skills training providers and policymakers for effective coordination and facilitation

It is important to note that skills development can function as a catalyst for regional development. The supply of skills training, as discussed in the previous section, does not appear to be aligned with the strategic skills needs for the region. Better and deeper coordination among policymakers and skills training providers would help maximize the synergy of policies and enhance the impact of skills training on regional development and poverty reduction. In doing so, it is ideal that actors (e.g. policymakers and skills training providers) share a common understanding of the areas in which additional skills training is needed, and a mutual vision of the goals of development and strategies for achieving these goals. This paper suggests to forge this common ground by enhancing the role of existing coordination body in charge of skills development, the Training Advisory Board. It is essential that the Board keeps the list of skills training updated, reviews the gap analysis, and discusses practical ways of filling the gap.

2. Developing and applying competency standards for key strategic skills

Skills development requires standards that can serve as a guideline for skills training providers and a formal reference for training quality. Once the Board of actors selects strategic skills for sustainable regional development and poverty alleviation, one of the first tasks may be to develop new or review existing competency descriptions for these skills.

3. Acquiring skills and expertise through external support, preferably with the assistance of donors

Advanced technology and knowledge are required in order to produce products and services that meet international standards of quality. Such resources may not always be available in Aceh at the current stage of development. Producers' cooperatives and skills training providers may wish to invite experts from outside the region and organize training workshops. At the same time, strategic and focused dialogue with donors may lead to the transfer of relevant technology and the eventual absorption of required skills by local producers.

4. Fostering entrepreneurship and an enabling business environment for the services sector

It is of strategic importance to facilitate the growth of the service sector so that it can cater to the demand arising from and accelerate the expansion of agribusiness. Agribusiness would not flourish if it were left without adequate support from other sectors. In order for agribusiness to be successful, support from, for example, the banking, transportation, printing, wholesale and retail sectors is required. The Government of Aceh may wish to foster entrepreneurship and an enabling business environment to this end. Measures such as mainstreaming entrepreneurship education in secondary and tertiary education, streamlining business regulations and providing incentives (i.e. tax concessions during the first few years after business start-up) are conducive to the growth of the service sector.

10. Conclusions

This paper analyzed a skills gap in Aceh from the view point of tapping into economic growth potential in a sustainable manner. It examined economic sectors, the development plan and skills demand at the community level to gain insight into skills demand in the near future. Labour market analysis and qualitative research complemented the skills demand analyses. The paper then compared the anticipated skills demand against the current supply of skills training identifying the gap in which skills development policy intervention is most desirable.

Adding more value to agrarian and marine products is fundamental to improving income in a sustainable manner. In fact, Aceh is endowed with fertile land and seawater rich in marine resources. Therefore, this paper emphasized the importance of food processing, packaging and marketing skills. Skills training supply in these areas, however, falls short of the necessary amount.

As discussed in Section 5, a relatively well-educated workforce is another asset of the region. Since enterprise development induces much needed employment creation in the region, fostering an enabling business environment brings about multiple benefits. Skills training can play a role to this end. Provision of entrepreneurial skills and other business skills is encouraged.

Skills demand and supply needs to be periodically reviewed. If there is an excess in supply, then resources may be re-allocated to strategic areas of skills training. The migration of young, technically educated workers to other provinces is a signal of a potential mismatch between skills supply and skills demand within the province.

The intent of this study is to contribute to the formulation of better skills development policies in Aceh. Competency standards are helpful in guiding skills development and in assuring the quality of training. A network of stakeholders would facilitate the process of policy formulation and effective implementation. Further and more detailed research is warranted in order to generate knowledge that would serve reforms of skills training in the region.

Bibliography

- Aceh Investment and Promotion Board (2008) *Investment opportunities in Aceh Province 2008* (Aceh).
- (2008) *Profile Potencies and Opportunities for Investment* (Aceh).
- Cited in ADB (2007) *Progress report- Indonesia: Aceh-Nias Rehabilitation and reconstruction* (Manila).
- Becker, Gary. S (1993) *Human capital: A theoretical and empirical analysis with special reference to education*, 3rd edition, (The University of Chicago Press, Chicago IL, USA)
- BRR NAD-NIAS (2009) *Economy* (Banda Aceh).
- Global Institute for Tomorrow (2009) *Global Young Leaders Programme: Aceh, Indonesia 30 Nov.-12 Dec. 2009* (Hong Kong).
- The Government of Nanggroe Aceh Darussalam Province (2007a) *AGENDA: Economic development Nanggroe Aceh Darussalam Province*, Initial edition (Aceh).
- (2007b) *ATLAS: Economic development Nanggroe Aceh Darussalam Province*, Initial edition (Aceh).
- (2007c) *ATURAN: Economic development Nanggroe Aceh Darussalam Province*, Initial edition (Aceh).
- ILO EAST project. unpublished. *Guideline for developing market-driven community-based vocational training for out-of-school youth* (ILO Jakarta Office).
- ILO (2005) *Training for rural economic empowerment (TREE) Project: Mid-term Evaluation Summary*, available online: http://www.ilo.org/skills/what/projects/lang--cn/WCMS_103528/index.htm [20 April 2010].
- . *Youth employment policy framework: The case and experiences of Indonesia*. Unpublished
- Sparreboom, Theo and Marcus Powell (2009) *Labour market information and analysis for skills development*. Employment working paper No.27, (Geneva, ILO)
- IOM (2009) *Labour Market Assessment: Final report – Bireuen* (Aceh).
- IOM (2009) *Labour Market Assessment: Final report – Lhokseumawe* (Aceh).
- USAID Indonesia. 2007. *Jobs for the 21st century: Indonesia assessment* (Jakarta).
- World Bank (2009) *Aceh Growth Diagnostic: Identifying the binding constraints to growth in a post-conflict and post-disaster environment* (Jakarta).
- World Bank and Bank Indonesia (2009) *Aceh Economic Update*, May 2009 (Aceh).

Annex 1: Growth of GRDP by sector in Aceh

	Output by sector at constant prices				Average annual growth (%)			Output index (Yr2000=100)	
	2000	2004	2005	2008	2000-04	2005-08	2000-08	2004	2008
Agriculture	6,983.0	8,069.0	7,755.0	8,223.9	3.7	2.0	2.1	115.6	117.8
Food crops	2,628.6	3,253.4	3,144.8	3,264.8	5.5	1.3	2.7	123.8	124.2
Estate crops	1,065.7	1,453.9	1,529.9	1,633.4	8.1	2.2	5.5	136.4	153.3
Livestock and products	1,344.5	1,414.0	1,296.3	1,396.3	1.3	2.5	0.5	105.2	103.9
Forestry	909.0	621.3	531.3	547.0	-9.1	1.0	-6.2	68.4	60.2
Fishery	1,035.2	1,326.4	1,252.7	1,382.4	6.4	3.3	3.7	128.1	133.5
Mining and quarrying	12,225.5	12,263.9	9,489.9	5,302.0	0.1	-17.6	-9.9	100.3	43.4
Manufacturing	9,758.5	7,407.3	5,755.5	4,144.7	-6.7	-10.4	-10.2	75.9	42.5
Manufacturing (non-oil and gas)	1,942.8	1,365.9	1,296.1	1,473.2	-8.4	4.4	-3.4	70.3	75.8
Food, beverages and tobacco	397.6	371.1	383.0	454.9	-1.7	5.9	1.7	93.3	114.4
Wood products	201.0	0.4	0.5	0.6	-78.7	8.8	-51.9	0.2	0.3
Paper and printing	91.7	9.0	9.7	13.9	-44.0	12.7	-21.0	9.8	15.2
Fertilizers, chemical and rubber products	1,142.7	848.2	848.6	938.0	-7.2	3.4	-2.4	74.2	82.1
Cement and non-metallic mineral product	95.2	119.6	36.9	45.8	5.9	7.5	-8.7	125.6	48.1
Electricity, gas and water supply	43.6	60.4	59.2	92.5	8.5	16.0	9.8	138.4	212.0
Construction	1,748.7	1,514.4	1,270.0	2,129.1	-3.5	18.8	2.5	86.6	121.8
Trade, hotel and restaurant	4,288.2	4,863.8	5,186.5	5,926.3	3.2	4.5	4.1	113.4	138.2
Wholesale and retail trades	4,181.1	4,736.1	5,018.0	5,722.1	3.2	4.5	4.0	113.3	136.9
Hotels	16.0	19.3	17.3	18.7	4.8	2.7	2.0	120.8	117.2
Restaurant	91.1	108.4	151.3	185.5	4.4	7.0	9.3	119.0	203.5
Transport and communication	1,268.5	1,516.7	1,734.9	2,165.9	4.6	7.7	6.9	119.6	170.7
Road transport	934.7	1,057.4	1,219.5	1,553.8	3.1	8.4	6.6	113.1	166.2
Sea transport	90.9	91.09	94.0	108.7	0.1	5.0	2.3	100.3	119.6
Air transport	16.6	55.4	94.1	118.0	35.1	7.8	27.8	333.5	710.2
Communication	222.7	307.1	315.5	371.8	8.4	5.6	6.6	137.9	166.9
Finance and business services	232.1	488.2	441.7	550.4	20.4	7.6	11.4	210.4	237.2
Banking	24.1	193.5	154.1	289.6	68.3	23.4	36.4	801.7	1199.6
Non-bank financial institutions	26.0	29.4	32.9	35.0	3.2	2.0	3.8	113.4	134.8
Real estate	169.7	251.3	239.0	212.9	10.3	-3.8	2.9	148.1	125.4
Business services	12.3	13.9	15.7	13.0	3.3	-6.1	0.8	113.8	106.2
Services	2,953.4	4,190.7	4,595.3	5,550.8	9.1	6.5	8.2	141.9	187.9
Government	2,753.7	3,884.0	4,299.8	5,237.3	9.0	6.8	8.4	141.0	190.2
Social and community services	101.8	176.2	163.2	176.6	14.7	2.7	7.1	173.0	173.5
Entertainment and cultural services	32.9	45.8	41.8	43.9	8.6	1.6	3.7	139.0	133.3
Personal and household services	64.9	84.8	90.4	93.0	6.9	0.9	4.6	130.7	143.2
Industry total (non-oil and gas)	19,626.7	22,260.7	22,531.8	26,510.6	3.2	5.6	3.8	113.4	135.1

Source: BPS in Aceh, author's calculation. Note: Data for 2008 is preliminary.

Annex 2: Skills training mapping

Note:

Training venue: 1=classroom, 2=on the job training, 3=Combination of both

Training capacity: The number of trainees that the training institution can actually train for the particular skill per year

Type: 1=public, 2=private, 3=joint

Disclaimer: The ILO does not guarantee the accuracy and exhaustiveness of the information in the list.

Skill training areas	Training venue	# of instructors	Training capacity	Training provider	Type	Note
Agriculture, fishery and husbandry						
Horticulture	2	1	100	Syiah Kuala University (research center)	3	Funded by OISCA International (Japanese NGO)
Duck farming	2	2	200	Dinas Peternakan Aceh Besar (Husbandry department)	2	Funded by OISCA International (Japanese NGO)
Compost (organic fertilizer) production	2	1	75	Compost Producers	2	Funded by OISCA International (Japanese NGO)
Fish finder and sonar mapping	2	2	300	ADB	2	Funded by OISCA International (Japanese NGO)
Livestock (quail)	2	17	100	PKBM Sinar Jaya (Community college), Sabang	2	Community college (non-formal education)
Chili making	1	4	41	Aceh besar, CC Lhonga	2	Community center for children
husbandry (Duck)	3	2	30	BLK Aceh Besar	1	Government
Planting and growing papaya	1	2	20	Aceh besar, CC Lhonga	3	Community center for children
Workshop: agriculture (tropical fruit and long bean)	1	15	71	Lhokseumawe PKBM Raudhatul Jannah	2	Community college (non-formal education)
Mushroom growing	1	26	135	Langsa, Yayasan Uswatun Hasanah	2	Community college (non-formal education)
Food processing						
Cacao processing	1	1	30	Research and Development of Cacao Institute, JEMBER	3	Funded by OISCA International (Japanese NGO)
Tuna fillet processing	3	2	100	Panglima Laot, Lampulo	2	Funded by OISCA International (Japanese NGO)
Tuna processing for export	2	1	100	Balai Pengembangan Ikan Budidaya, SUKABUMI	3	Funded by OISCA International (Japanese NGO)
Maintenance of Cocoa Processing equipments	2	2	10	Research and Development of Cacao Institute, JEMBER	3	Funded by OISCA International (Japanese NGO)
Patchouli (perfume) production with stainless steel boiler and pressure	2	3	60	Payand Bertrand, France	2	Funded by OISCA International (Japanese NGO)
Tempeh (fermented soya bean food product) processing	1	2	20	BLK Aceh Besar	1	Government

Kunyit (turmeric) processing	1	3	60	PKBM Al-Alaq, Aceh Besar	2	Community college (non-formal education)
Processing sea food (octopus)/salt fish	2	2	40	PKBM Al-Alaq, Aceh Besar	2	Community college (non-formal education)
Processing Salt egg	1	20	107	Pidie, PKBM Bukit Thursina	2	Community college (non-formal education)
Processing abon dan tongkol (Fish-based food product)	1	2	30	Lhokseumawe PKBM Raudhatul Fata	2	Community college (non-formal education)
Processing Jamur Mayang (mushroom)	1	2	40	Pidie, UPTD SKB Bambi	1	Government
Tailoring and embroidery						
Embroidery	1	38	200	PKBM Sinar Jaya (Community college), Sabang	2	Community college (non-formal education)
Embroidery, sewing	1	35	190	PKBM Tgk Imum Luengbata,B Aceh	2	Community college (non-formal education)
Embroidery, sewing	1	26	133	PKBM Cut Mutia,B Aceh	2	Community college (non-formal education)
Tailor, sewing	1	2	20	PKBM Al-Ikhlash	2	Community college (non-formal education)
Tailor	3	68	761	Pidie, Bimakuskom	2	Community college (non-formal education)
Tailor	1	2	30	Lhokseumawe PKBM Raudhatul Jannah	2	Community college (non-formal education)
Tailor and embroidery	1	2	60	Langsa, Yayasan Uswatun Hasanah	2	Community college (non-formal education)
Embroidery and sewing	1	23	200	PKPS Ulee Kareng, B Aceh	2	Community college (non-formal education)
Embroidery	1	35	300	PKBM Cut Nyak Dhien	2	Community college (non-formal education)
Tailor	1	1	15	Langsa, PKBM Nur Ikhsan	2	Community college (non-formal education)
Tailor and embroidery	1	4	60	Langsa, Indah Kustum	2	Community college (non-formal education)
Repair and mechanics						
Electronics repairing (HP, Computer, bengkel)	3	38	200	PKBM Sinar Jaya (Community college), Sabang	2	Community college (non-formal education)
Repair service: Hand phone, Computer, Printer	1	55	200	SKB Sabang	1	Government
Repair service: HP, computer, car, motorcycle	1	26	140	BLK Maritim, Sabang	1	Government
Repair service : computer, printer	1	13	200	LPKComtech, Banda Aceh	2	Training provided at PKBM
Engine repair workshop (motorbike and car)	3	53	400	BLK Banda Aceh	1	Government
Repair service : workshop, computer,	1	39	180	PKBM Al-Ikhlash	2	Community college (non-formal education)
Repair workshop: engine	1	13	46	PKBM Rahmat Ilahi, Aceh Besar	2	Community college (non-formal education)
Motorcycle repair	1	10	30	Pidie, SMK 2	1	Government
Motorcycle mechanic	1	20	95	Lhokseumawe PKBM Raudhatul Fata	2	Community college (non-formal education)
Motorcycle repair	3	24	64	Pidie, PKBM Ingin Maju	2	Community college (non-formal education)

Computer						
How to use Skype as a cheap multi media communication tools	2	1	30	ADB	2	Funded by OISCA International (Japanese NGO)
Computer skills training and computer repair	1	10	100	Pidie, Bimakuskom	2	Community college (non-formal education)
Auto CAD	1	3	20	Pidie, SMK 2	1	Government
How to use computer	2	2	30	PKBM Cut Nyak Dhien	2	Community college (non-formal education)
Computer and multimedia	1	15	117	Langsa, PKBM Nur Ikhsan	2	Community college (non-formal education)
Handicrafts and furniture						
rattan craft making (e.g. chair, table)	1	32	182	PKBM Al-Alaq, Aceh Besar	2	Community college (non-formal education)
rattan craft making	1	2	20	Aceh besar, CC Lhonga	2	Community center for children
bamboo craft making	1	2	20	Aceh besar, CC Lhonga	2	Community center for children
Handicraft (accessories) making	1	15	33	Pidie, CC Muhammadiyah	2	Community college (non-formal education)
furniture making	1	5	30	Pidie, SMK 2	1	Government
Handicraft (bamboo, pottery, wood)	1	12	60	Langsa, LPK Sanggar Asri	2	Community college (non-formal education)
Furniture making,	1	19	175	PKBM Bangkit Aceh, Aceh Besar	2	Community college (non-formal education)
Handicraft making	1	1	30	PKBM Bangkit Aceh, Aceh Besar	2	Community college (non-formal education)
Furniture making	1	1	15	Pidie, PKBM Ingin Maju	2	Community college (non-formal education)
Handicraft (rope)	1	42	140	Pidie, UPTD SKB Bambi	1	Government
Handicraft	1	2	30	Langsa, Indah Kustum	2	Community college (non-formal education)
Carpentry						
Carpentry	1	2	30	Lhokseumawe PKBM Raudhatul Jannah	2	Community college (non-formal education)
Carpentry	1	2	20	Lhokseumawe PKBM Raudhatul Fata	2	Community college (non-formal education)
Beauty salon						
Beauty salon (hair cut, facial, pedicure)	1	2	30	PKPS Ulee Kareng, B Aceh	2	Community college (non-formal education)
Beauty salon (hair cut, facial, pedicure),	1	1	15	PKBM Bangkit Aceh, Aceh Besar	2	Community college (non-formal education)
Beauty salon	1	2	10	Langsa, PKBM Nur Ikhsan	2	Community college (non-formal education)