

Affaires étrangères, Commerce  
et Développement Canada

# Sulawesi Development Diagnostic: Achieving Shared Prosperity

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## Foreword

With an average annual economic growth rate of 6.8 percent, Sulawesi was recorded as the Island with the fastest growing economy in Indonesia during 2001 to 2013. The economic growth was largely contributed by the natural resources sector and the service sector. It is also driven by the expansion of capital accumulation. The high economic growth is also accompanied by rapid poverty reduction in the island. Nevertheless, concern remains over the low productivity and large income inequality. Inequality of income distribution have largely occurred due to the fact that many of the poor live in the rural and work in agriculture and informal sector. Under such circumstances, they do not have sufficient capacity to take advantage of new sectors that promote growth (such as construction and services) as these sectors are mostly found in urban areas and require skilled labor.

In the future, Sulawesi need to maintain economic growth by raising labor productivity and make growth more inclusive by expanding opportunities for poor people to access more stable and productive employment. The report recommends a number of policy priorities in order to achieve these objectives. First, given the importance of the agricultural sector and rural areas in Sulawesi, the government needs to improve the performance of the agricultural sector. At the same time, employment in non-agricultural sectors in rural areas need to be more created. Other priorities are investing in human resources by improving access for the poor to obtain basic services, particularly in health and education. Improving the quality of human resources will not only facilitate the reallocation of labor to leave the agricultural sector which has low productivity, but will also facilitate the movement of workers to work in the secondary or tertiary sectors in urban areas. Finally, the government needs to manage the infrastructure investment which aims at raising productivity in order to sustain economic growth.

We hope that this report can be of benefit for the government and people in Sulawesi. We also invite all stakeholders to work together to implement the policy recommendations contained in this report for the achievement of equitable development and welfare in Sulawesi.

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## Executive Summary

**Sulawesi has been designated as one of the economic corridor in Government of Indonesia (GoI)'s Master Plan for Acceleration and Expansion of Indonesian Economic Development (MP3EI).** The use of island-based economic corridors as the organizing unit for implementing economic development strategy in the MP3EI has created a thrust to study Indonesia's islands as one integrated entity. The development context of Sulawesi – as a highly growing region with apparent challenges to making growth more inclusive – provides further motivation to study the region given the increasing importance of understanding regional dimensions of growth and development in Indonesia.

**Sulawesi emerged as the fastest growing island in Indonesia during the period of 2001-13, with an average annual growth rate of 6.8 percent.**<sup>1</sup> Economic growth in Sulawesi has been mostly contributed by the primary and tertiary sectors. Agriculture still contributed to 21.0 percent of growth in 2001-13, although its relative importance has declined. Despite, the double-digit growth of the mining sector in Central and Southeast Sulawesi after 2008, the overall direct contribution of mining sector to Sulawesi's growth remain modest at 6.6 percent during the same period. The bulk of the expansion (52.1 percent) came from the tertiary sector (trade, restaurants, and hotels; transport and communications; and other services). This growth pattern indicates that, as happened elsewhere in Indonesia, growth in services sectors, induced by strong consumption growth have driven Sulawesi's economic expansion in recent years. In the case of Sulawesi, strong consumption growth was amplified by stronger investment growth compared to other islands of Indonesia, with majority of these investments going into natural resources sector.

**Sulawesi's strong economic growth has been largely the result of the rapid expansion in the quantity of capital and labor.** An attempt to breakdown the sources of growth in Sulawesi shows that nearly half (47.3 percent) of total growth in Sulawesi can be attributed to growth in the capital stock, while labor force growth accounted for 27.1 percent of total growth.. Meanwhile, total factor productivity (TFP), a residual measure, which often cited as a representing multi factor productivity growth (albeit imperfectly) contributed to about a quarter of total growth, reflecting relatively low gains in productivity<sup>2</sup>.

**High growth has contributed towards a reduction in the poverty rate; but poverty remains above the national level in a majority of provinces in Sulawesi and income inequality is still wide.** From 1999 to 2012, Sulawesi managed to lift more than 300,000 people out of poverty. Nevertheless, Sulawesi's growth-poverty elasticity remains below the national value indicating that growth contributes slower pace to poverty reduction in Sulawesi than in Indonesia as a whole. The poverty rate of most provinces also remains above the national level except for North and South Sulawesi. Furthermore, inequalities among the population remained high. In 2012, the top ten percent population had average per capita consumption 11 times higher than the lowest ten percent, similar to Indonesia. These poorer segments of populations in Sulawesi are characterized as overwhelmingly rural, work in agriculture informal sectors, and have low educational attainments. As such, they may have a very limited capacity to benefit from the new sectors that are driving growth (services sectors) because those sectors are predominantly urban and demand more skilled labor.

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<sup>1</sup> In some nickel producing provinces (Southeast and Central Sulawesi), short-term growth prospects after 2014 have declined due to the slowdown of mining sector growth stemming from the implementation of export restrictions on unprocessed mineral products.

<sup>2</sup> Total Factor Productivity (TFP) is the portion of output growth not explained by the growth in inputs used in production. As such, its level is determined by how efficiently and intensely the inputs are utilized in production (Comin, 2006).



**Sulawesi's challenges are also observed in other development dimensions such as lack of access to infrastructure and basic services.** The island is characterized by complicated infrastructure challenges due to the island geographical layout and a potentially difficult governance environment with its dependence on commodities. The challenges becomes augmented with the existence of widening gap between the lowest and the highest income group not only on the income dimension but also on the non-income dimension of welfare. Lack of access to some basic services is still experienced by the poorer segments of the population in Sulawesi, including access to sanitation, safe water, health services (births attended by skilled worker), and school enrollments. Sulawesi also still lags behind in some of these basic services compared with Java and Sumatera. The overall situation calls for necessary policy actions to overcome the problems, and hence broadening the ability to share the prosperity to all population.

**A number of policy priorities are worth considering in view of the underlying challenges facing Sulawesi.** Based on the trends highlighted above, the overarching objectives should aim at sustaining growth by improving overall productivity and also making growth more inclusive by providing opportunities for the poor to access more stable and productive jobs, or failing that by providing a social safety net. The strategies to achieve these goals shall be based on three policy priorities. First, due to the importance of the agriculture and rural sector in Sulawesi, increasing agricultural sector performance and creating more opportunities in rural non-farm sectors should become top priorities for both the central and local governments. Second, investing in human capital by improving access to basic services for the poor will help to make growth more inclusive. Improved human capital will facilitate labor re-allocation out of the low productivity agriculture sector and facilitate workers' mobility to work in urban areas in the secondary or tertiary sectors. Lastly, local governments should make use of their instrumental role in leveraging urbanization and providing productivity enhancing investments by focusing on infrastructure investments that link rural areas to smaller urban centers first and then to larger places second.

**The first policy priority is to sustain the improvements in agriculture and the rural sector by making it more productive and competitive.** The agriculture sector in Sulawesi still looms so large in the region's economy that it remains a crucial component in achieving shared prosperity. A closer look at the performance of the three main commodities of Sulawesi – rice, maize, and cocoa – indicates that opportunities exist for sustaining agriculture growth in Sulawesi that can be achieved by closing the yield gap between Sulawesi and the best performing regions in Indonesia. Given the limited resources that the provincial and district governments possess, priority should be given to increasing the productivity of maize and cocoa. These commodities are relatively competitive in the international and domestic markets. Meanwhile, the existing domestic production deficit implies that increasing output of these commodities will not lead to a sharp decline in the prices of these commodities. Improving yield for maize and cocoa requires improving access to finance and the provision of supporting services provided by the government. As for rice, due to Sulawesi's relatively lower cost of rice production compare to other regions in Indonesia, and high rice production surplus, Sulawesi has the potential to be Indonesia's "rice barn". But, to stay competitive with cheaper rice import, Sulawesi's rice farmers need to increase their efficiency and productivity. The public sector could help by investing in infrastructure and other supporting services, especially by rehabilitating irrigation networks, revamping agriculture R&D, and revitalizing extension services. Improving irrigation coverage would require massive investment and thus requires a concerted effort with the participation of the central government; rehabilitating irrigation networks requires less investment and should have been able to be addressed through the local budget. Revitalizing

extension services requires the provision of adequate resources by the local government, as well as the use of alternative delivery models. The “train and visit by the extension workers (LAKU/ (*Latihan dan Kunjungan*)” model need to be combined with the model that empower farmers organization to act as “knowledge broker”, by actively seeking and disseminating agriculture knowledge and technology.

**In addition to sustaining growth in agriculture sector, increasing productivity in agriculture requires labor reallocation to non-agricultural sectors..** The majority of Sulawesi’s poorest population lives in rural areas and works in agriculture sector which has the lowest labor productivity. Although agricultural-based income remains very important for rural households, income from rural non-agricultural activities also contributes significantly to total household income in rural areas. If only considering income from primary employment, income from non-agricultural sectors makes up more than half of total income in rural Sulawesi. The shift of employment to more productive sectors can provide more opportunities for the poor to diversify their income and improve their welfare. While in the past, the rural employment shift to non-agricultural work came largely from those in wealthier income groups and mostly involved young workers between 15-44 years old, now the objective is to have those in the poorer group to enter the more productive sectors, which in turn would reduce the labor surplus in agriculture, therefore increasing the sector productivity.

**Participation in rural non-agricultural employment shows positive relationship with welfare, however, since the existing employment are mostly in social services, there is a need for a more diversified rural employment supported through the enabling factors provided by the government.** Greater participation in the rural non-agricultural sector is linked with higher per capita consumption and a lower poverty rate, which suggest a strong pathway out of poverty. A large proportion of the rural non-agricultural employment comprises of wage and self-employment. From the sector wise, around one-third works in social services, followed by trade, hotel and restaurants (19 percent), transport (13 percent), and manufacturing (13 percent). Since currently most of the social services employment consists largely of public administration types of work; there is a need to create a more diversified rural employment through the creation of rural small industrial clusters that can connect to larger market in urban areas and outside the region. For this to happen, it is important for the government to provide enabling factors for participation in rural non-agricultural employment which includes education or skill, health, access to financial services, better infrastructure to support goods and services logistics and mobility of workers. Empirically, these factors are significantly and positively associated with greater participation in rural non-agricultural employment.

**In provinces where extractive industries are significant, particularly Central and Southeast Sulawesi, sharing prosperity in rural areas more widely means making extractive industries more inclusive.** Employment in the extractive sector is low and dominated by informality and low levels of education, while few local people have access to senior positions in the formal sector. While households working in the formal extractive sector are financially better off, this is not the case for the majority of households whose members work in the informal extractive sector. In addition, small-scale mining practices present risks for miners, the surrounding communities, and the wider environment. There are several ways to expand the economic opportunities so that the EI sector can contribute more to improving people’s livelihoods in the short term, this includes: (i) providing targeted professional training that could help local communities acquire the professional skills needed by the EI sector and help them access better jobs, and (ii) promoting best industry’s

Corporate Social Responsibilities practices with small- and medium-scale players, for instance, by encouraging them to provide training or health facilities to communities. Trainings could be offered to people engaging in ASM (artisanal and small-scale mining) so that they could limit environmental degradation, as well as health and safety risks downstream processing requirements issued by the Gol.

**The second priority is to invest in the human capital necessary to improve the overall labor productivity, and this needs to be supported – as highlighted above – with sufficient provision of basic services.** In terms of access to education, enrollment rates showed a marked improvement in 2001-2012, while disparities between districts and between the most vulnerable and the rest of the population have narrowed. However, the picture is rather less positive for health. Health indicators are low, and have even decreased in some cases, while inter-regional inequalities have increased. One of the most serious issues is the proportion of births that are not attended by a skilled health worker. Also of major concern, the gap between the most vulnerable and the rest has also failed to narrow over the same period.

**In access to basic services, there are still weaknesses related to several indicators of supply readiness in Sulawesi.** In education the main gap in supply readiness is found in the quality of school facilities. There is also limited access to senior high schools and properly qualified SMP teachers. Supply readiness in health highlights the unequal access to secondary health care and midwives are not available in many villages. The shortcomings in education should be addressed by providing properly qualified teachers through a review of staffing policy to allow a better distribution of qualified teachers between junior high schools and by improving the school facilities such as through the provision of laboratories for SMP and generators for electricity matters. Meanwhile to address the shortcoming in health, regions lacking a widespread presence of midwives in villages should be systematically identified. Training and incentives programs should then be set up to address this gap. The incentive could include experimenting with non-monetary incentives for all providers, especially midwives, including better career opportunities, merit-based career management, and improved in-kind benefits (such as housing and education) to encourage more deployment to remote areas. Appropriate resources to address the gap in both education and health should be allocated by sub-national governments.

**Third and finally, local governments need to make the most of urbanization and provide productivity enhancing infrastructure investments that link rural areas to smaller urban centers first and then to larger places second.** The increase in Sulawesi's urban population has been very rapid relative to the rest of Indonesia. Urbanization has positively affected economic development in Sulawesi just as it has elsewhere across the country. Greater levels of population density and attendant agglomeration economies found in urban places are associated with a higher level of economic output and faster growth. However, the constraints imposed by the rapid pace of urbanization are more severe in Sulawesi than they are elsewhere. In addition, the spillover effects of urban economic growth on rural development are weaker in Sulawesi than in the rest of the country.

**Adequate infrastructure plays an important role in the mobilization of people to urban areas and for overall economic growth, yet Sulawesi scores below average in the main infrastructure types.** Access to the major types of infrastructure, including electricity, sanitation, water, and roads, is below average in Sulawesi, and significantly worse than Java/Bali, although somewhat better than Kalimantan and eastern Indonesia, and about the same as in Sumatra. Sulawesi spends less on

infrastructure per capita than other islands in Indonesia partly because it has lower per capita revenue than other islands. The potential for Sulawesi to use fiscal reserves to finance infrastructure appears to be limited since it has significantly fewer savings than any other islands. Sulawesi's repayment record is also worse than all other islands, which makes borrowing a less viable alternative. Meanwhile, the central government has only provided moderate support for infrastructure development in Sulawesi.

**Sulawesi needs to better prioritize its infrastructure investment if it wants to create and sustain equitable service delivery and economic growth.** Sectoral priorities include sanitation and roads, both of which are below national standards. Geographic priorities include infrastructure investments within the jurisdiction of fast growing urban areas, as well as those linking urban and rural areas. Such investments would help to reduce urban congestion, which constrained economic growth, and enhance urban economic spillovers to rural areas, which are currently weak by national standards. Investing in infrastructure that connects urban and rural areas will make it easier to supply input for agriculture and rural non-farm activities as well as facilitate the marketing of agricultural and rural products. As for expanding the access to electricity in Sulawesi, it will require improvement in the nationwide policy and regulatory framework. Electricity production costs far exceed sales prices in many provinces and PLN argues that available funding is insufficient to cover the implied subsidies, hence limit the PLN's ability to invest more on electricity supply. Particularly for Sulawesi, additional investment will also be needed to replace the outdated transmission equipment and overcoming difficult geographic terrain.

**Financing the needed infrastructure improvements will require the Sulawesi's government to spend much more than it does now as well as making more effort in lending.** Sulawesi should at the very least spend more of its own-source and transfer revenues on infrastructure than the current level. Sulawesi's sub-nationals should also consider increasing their borrowing from the central government, via the Government Investment Agency (PIP) and more aggressively explore borrowing opportunities from private financial institutions, as well as bond issuances. Given the current lack of appetite among commercial banks for lending to subnational governments and weak administrative capacity, the latter two will not be easy. Finally, the central government might consider increasing its own direct investment in subnational public assets, even though this runs counter to the spirit of decentralization.



# **Chapter 1**

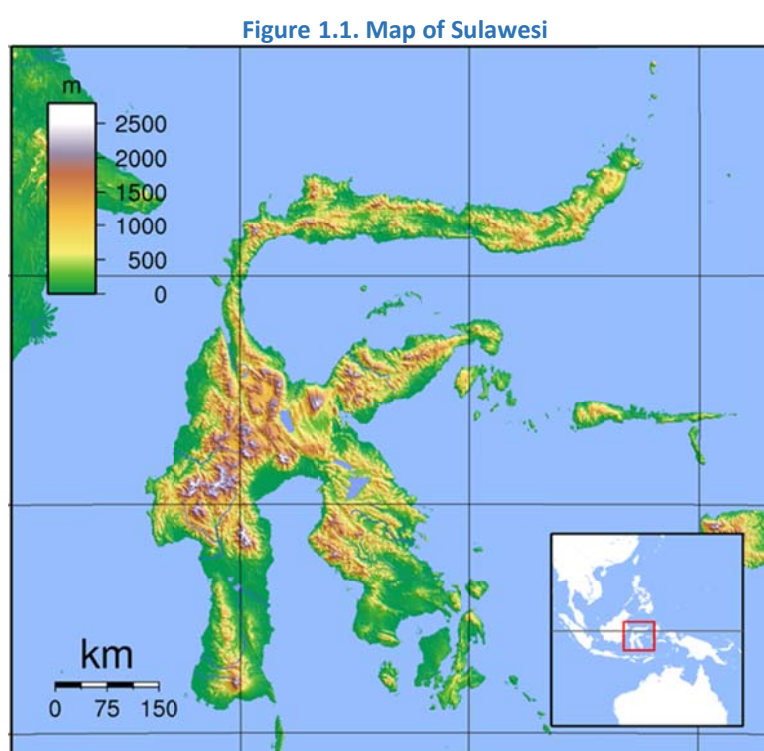
## **Introduction**





### 1.1. Context

**Sulawesi is one of the five major islands in Indonesia and is home to 17.4 million people.**<sup>3</sup> The island is shaped like a lower case “k” spread over four interconnecting peninsulas. Since the central part of the island is ruggedly mountainous, the island's peninsulas are not easily accessible to each other. Administratively, the island is divided into 6 provinces and 73 districts. The provinces are Gorontalo, South Sulawesi, Central Sulawesi, Southeast Sulawesi, North Sulawesi, and West Sulawesi. The largest cities on the island are Makassar, Manado, Palu, and Kendari. Since 2009, Sulawesi has been designated as one of the economic corridors in the Government of Indonesia’s Master Plan for Acceleration and Expansion of Indonesian Economic Development (MP3EI).



*Source: Wikipedia (<http://en.wikipedia.org/wiki/Sulawesi>)*

**Sulawesi has grown the fastest of Indonesia’s five major islands since 2001.** Between 2001-2013, the island has grown by an average of 6.8 percent per annum, significantly higher than the national average of 5.5 percent. Sulawesi’s real per capita GDP more than tripled from Rp 1.9 million in 1985 to Rp 7.1 million in 2013. Despite the speed of growth, Sulawesi’s economy remain relatively small compared to the other major islands Java and Sumatera. Sulawesi, only accounts for five percent of the national GDP in 2013, while Java generates 60 percent and Sumatera generates 21 percent of the national GDP. Sulawesi’s economy is even smaller than Kalimantan Island which contributes to 8 percent of the national GDP, despite having a smaller population than Sulawesi.

**Sulawesi’s fast economic growth has contributed towards a reduction in the island’s poverty levels.** Sulawesi’s poverty rate has reduced from 21.1 percent in 1999 to 11.8 percent in 2012 resulting in more than 300,000 people being lifted out of poverty over this period. Gorontalo achieved the largest reduction in poverty rate of Sulawesi’s six provinces. In fact, three of the five

<sup>3</sup> Other major islands are Java, Sumatera, Kalimantan and Papua.

provinces that achieved the greatest decline in poverty rate were from Sulawesi (Gorontalo, Central Sulawesi and Southeast Sulawesi).

**Despite fast economic growth and reducing poverty, many challenges remain.** These challenges include:

- **Sulawesi's poverty rate remains higher than the national average and the availability of basic services on the island still lags behind Indonesia's other major islands Java and Sumatera.** Five of the six provinces in Sulawesi have low human development indicators (exception is North Sulawesi). Moreover, people in poor communities have limited access to basic services such as sanitation, safe drinking water, and basic health services. School enrollment rate in many parts of Sulawesi remains low.
- **The gap in consumption – which reflects income – between the poor and non-poor is growing.** Between 2003-2012, the annual per capita consumption growth rate for the poorest 40% of the population was only 1.4 percent, significantly lower than the overall per capita consumption growth rate of 5.2 percent and real per capita GDP growth of 6.1 percent. The cumulative distribution of real per capita expenditure in Sulawesi between 2003 and 2012 also shows that expenditure is accelerating faster for the higher income groups.
- **High GDP growth rate in Sulawesi has yet to translate into an increase in productive jobs.** In 2012, the agriculture sector contributes to 28.5 percent of Sulawesi's GDP, absorbs 44.4 percent of total employment, and 57.5 percent of the poorest 40 percent are working in this sector. Meanwhile, the agriculture sector has the lowest labor productivity (value added per worker), and the lowest average wage of all economic sectors, indicating that the sector is in a labor surplus situation. However, the transition of employment to non-agriculture sectors has been slower than the decline in agriculture's share in Sulawesi's GDP, leaving behind a large number of workers in the agriculture sector.
- **Sulawesi's high dependency on the primary sectors (agriculture and mining).** About 33.7 percent of Sulawesi's GDP are contributed by the primary sector. Although some provinces in Sulawesi, such as Southeast and West Sulawesi are the main beneficiaries of the recent commodity boom and do not appear to be in urgent need to diversify their economy, some provinces, particularly South and North Sulawesi are getting more urbanized, and already facing issues regarding their capacity to rely on the primary sector to sustain their economic growth. In recent years, the government has stepped up the effort to make Sulawesi not only the center for production but also for processing for agriculture, plantations, fisheries, oil, gas and mining commodities. To achieve this goal, the government has introduced several policies such as an export tax and an export ban for raw produce of cocoa and rattan, and has introduced the designation of integrated economic development area (KAPET) and special economic zone (KEK) in Sulawesi. However, up until now, Sulawesi does not seem to have benefited from these new initiatives. New processing plants that emerged after the introduction of the export tax policy are mostly located in Java. A discussion with major manufacturer indicates that they are still reluctant to locate their plants in Sulawesi due to infrastructure concerns.
- **Sulawesi faces infrastructure challenges.** In 2009, 47.2 percent of district roads in Sulawesi were in poor condition, significantly worse than Java where 27.7 percent of roads were rated as poor. The private sector reports that electricity supply is poor, although may improve as several

planned power plants become operational Intra-Sulawesi transport links are still weak. The mountainous central part of the island means that there is no single axis that connects the various the corners of Sulawesi. As a result, land transportation remains difficult and fragmented. Exporters from Gorontalo or Central Sulawesi still use Surabaya port as their main cargo consolidation hub instead of the nearer port of Bitung in North Sulawesi or Makassar, due to the presence of better infrastructures in Surabaya.

- **New natural resource projects may cause governance, wealth management, and environmental problems.** Sulawesi's natural resource sectors is growing with the initiation of several huge mining explorations projects including gas exploration in Central Sulawesi and South Sulawesi; and gold mining in North Sulawesi and Gorontalo. Based on experience in other regions, natural resources sector growth has not always been inclusive to create benefits for the local community and the same time produced environmental and governance costs. Hence, it is important for the island to prepare for the potential governance and wealth management issues could emerge.

**Sulawesi's development context as a fast growing region but with growth is not always inclusive makes it an important region to study.** Indonesia's decentralization means that policies that influence growth and development are increasingly defined at the regional and local levels. A one size fits all approach analysis may produce policy recommendations that are not appropriate for all regions in Indonesia. Understanding the factors driving Sulawesi's growth, and its impact on poverty reduction and livelihood improvement, as well as identifying actions that could make growth sustainable and inclusive is vital not only to inform development policy and programming in Sulawesi but also to draw broader conclusions relevant to other regions in Indonesia.

## 1.2. Analytical framework

**The Sulawesi development diagnostic aims to examine the island's growth drivers and constraints, analyze why growth is not inclusive and what segment of the population is lagging.** This report looks into the pace and pattern of growth and examines benefits different segments of the population derived from Sulawesi's economic growth, for example, poor versus non-poor. The report also analyzes why growth has not been unconvincingly inclusive, particularly in terms of equality of opportunity, poverty reduction and employment creation. The analysis also identifies constraints to sustained and inclusive development such as education and health outcomes. The analysis will focus on the agriculture, extractive industries and infrastructure in its examination of drivers and constraints of growth.

**This report matches the development challenges identified with a discussion of the current policies and propose potential solutions for Sulawesi.** This analysis treats Sulawesi as a single economic entity to promote an integrated view of the island's economy. An island-based approach consistent with the central government's regional plans used in its medium term planning framework (RPJM) and in the Master Plan for Acceleration and Expansion of Indonesia Economic Development (MP3EI) where Sulawesi Island is designated as an economic corridor. A regional approach fosters more coordinated and integrative policy responses across provinces in Sulawesi. This analysis also recognizes the variation between provinces in Sulawesi. The mapping of Sulawesi's challenges with the relevant policy discussion is presented in Figure 1.2 below.

The research in this report is based on with local stakeholder interviews and analysing an extensive set of databases and secondary materials. Secondary data were sourced from Indonesia's central statistics agency (BPS) databases including national income, population census, the national labor survey (Sakernas) and households surveys (Susenas), and the villages' census (Podes). Extensive consultations with relevant local stakeholders were also conducted.

Figure 1.2. Mapping between identified challenges in Sulawesi's economy and its policy discussion



### 1.3. Organization of the report

The report is organized into ten chapters broken into two parts. Following the introductory chapter, Part one of this report comprises of three chapters that analyze the challenges for achieving inclusive growth in Sulawesi. Chapter 2 provides an overview of Sulawesi' growth pattern and growth drivers; Chapter 3 presents analysis showing that despite reduction in poverty inequality has increased; Chapter 4 identifies why growth has not been more inclusive and what challenges Sulawesi faces. Part two of the report comprising of Chapter 5-9 discusses each challenge in more detail and proposes policy measures for each challenge. Chapter 5 analyzes the first challenge of how to make agricultural sector more productive in order to increase income for labor participants in the sector. This chapter analyzes the agriculture sector through the lens of Sulawesi's three main commodities: rice, cocoa, and maize. Chapter 6 analyzes the challenge of developing the rural non-farm sector so that it can generate alternative and higher income employment for the rural poor. Chapter 7 discusses why Sulawesi's extractive industry is not inclusive and offers ideas for improvement so that more communities benefit from its growth. Chapter 8 analyzes why health and education outcomes are low in Sulawesi and identifies the main constraints for effective service delivery, particularly for the vulnerable and marginalised population. Chapter 9 assesses Sulawesi's

infrastructure challenges and how increased access to public infrastructure is crucial for ensuring Sulawesi achieves sustained economic growth. Chapter 10 will conclude with a conclusion of the key priorities for Sulawesi and a discussion on the future prospects of the region.



## **Part 1: Challenges to inclusive economic growth in Sulawesi**

Since 2001, Sulawesi has been one of the fastest growing regions in Indonesia. Part 1 consists of three chapters: Chapter 2 sets out the drivers responsible for that growth but in Chapter 3 this report argues that growth has not been unconvincingly inclusive. Chapter 4 then identifies why growth has not been inclusive in Sulawesi.





## **Chapter 2**

# **Sulawesi's Economic Growth Drivers**



Since 2001, Sulawesi's economy has been growing faster than any other island region in Indonesia. Sulawesi has outperformed the rest of Indonesia achieving an average growth rate of 6.8 percent per year over the period 2001-13, significantly higher than the national average annual growth rate of 5.5 percent. Moreover Sulawesi has been the fastest growing island region in Indonesia since 2006<sup>4</sup>.

Figure 2.1. Annual growth rate, Indonesia and Sulawesi, 1986-2013



Note: Figures for 2000 have been adjusted using 1993 constant.

Source: World Bank staff calculations based on BPS data

The contribution of tertiary sectors, including, trade, restaurant, hotel, transport, communication, and services to Sulawesi economic growth has been increasing. Tertiary sectors contribute to 52 percent of economic growth during 2001-2013 period, its contribution increased from 47.9 percent of the growth in 2001-2005 period to 53.5 percent in 2006-2013. The trade, hotel, and restaurant sector is the sector that showed the largest increase in its contribution to growth, from 16.1% during 2001-2005 to 19.2% during 2011-2013 (Figure 2.2).

The agricultural sector remains one of the largest contributor to GDP growth in Sulawesi, but its influence is declining. In 2013, agriculture represented 16.1 percent to Sulawesi's total growth rate and is the largest sector in the region. Its contribution to GDP growth has been decreasing, falling from 27.2 percent of the total growth rate in 2001-05, to 19.7 percent in 2006-10, and just 17.2 percent in 2011-13. This is because the agriculture sector experienced the slowest average annual growth rate of only 4.6 percent between 2001-2013.

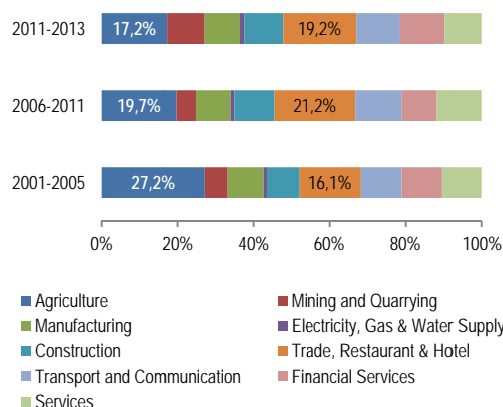
The tertiary sectors may have benefited from spillovers from the commodity boom. Sulawesi experienced a local "commodities boom" between 2006-2010. During this period, Sulawesi's terms of trade with the rest of Indonesia increased by 2.5 percent.<sup>5</sup> The positive terms of trade reflect the relative increase in the price of Sulawesi's products - mainly consisting of natural resource-based commodities - in comparison with the prices of goods in the rest of Indonesia. According to the literature, the increased capital inflows from

<sup>4</sup> Except in 2009, when growth in Papua outpaced Sulawesi's growth

<sup>5</sup> Terms of Trade gain is measured by subtracting the rate of growth of real RGDP (deflated by regional GDP deflator) from nominal RGDP deflated by national CPI (reflecting the general price index of product produced all over Indonesia), if national CPI deflated RGDP is higher than real RGDP then terms of trade gain is positive. This procedure is used by Coulombe (2011) for estimating terms of trade changes in Canadian provinces.

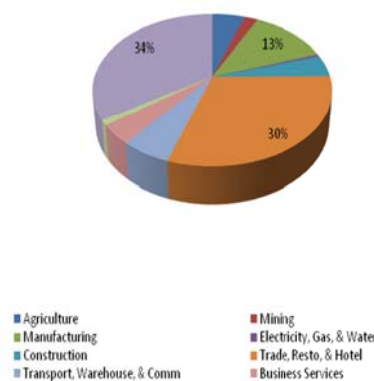
increased commodity revenues lead to higher demand in non-tradable sectors for goods and services such as construction.

**Figure 2.2. Sectoral contribution to economic growth in Sulawesi, 2001-13**



Source: World Bank staff calculations based on BPS data.

**Figure 2.3. Sectoral allocation of credit in Sulawesi, 2001-07\***

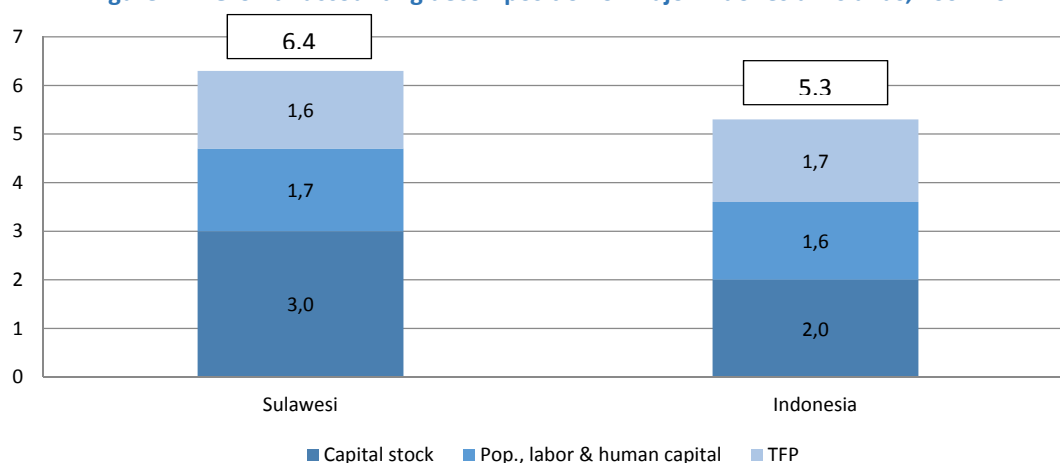


Source: World Bank staff calculations based on BI data \*cumulative during 2001-07, excluding others, unidentified sector.

**The tertiary sectors also benefited from a “credit boom” that happened over the same period as the commodities boom.** Credit from the banking sector grew by 20 percent in Sulawesi during 2001 to 2010, the second highest among island region in Indonesia. Figure 2.3 shows that the “trade, hotels and restaurants” sector — one of the main components of the tertiary sector — was a key beneficiary of credit from the banking sector in 2001-07.

**Sulawesi’s economic growth over 2001-2010 was underpinned more by capital accumulation than productivity gains.** Economic growth stems from two sources: (i) production input accumulation, which may include accumulation of human capital or accumulation of capital (for example machines, buildings and roads); and (ii) increase in productivity (or output per unit of input) as a result of better management, better policies, and technological innovation. Productivity gains, as measured by the residual or total factor productivity (TFP) only contributed to 25.6% of total growth in Sulawesi between 2001-2010. This means that of the 6.4 percent average annual GDP growth between 2001-2010, 1.6 percent was derived from the TFP. Productivity gains in Sulawesi were lower than the national average where 31.5 percent of total growth was from the TFP. In comparison, growth in capital stock—or capital accumulation—accounted for nearly half of Sulawesi’s growth during the same period. Growth in capital stock contributed 3.0 percentage points, or about 47.3 percent of total Sulawesi growth. Growth in human capital (education adjusted) contributed 1.7 percentage points, or 27.1 percent of total growth.

Figure 2.4. Growth accounting decomposition of major Indonesian islands, 2001-10

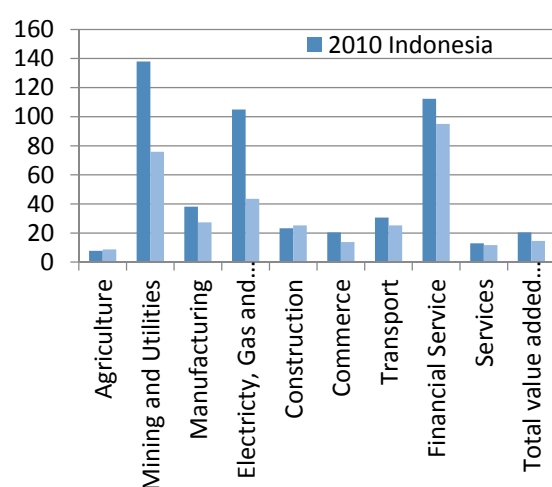


Source: World Bank staff calculations based on BPS data.

**Both labor and capital productivity in Sulawesi increased in 2001-2010.** Capital to output ratio has been decreasing in Sulawesi since 2001 but then increased in 2009-10. A reduction in capital to output ratio means that less capital was needed to produce one unit of value-added. Labor productivity grew by 43 percent in Sulawesi in 2001-10, corresponding to Rp 4.4 million (in real 2010 prices) per worker. This increase was higher than for Indonesia as a whole, where labor productivity grew by 32 percent. This trend is consistent across all sectors except for agriculture and construction, in which Sulawesi has achieved higher labor productivity (Figure 2.4). Sulawesi's labor productivity is only three-quarters of the overall Indonesian labor productivity, however.

**Forty-seven percent of the increase in labor productivity in Sulawesi was due workers moving to more productive sectors (referred to as inter-sectoral shifts).** The remaining fifty-three percent was the result of increased labor productivity within the sector (Table 2.1).

Figure 2.5. Value-added per worker, Sulawesi and Indonesia, 2010



Source: World Bank staff calculations based on Sakernas/BPS data 2008-2010.

Note: Figures are in million IDR.

Table 2.1. Decomposition of change in total value-added per worker, 2001-10

	Contribution to change in total VA per worker (%)
Agriculture	30.3
Mining and Utilities	-27.0
Manufacturing	8.6
Electricity, Gas and Water Supply	-0.9
Construction	2.5
Commerce	18.9
Transport	7.9
Financial Service	10.8
Services	2.2
<b>Intra-sectoral Productivity Changes</b>	<b>53.3</b>
<b>Inter-sectoral shift</b>	<b>46.7</b>
<b>Total change in output per worker</b>	<b>100.0</b>

Source: World Bank staff calculations based on BPS data





# **Chapter 3**

## **Economic growth in Sulawesi has not been unconvincingly inclusive**

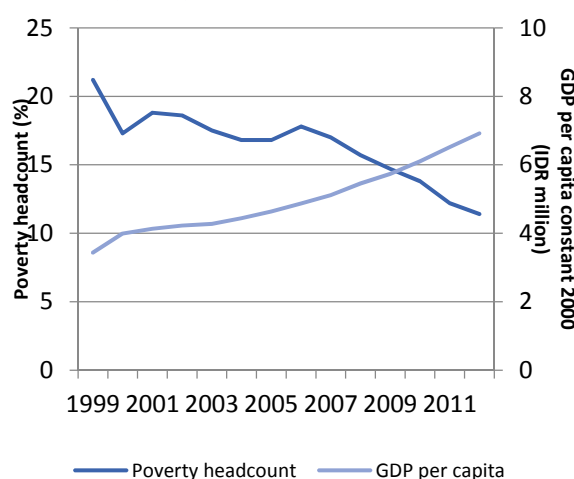


Not all segments of society benefited equally from Sulawesi's economic growth. This section discusses how inequality has actually increased during Sulawesi's decade of boom and identify who was left behind.

### 3.1. Although poverty is reducing, income inequality is rising

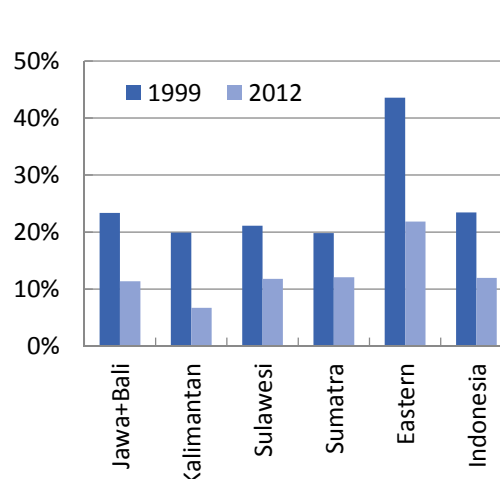
**Sulawesi has achieved significant poverty reduction during the period of high economic growth (Figure 3.1).** From 1999 to 2012, Sulawesi's real per capita GDP increased from Rp 3.4 million to Rp 6.9 million. Over the same period, Sulawesi's poverty rate reduced from 21.2 percent to 11.8 percent, lifting more than 300,000 people out of poverty. The pace of poverty reduction in Sulawesi was slightly slower than the national average (Figure 3.2). Across Indonesia, poverty declined by 11.5 percentage points over 1999-2012, compared to 9.3 percent in Sulawesi. Poverty reduction has also not been even across provinces in Sulawesi. Within Sulawesi, Gorontalo achieved the largest reduction in poverty amongst Sulawesi's six provinces.

**Figure 3.1. Sulawesi's poverty reduction and GDP per capita over the last decade**



Source: World Bank staff estimates based on BPS data.

**Figure 3.2. Poverty headcount by island, 1999 & 2012**



Source: World Bank staff estimates based on BPS data.

**The depth of poverty has drastically decreased across Sulawesi.** The Poverty Gap Index (P1) estimates the depth of poverty by considering how far, on average, the poor are from the poverty line. The higher the P1, the further the poor is away which reduces the likelihood that they will be lifted out of poverty quickly. Table 3.1 shows that similar to the national trend P1 has reduced in all six Sulawesi provinces. Southeast Sulawesi's P1 fell below the national average for the first time in 2013. Although the largest reduction in P1 took place in Gorontalo, the depth of poverty in the province remains the highest in Sulawesi.

**The severity of poverty also declined dramatically in Sulawesi.** The Squared Poverty Gap Index (P2) measures the severity of poverty by providing more weight to the poorest of the poor. Similar to the depth of poverty trend, the severity of poverty in all Sulawesi provinces decreased significantly; Southeast Sulawesi's P2 fell below the national average for the first time in 2013; and although Gorontalo's P2 decreased by 65% between 2004-2013, the largest reduction in Sulawesi, the province's severity of poverty remains the highest in Sulawesi and is significantly higher than the national average.

**Table 3.1. Poverty gap index (p1) and poverty gap squared index (p2) in provinces in Sulawesi**

	2004	2007	2009	2011	2012	2013
<b>Poverty gap index (p1)</b>						
North Sulawesi	1.80	1.88	1.55	1.1	1.18	1.16
Central Sulawesi	4.03	4.46	4.09	2.76	2.82	2.28
South Sulawesi	2.42	2.6	2.08	1.65	1.68	1.65
Southeast Sulawesi	3.80	4.33	3.44	2.61	1.92	1.83
Gorontalo	7.00	5.57	4.59	3.72	3.21	3.22
West Sulawesi		2.59	2.47	2.32	1.74	1.30
National	2.89	2.99	2.50	2.08	1.90	1.89
<b>Squared poverty gap index (p2)</b>						
North Sulawesi	0.54	0.47	0.36	0.24	0.30	0.28
Central Sulawesi	1.14	1.38	1.37	0.75	0.82	0.53
South Sulawesi	0.63	0.68	0.55	0.40	0.42	0.40
Southeast Sulawesi	0.98	1.21	0.98	0.69	0.49	0.43
Gorontalo	2.30	1.68	1.27	1.00	0.84	0.85
West Sulawesi		0.57	0.60	0.61	0.40	0.27
National	0.78	0.84	0.68	0.55	0.49	0.48

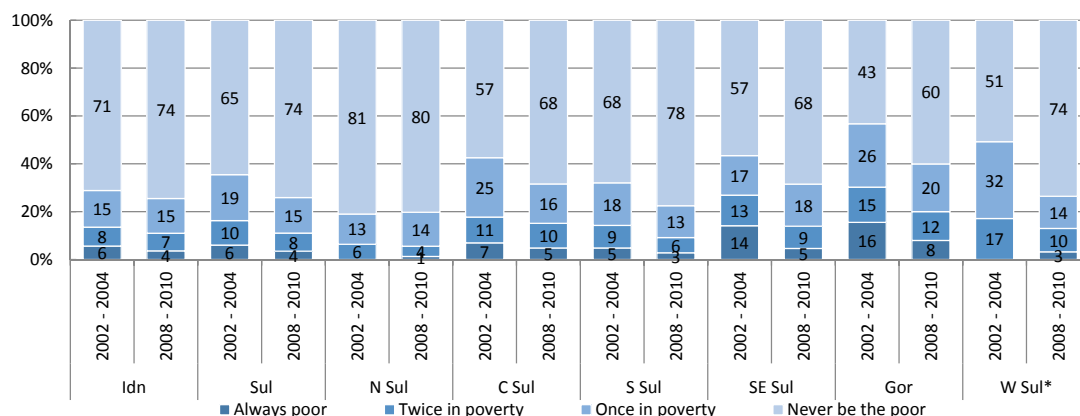
Source: BPS.

Note: Poverty gap index (p1) estimates the depth of poverty by considering how far, on the average, the poor are from the poverty line. Squared poverty gap index (p2) measures the severity of poverty by providing more weight to the poorest of the poor.

**Sulawesi's population remains extremely vulnerable with 22.5 percent of the population experienced falling into poverty at least once in 2008-10.<sup>6</sup>** Nationally, 21.9 percent of the population has fallen at least once into poverty over the same period (Figure 3.3). This means that a significant proportion of Sulawesi's population is susceptible to falling back into poverty, particularly if an unforeseen shock such as a natural disaster or a financial disaster occurs. Moreover, 3.5 percent of Sulawesi's population was considered persistently poor in 2008-10 because they never "fell out" of poverty during those three years. The highest share of persistent poor was in Gorontalo (8 percent) and in two provinces, North Sulawesi and West Sulawesi, the proportion of persistent poor population actually increased in 2008-2010.

<sup>6</sup> The estimation used the Susenas panel data of 2008-2010.

Figure 3.3. The vulnerable in Sulawesi



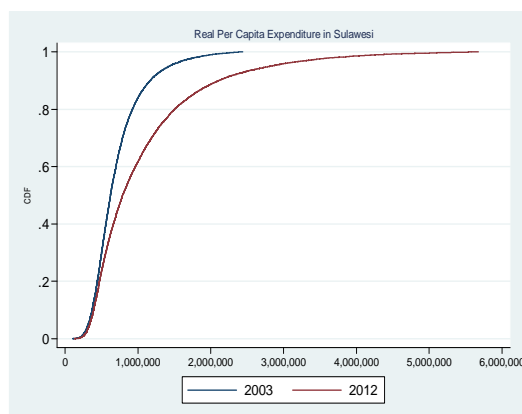
Source: World Bank staff estimates based on Susenas panel/BPS data 2008-10.

Note: \*West Sulawesi figure is estimated using the districts that were previously located under South Sulawesi Province.

**Inequality in Sulawesi has been increasing.** Although real monthly per capita consumption in Sulawesi has increased from Rp 245,996 to Rp 387,750 between 2003 and 2012, the distribution of consumption patterns has been uneven. The wealthiest 1 percent of the population had a real per capita consumption level almost 37 times higher than the poorest one percent in 2012. Growth in per capita expenditure for the poorest 40 percent of the population in Sulawesi is only 1.4 percent, lower than the overall average of 5.2 percent and significantly lower than the per capita expenditure growth rate of the richest 1% of 15.7 percent. The cumulative distribution of real per capita expenditures in Sulawesi between 2003 and 2012 shows that per capita expenditures increased faster for higher percentiles (Figure 3.4). The growth of per capita consumption between 2003 and 2012 also shows that the gap between the lower and higher percentiles of the population has widened

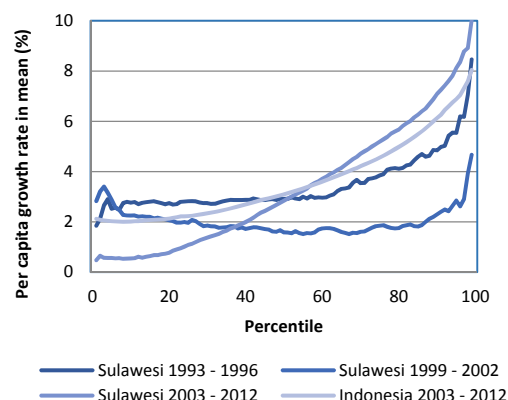
**The poorest 40% of the population (from herein referred to as the “poorest 40”), of which 33.9 percent are poor, is lagging behind other groups in Sulawesi.** The 7.1 million people part of the *poorest 40* is the focus of the overall analysis. The rest of this Chapter describes this population: where they live, age, education level and employment.

Figure 3.4. The cumulative distribution of Sulawesi



Source: World Bank staff estimated based on Susenas/BPS data.

Figure 3.5. The expenditure growth incidence curve of Sulawesi



Source: WB staff estimated based on Susenas/BPS data.

### 3.2. The poor mostly live in rural areas

The majority of the *poorest 40* in Sulawesi reside in rural areas and is urbanizing at a slightly slower pace than the overall population. In 2012, of the 7.1 million people in the *poorest 40*, 81.4 percent lived in rural areas, reduced from 85.5 percent in 2003 (Table 3.2). In comparison the overall share of the population living in rural areas is 66.3 percent in 2012, reduced from 72 percent in 2003. The decline of the rural population in the *poorest 40* was slower (4.1 percentage points) than the overall population (5.7 percentage points). The relatively small number of urban people in the *poorest 40* percent was mostly located in provincial or district capitals.

Table 3.2. Rural vs. urban within the poorest 40 percent

	Share of population		Share of lowest 40 percent		Mean per capita consumption of lowest 40 percent (Rp/month)	
	2003	2012	2003	2012	2003	2012
Rural	72.0	66.3	85.5	81.4	426,141	459,893
Urban	28.0	33.7	14.5	18.6	447,723	526,413

Source: World Bank staff estimates based on Susenas/BPS data.

A large number of the *poorest 40* population lives in South Sulawesi. South Sulawesi is the most populated province within the island, with 46 percent of the *poorest 40* lives in this province. A large numbers of the *poorest 40* also live in Central Sulawesi and Southeast Sulawesi. These three provinces account for 73 percent of the total *poorest 40* population. Nevertheless, in terms of the prevalence of the *poorest 40* to each province population, the highest prevalence was found in Gorontalo, with almost 50 percent of population in this province fell under this group. Both high incidence and prevalence of the *poorest 40* are equally relevant for policy discussions: high incidence locations may call for more sophisticated targeting as they are likely to be better-off regions with better public services and facilities, while high prevalence locations are likely to be lagging behind on most development dimensions.

### 3.3. Most of the poorest 40 are at a productive age, with education below secondary school and working in agriculture

The *poorest 40* are generally in a medium-sized household with a man as a head of the household. Around 87 percent of the *poorest 40* had a man as the head of the household. The *poorest 40* were almost always in medium to large households. Around 60% of this group was in households with 3-5 people and 33 percent was in households with more than 6 people (Table 3.3). Large household size is usually because of the household's choice to have many children; dependents in large households, may also include parents-in-law, grandchildren and other family relatives.

Half of the population in the *poorest 40* is of productive age with almost similar ratios of women and men. Table 3.3 shows that 55 percent of the *poorest 40* were within the productive age of 15-60 years old, 39 percent were below the age of 15, with only a small share or 7 percent in the elderly group (Table 3.3). With such a large proportion of the

*poorest 40* in the productive and young age group, Sulawesi could benefit from a demographic dividend if there is an increase in the availability of employment in Sulawesi.

**Table 3.3. Characteristics of the poorest 40 percent in Sulawesi, 2012**

	Percentile ≤ 40		40 - 100		Overall population	
	Numbers	(%)	Numbers	(%)	Numbers	(%)
<b>Gender of household head</b>						
Male	1,251,899	86.7	2,345,666	84.1	3,597,565	85.0
Female	191,238	13.3	444,694	15.9	635,932	15.0
<b>Household Size</b>						
<3 persons	96,730	6.7	604,581	21.7	701,311	16.6
3-5 persons	870,257	60.3	1,756,337	62.9	2,626,594	62.0
≥ 6 persons	476,150	33.0	429,442	15.4	905,592	21.4
<b>Demographic group</b>						
< 15 yrs old	2,765,660	38.6	3,036,176	28.2	5,801,836	32.4
Male	1,437,324	20.0	1,549,498	14.4	2,986,822	16.7
Female	1,328,336	18.5	1,486,678	13.8	2,815,014	15.7
15 - 30 years old	1,636,813	22.8	2,806,438	26.1	4,443,251	24.8
Male	800,873	11.2	1,402,119	13.0	2,202,992	12.3
Female	835,940	11.7	1,404,319	13.1	2,240,259	12.5
30 - 45 years old	1,514,292	21.1	2,506,720	23.3	4,021,012	22.4
Male	749,099	10.4	1,247,498	11.6	1,996,597	11.1
Female	765,193	10.7	1,259,222	11.7	2,024,415	11.3
45 - 60 years old	756,167	10.5	1,589,314	14.8	2,345,481	13.1
Male	372,374	5.2	789,393	7.3	1,161,767	6.5
Female	383,793	5.4	799,921	7.4	1,183,714	6.6
>60 years old	500,052	7.0	820,281	7.6	1,320,333	7.4
Male	221,754	3.1	371,926	3.5	593,680	3.3
Female	278,298	3.9	448,355	4.2	726,653	4.1

Source: World Bank staff estimates based on Susenas/BPS data.

**The work force in the *poorest 40* in Sulawesi is poorly educated, and on average only had 7 years of schooling.** Figure 3.5 shows that 23 percent of the total labor force in the *poorest 40* (4.4 million people) had, on average, less than 6 years of schooling and did not complete primary school. Around 45 percent were in school for an average of 6-9 years (it typically takes 9 years of schooling to complete junior secondary school). Only about 10 percent of the labor force in the *poorest 40* went to school for an average of more than 12 years. Moreover, 32 percent of head of households' highest education attainment is primary school and a further 30 percent had never even completed primary school. More shockingly, a further 12 percent of the *poorest 40* work force have never been to school.

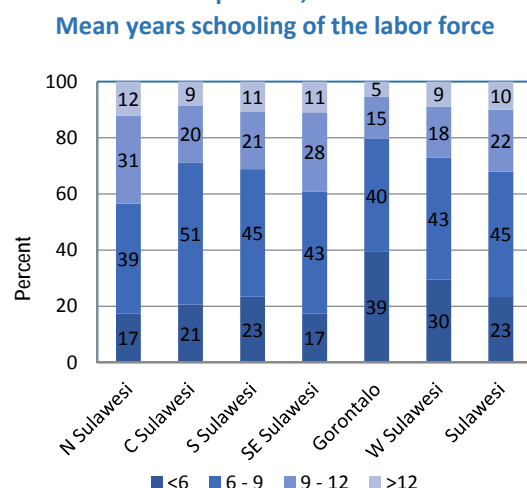
**Almost 39 percent of the work force in the *poorest 40* is unemployed and the majority of those with employment work in agriculture.** Almost 58 percent of the employed labor force in the *poorest 40* are working in agriculture, with another 11.7 percent working in trade, hotel, and restaurant, 7.2 percent employed in the construction sector and 6.3 percent working in the construction sector (Figure 3.6).

**The majority of *poorest 40* are employed in the informal sector.** Over two-thirds of the employed work force in the *poorest 40* was either self-employed (22.8 percent), employers assisted by temporary/unpaid workers (21.9 percent) or working with family in a

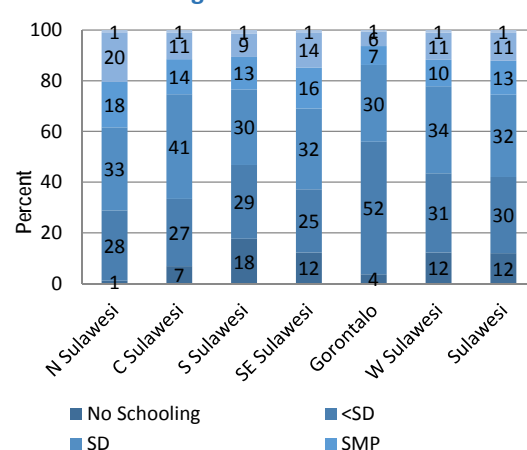


temporary/unpaid arrangement (21.0 percent). The large proportion of the *poorest 40* with employment working in the informal sector under conditions of uncertainty is potentially one of the key reasons for the low per capita consumption growth rate for the poorest 40 percent of Sulawesi's population.

**Figure 3.6. Education attainment of the poorest 40 percent, 2012**

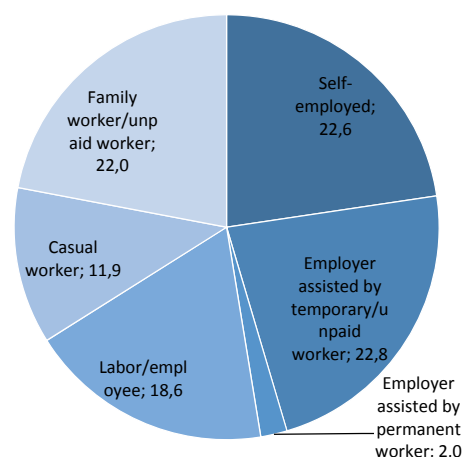
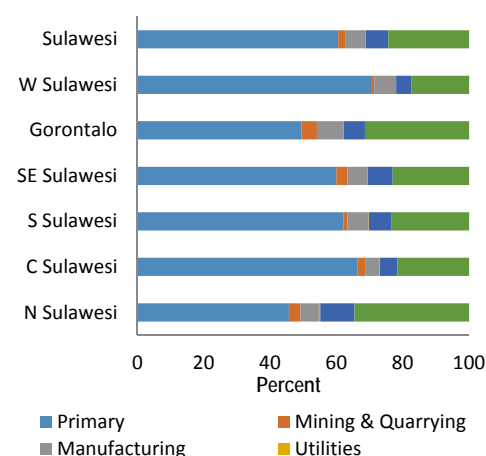


**Education background of the household head**



Source: World Bank staff estimates based on Susenas/BPS data.

**Figure 3.7. Sector and status of employment in the poorest 40 percent, 2012**



### 3.4. Households in the poorest 40 percent come from a variety of backgrounds

The underlying characteristics of households that are in the *poorest 40* vary. Some households are poor because of insufficient employment opportunities, perhaps because of low education levels. Other households are poor because income generated through their employment is insufficient. This section analyzes household profiles by grouping them into clusters based on six characteristics: level of education, employment sector, access to health services, unemployment level, reside in rural or urban area and whether work in the formal or informal sector. The analysis is conducted using data from the national household survey (Susenas) (Table 3.4).

**Table 3.4. Characteristics utilized to construct poverty clusters in Sulawesi, 2012**

Characteristic	Description	Mean value of the poorest 40 percent	Mean value of the population
<b>Low education of labor</b>	Maximum education level attained by any labor member of a household is junior high school level.	40.62	34.77
<b>Working in agriculture sector</b>	Household has at least one labor member whose primary employment is in agriculture sector.	48.98	36.31
<b>Birth attended by professional paramedics</b>	Household has access to professional paramedics (health)	60.59	68.70
<b>Unemployed household members</b>	Ratio of unemployed members in the household to total household members (excluding those in schools)	37.83	35.24
<b>Lives in rural area</b>	Percentage of households living in rural area.	76.78	72.28
<b>Informal worker</b>	Share of employed workers working without receiving income or assisting a family business and entrepreneurs assisted by temporary worker	40.57	35.71

Source: World Bank staff estimates based on Susenas/BPS data.

**Households in Sulawesi's poorest 40 can be grouped into three different clusters** (Table 3.5). The characteristics of each group differ quite significantly:

- **Cluster 1** (higher unemployment, non-agriculture, good access to health services, more urban, formal sector): This cluster represents 41 percent of the population of the *poorest 40*. Almost half of this group lives in urban areas with the remaining residing in areas close to urban centers. Probably due to their proximity to urban areas, the majority of people in this cluster have good access to health services. Almost half of the population is unemployed, much higher than the other two clusters. Those with employment predominantly work in non-agriculture sectors (37 percent) and with formal employment (78 percent). Around 40 percent of this cluster has a low level of education, similar to other clusters.
- **Cluster 2** (mixture of agriculture and non-agriculture based employment, average access to health services, informal sector, rural): 48 percent of the *poorest 40* are in this cluster. They largely live in rural areas with a relatively equal proportion of people working in agriculture and non-agriculture sector. Only 34 percent is unemployed, which is less than cluster 1. This group's employment profile suggests that many people are transitioning from agriculture sector to non-agriculture sectors. Around half of the people in this cluster have access to health services.
- **Cluster 3** (agriculture, informal, limited access to public service, rural): only 11 percent of the *poorest 40* are in this cluster. People in this cluster mostly reside in rural areas and work in the agriculture sector. This cluster has the lowest unemployment rate but also the worst access to health services.

**Table 3.5. The poorest 40 percent clustering group in Sulawesi, 2012**

Cluster	Low Level of Education	Work in Agriculture	Access to Health	Unemployment Rate	People Lives in Rural Area	Informal Worker	% poorest 40 percent
1	40.24	36.78	77.65	44.68	56.30	22.06	41.26%
2	41.63	53.69	52.60	34.25	91.06	50.23	47.52%
3	38.72	70.23	35.09	28.68	93.34	65.26	11.22%

*Source: World Bank staff estimates based on Susenas/BPS data.*

**Despite the variation across clusters, a commonality emerges which is low education levels.** The deficiency in education is evident as clusters that have a higher proportion of the work force in the formal sector also have significantly higher unemployment levels. Moreover, even those who are employed in the non-agriculture sector are likely to be working in low skilled jobs because of the low education attainment.



## **Chapter 4**

### **Challenges to inclusive growth in Sulawesi**



This chapter identifies five key reasons to explain why fast growth in Sulawesi has taken place at the same time as increasing inequality.

#### 4.1. Slower growth in the agricultural sector

**Growth in the agricultural sector is key to reducing poverty in Sulawesi.** Between 2001-2011, agriculture sector GDP growth in Sulawesi was positively correlated with a reduction in poverty. That is, a one percent growth in the agricultural sector is associated with a 0.04 percentage point reduction in the poverty rate. The impact of agriculture GDP growth is not as strong as service sectors whereby a one percent growth in the service sector is positively correlated with a 0.07 percent reduction in the poverty rate. This report's analysis is consistent with several existing studies, for example by Suryahadi, Sumarto, and Suryadharma (2009) and Suryahadi and Hadiwijaya (2011)), that also concluded the major role the agriculture sector growth played in reducing poverty in rural areas and concurred with the finding that service sector growth has a bigger impact to poverty reduction.

**Agricultural sector performance is important for reducing poverty because the majority of the poor are employed in the sector.** Although it only contributed 28.5 percent to the region's GDP, the agricultural sector provided 44.4 percent of Sulawesi's employment in 2012. Agriculture is the main source of livelihood for the poor in Sulawesi – 67.4 percent of the poor earned their income from this sector, according to data from the 2012 household survey (Susenas). The poverty rate of the population working in the agricultural sector is 14.7 percent, which is 25 percent higher than the poverty rate for Sulawesi (11.8 percent)

**Agricultural sector income is low because labor productivity in the sector remains low.** The challenge for those working in agriculture is that labor productivity, as measured by the average value-added per worker, is a major determinant of income. The correlation between income and labor is particularly strong if the farms are smallholdings and are labor intensive, as is the case in Sulawesi<sup>7</sup> (De Janvry and Sadoulet, 2010).

**The surplus of agriculture labor is another reason for low productivity and income in the sector.** The share of agricultural workers in Sulawesi's total employment is 1.5 times higher than agriculture's share in the region's GDP in 2012, suggesting that an employment surplus exists. Thus, improving labor productivity can be achieved through either increasing value-added or reducing the number of workers. To illustrate the significance of re-allocation of labor out of the agriculture sector for improving agriculture labor productivity, we could compare agriculture labor productivity growth if there is a change in the share of agriculture labor in total employment or if the share of labor remains the same. In total, agriculture labor productivity growth was increased by 64.6 percent between 2001 and 2012. However, if the share of agriculture labor in total employment remains the same as in 2001, the growth in agriculture labor productivity would only be 27.9 percent.

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<sup>7</sup> Smallholder farmer is defined as those that have the landholding of less than 2 ha, and depend on family members to fulfill the need of their labor force (IFAD, 2009). Majority of Sulawesi's farmers can be considered as smallholder farmers, average land holding in the provinces of Sulawesi, according to agriculture census of 2013, is between 1.06 ha (Gorontalo) and 1.56 (Southeast Sulawesi), whereas 84 percent of farmers are either self-employed, assisted by temporary workers, or themselves are family and temporary workers.

Sulawesi needs to improve the income of those working in the agriculture sector through improving productivity and reducing the sector's labor surplus. Chapter 5 analyzes Sulawesi's agricultural sector and proposes policy solutions to improve productivity.

#### 4.2. Transition to rural non-agricultural sectors have been slow

**The majority of those working in agriculture reside in rural areas.** Most of Sulawesi's poorest population lives in rural areas. In 2012, 5.7 million people or 80.7 percent of the population in the *poorest 40* resided in rural areas, which was equivalent to almost half of Sulawesi's rural population. Seventy percent of the rural *poorest 40* are employed in the agriculture sector. Of this figure, around 85 percent is employed in the food crops and estate crops sub-sectors<sup>8</sup>. Only 15 percent works in the fishery, livestock, and forestry sub-sectors. Most of them are informal workers who work as family/unpaid workers or as an employers assisted by temporary labor. Less than 6 percent is employed as wage employees or as employers who are assisted by permanent labor. In addition, about half of them work less than 35 hours per week. Since an agricultural labor surplus is one of the reasons for Sulawesi's low average agricultural income, more workers need to shift to non-agricultural sector employment so that the *poorest 40* can diversify their income sources.

**Shifting rural agricultural workers to non-agricultural sectors has been slow, while many rural households rely on income from non-agricultural sector.** Though rural employment is concentrated in agriculture, an increase in the share of non-agricultural sector employment is observed over time. In 2011, 40 percent of the labor force was involved in the non-agricultural sector as the first job. Meanwhile, 31 percent was involved in non-agricultural activities as a second job. The share of rural employment in non-agricultural sector increased by 13 percent between 2001 and 2011, compensating for the decline in agriculture employment. Meanwhile, the contribution of non-agricultural income is relatively high for rural households. If only considering income from primary employment, income from non-agricultural sectors makes up 55 percent of total income in rural Sulawesi, and on average contributes 42 percent to individual household income (Susenias, 2011). Taking into account a whole range of income a household receives, however, income from non-agricultural sources contributes 67 percent of total rural income in South Sulawesi, while the average proportion of non-agricultural income a household receives is 54 percent (IFLS, 2007).

**More rural non-agricultural sector employment opportunities are needed in order to successfully reduce the agricultural labor surplus.** Chapter 6 of this report analyzes the economic contribution of rural non-agricultural sectors and how governments can create additional employment opportunities in the sectors. This report uses Davis's (2007) definition of 'non-agricultural' as comprising non-agricultural income generating activities, either through wage employment or self-employment. The rural non-agricultural income sources can come from rural service, rural trade, rural manufacturing, as well as income originating from transfers and other non-labor sources.<sup>9</sup>

<sup>8</sup> The estate crops sub-sector includes those that work primarily in horticulture.

<sup>9</sup> As a comparison, Junior Davis (2004) defines the 'rural non-farm economy' as comprising "all those non-agricultural activities which generate income to rural households (including income in-kind and remittances), either through waged work or in self-employment," while Elbers & Lanjouw (2001) uses the term 'non-farm' and 'non-agricultural' interchangeably. The latter, however, defines 'non-farm income' as comprising income derived from home businesses and wage employment, while defining 'non-agricultural employment' as only including "those individuals with wage employment in the non-agricultural

### 4.3. Growth in the extractive industries has not been inclusive

The extractive industries's role in driving growth in Sulawesi appears to mainly come through the "indirect effect" resulting from the injection of capital through investment in natural resources sectors. The extractive industry direct GDP growth themselves are relatively small, contributing to only 6.6 percent of the total economic growth during 2001-2013. However, this sector contribute to a significant share of Sulawesi's investment growth which drives higher GDP growth in the island. For example, in 2011, 96 percent of foreign direct investment in South Sulawesi was for nickel mining.

The economic multiplier effect on other sectors of the economy, however, is low. The extractive industries in Sulawesi have few links to backward or forward industries. Instead, they tend to be highly localized by dominating the local economy in a small number of districts.

Employment in the sector is relatively low and dominated by informal work. Senior positions in the formal sector were mostly held by outsiders. Only 1.76 percent of Sulawesi's labor force is employed in the extractive industries with 55% working in the informal sector. Moreover, only 7.1 percent of those working in the extractive industries are women. The limited employment opportunities means that the extractive industries often fail to bring significant benefits to local communities. Conversely, reports of risks to workers' safety, health dangers to nearby communities, and hazards to the wider environment means the potential costs of the extractive industries may be significant, if not properly managed.

Sulawesi needs to ensure that the extractive industries play a more inclusive role in region's economy. With Sulawesi already considered Indonesia's main nickel producing region, the extractive industries have the potential to grow further and become more significant to Sulawesi's economy. Moreover, the risks associated with a growing extractive industry are considerable: environmental damage and potential conflict between industry and local communities over resource management, for example, means that it is crucial that the extractive industries are properly managed and monitored. Chapter 7 assesses the less-than-inclusive role of the extractive industries in Sulawesi, and proposes possible solutions to how it can provide more benefits to the region and its communities in the future.

### 4.4. Low levels education and training limits workers' mobility

Limited skills and education is a key challenge facing the *poorest 40* because it constrains their ability to find higher income employment. A key obstacle for worker mobility is that many in the *poorest 40* do not have the relevant skills to work in the secondary and tertiary sectors. The extractive industries, for example, tend to employ skilled labor from outside of Sulawesi for their more senior positions. Limited human capital also constrains Sulawesi from diversifying its economy. Hence, improving skills and education of the *poorest 40* and shifting them to more productive sectors is the main way to improve their income.

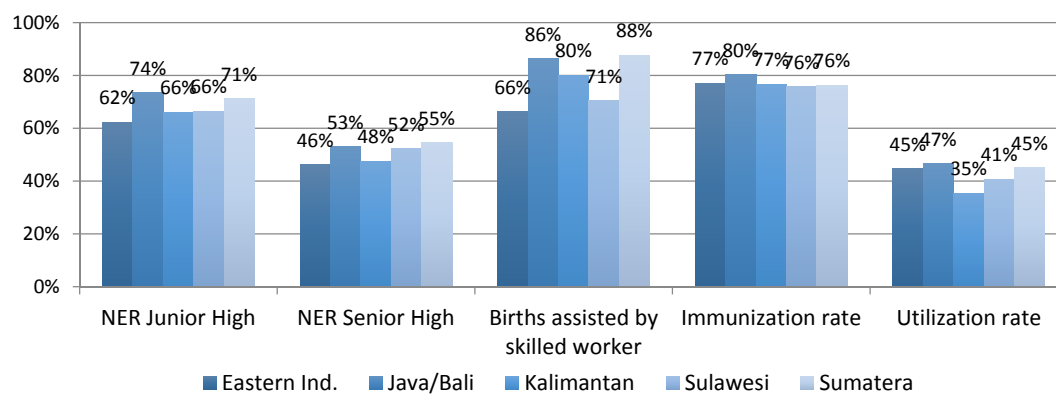
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sector as a primary occupation." Araujo, et al. (2002) and Kundu's (2003) definitions of 'non-farm' align closely to that of Benjamin Davis (2007).



**Improving human capital and workers' mobility in Sulawesi requires improving overall human development indicators, particularly in health and education outcomes.** A comparison of five key education and health outcomes show that Sulawesi has an average education level but performs poorly in health. Sulawesi's junior high school enrollment rate of only 66 percent and senior high school enrollment rate of only 52 percent was lower than Java, Bali and Sumatera but higher than Kalimantan and the rest of Eastern Indonesia. In the share of births assisted by skilled health workers and health facilities utilization rates, Sulawesi performs poorly compared to other regions.

**Figure 4.1. General population - Key service delivery indicators, Sulawesi and other regions, 2012**



Source: Susenas, World Bank estimates.

**Sulawesi needs to improve its provision of basic services in order to lift its education and health outcomes.** Chapter 8 analyzes the main constraints for effective service delivery and proposes a set of recommendations to address the identified issues.

#### 4.5. Poor infrastructure constrains sustainable economic growth

**Access to public Infrastructure in Sulawesi has been steadily improving during the last decade, but overall improvement has been modest.** Household access to electricity, sanitation, water and roads has had modest but steady improvements all across the island.

**Compared to other regions in Indonesia, Sulawesi provides households an average level of access to infrastructure.** Sulawesi's access to all types of public infrastructure is slightly below average, in comparison to the rest of Indonesia. In general, Java and Bali have the best access for all types of infrastructure except sanitation. Eastern Indonesia has the worst access to electricity and sanitation. Kalimantan has the worst access to water and roads. Sulawesi has a similar level of access to Sumatera: it performs well in some areas such as water and roads but worse in others such as electricity and sanitation.

**Sulawesi spends much less on infrastructure than other regions.** In 2001-09, Sulawesi's annual per capita infrastructure expenditure was only Rp 88,500 (in constant 2000 rupiah). This figure includes spending by all levels of government—central, provincial and district governments.

**Limited access to infrastructure constrains the ability of workers to seek employment in more productive sectors.** Infrastructure is needed to enable those employed in the low-productivity agriculture sector to transition to rural non-farm jobs or migrate from rural to urban areas to work in higher productivity jobs.

**Sulawesi needs to improve access to all types of infrastructure in order to grow sustainably and inclusively.** Without adequate infrastructure, Sulawesi cannot take full advantage of the positive spillovers that come with urban economic growth and rural development that has been taking place in the region. Chapter 9 analyzes Sulawesi's urbanization and infrastructure trends and proposes policies to improve infrastructure in the region



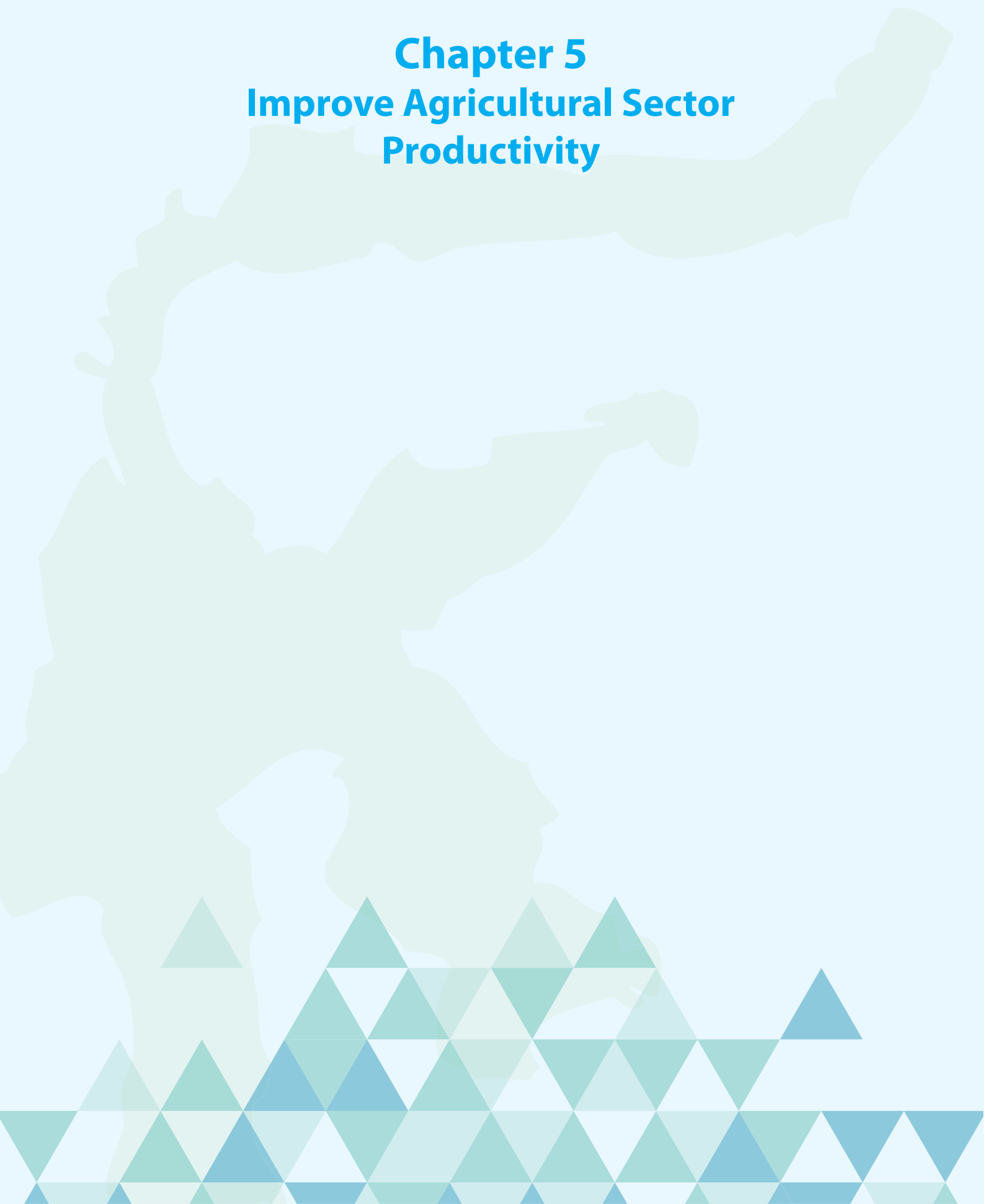
## Part 2: Addressing the challenge to inclusive economic growth in Sulawesi

Part two of the report comprises Chapter 5-9 discusses each challenge in more detail and proposes policy measures for each challenge. Chapter 5 analyzes the first challenge of how to make agricultural sector more productive in order to increase income for labor participants in the sector. This chapter analyzes the agriculture sector through the lens of Sulawesi's three main commodities: rice, cocoa, and maize. Chapter 6 analyzes the challenge of developing the rural non-farm sector so that it can generate alternative and higher income employment for the rural poor. Chapter 7 discusses why Sulawesi's extractive industry is not inclusive and offers ideas for improvement so that more communities benefit from its growth. Chapter 8 analyzes why health and education outcomes are low in Sulawesi and identifies the main constraints for effective service delivery, particularly for the vulnerable and marginalised population. Chapter 9 assesses Sulawesi's infrastructure challenges and how increased access to public infrastructure is crucial for ensuring Sulawesi achieves sustained economic growth. Chapter 10 will conclude with a conclusion of the key priorities for Sulawesi.



# **Chapter 5**

## **Improve Agricultural Sector Productivity**



**As identified in Chapter 4, a priority for improving growth inclusiveness is to improve agricultural sector productivity in Sulawesi.** Although the sector is not growing as quickly the rest of the Sulawesi economy, it remains an important sector because a large proportion of the *poorest 40* work in the agriculture sector. Increasing the income of the *poorest 40* through improving agricultural sector productivity is therefore a priority for Sulawesi.

**This chapter proposes policy solutions for improving agricultural productivity by discussing the opportunities and constraints in sustaining growth in three main commodities: rice, cocoa, and maize.** These three commodities are the focus of Chapter 5 because they are the most important contributors to Sulawesi's agricultural sector GDP.

## 5.1. Rice

### 5.1.1. Constraints and Opportunities for Smallholder Farming in Rice

Since early 2000s, the Indonesian government shifted its rice policy from focusing on price stabilization to promoting high prices for farmers. Prior to the 1997 Asian financial crisis, Indonesian government was relatively successful in achieving the rice policy goal of stabilizing domestic rice prices so that it is close to the average international price (Warr, 2011; Dodge and Gemessa, 2012).<sup>10</sup> Since the 2000s, however, the government enacted trade restrictions and shifted rice policy to one that promoted high prices for farmers. The domestic rice price was significantly higher than the international price between 2005-2007. An export ban prevented domestic prices from increasing further in 2008-2009 at a time when international prices were also high. From 2010, domestic rice price was persistently higher than the international price. Previously a traded good where the domestic price was largely driven by the international market, rice became a non-traded good where the domestic price became dependent on domestic conditions of supply and demand (Warr, 2011).

**Most rice producers in Sulawesi, and in Indonesia broadly, do not benefit from the “high-rice-price” policy because they are not net producers of rice.** According to the 2012 Susenas survey, only 18 percent of Sulawesi households are net rice producers. Across Indonesia, only 12.6 percent of households are net rice producers. The majority of rice producers are therefore disadvantaged by high rice prices. According to Warr (2011), several studies show that high rice prices have adverse impacts, particularly for Indonesia's poor. For example, Warr's analysis shows that a 10 percent increase in the real price of rice will raise poverty incidence by 0.8 percent.

**Instead of ensuring high prices, Sulawesi should prioritize efforts to improve rice production efficiency and productivity and increase the available marketing channels to producers.** Improving agricultural efficiency and productivity can raise domestic rice production and farmers' incomes without raising the price level, which can have an adverse impact on poor consumers.

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<sup>10</sup> Indonesia's domestic rice price in 1967-97 hovers around long-term median rice price with just a quarter of global price volatility (Dodge and Gemessa, 2012).

**According to existing research, limited irrigation development, low investment in research and development and the decentralized extension services were the key constraints for increasing rice productivity.** Timmer and Simatupang (2010) argue that Indonesia's huge investment in irrigation development was one of the key factors leading to the rapid expansion of rice production in the late 1970s and early 1980s. Since the mid-1980s, however, development and maintenance have slowed down, and the irrigation system deteriorated. Another factor that influences rice productivity is inertia in R&D due to the failure to achieve any technological breakthroughs and disseminate technology from R&D institutions to farmers. The high-yielding variety (HYV) most commonly used in 2000 was introduced 14 years earlier, while the new varieties have failed to maintain the yield potentials achieved in the late 1990s. One of the developments that have hampered technology dissemination is the breakdown in the agriculture technology delivery system through the agriculture extension service system. The decentralization of agriculture extension services to local governments has not resulted in any improvement in the delivery of extension services, since not all district governments are supportive of, or capable of, facilitating effective extension services.

**Rice farming still appears to be profitable.** Existing research all conclude that rice revenue-cost ratio exceeds 1.0 and thus remains profitable, but the profit margin for each producer differs.<sup>11</sup> The PSKMP UNHAS Survey, which surveyed rice cultivation activities of a sample of eight villages in Sulawesi during the wet season of 2012/2013, found that profitability varied between the eight villages. The revenue-cost ratio per hectare of rice cultivated was between 1.5 and 1.9 with an average of 1.7. This means that on average the gross revenue of rice farming per hectare is about 70 percent higher than its cost.

**Small farm sizes keeps farmers' incomes low.** The average net income per hectare (revenues minus costs) from rice farming in the wet season of 2012/2013, according to the PSKMP UNHAS Survey, was Rp 5.9 million per planting season. With an average farm size of 1.3 ha and an average harvesting period of three months, this corresponds to an average monthly income of Rp 1.3 million per farming household. This average monthly household income is approximately 78 percent of the average agricultural household's monthly expenditure in Sulawesi, according to March 2012 Susenas data.<sup>12</sup>

**Tabel 5.1. Estimated Average Income from Rice Farming in Sulawesi and its proportion to average agriculture household expenditures**

Description	Rp (Million)
Income per hectare per planting season	5.9
Estimated Total Income (assuming average land holding of 1.3 ha based on 2013 agriculture census)	7.7
Estimated annual income (assuming 2 planting season per year)	15.4
Estimated monthly income	1.3
Average monthly expenditures for agriculture household in Sulawesi (SUSENAS 2012)	1.6
% Monthly income from maize farming/monthly expenditures of agriculture household	78

Source: PSKMP UNHAS Field Survey.

<sup>11</sup> These studies have different survey locations, planting season, year, and definition of cost element. Among several studies that were reviewed are: Suriany and Arman (2009), Salam and Abbas (2004).

<sup>12</sup> This figure seems quite reasonable considering that farmers also derived their income from other sources including non-rice farming and non-farm employment.

**Indonesia's premium rice export market is still relatively small but is a potential opportunity for Sulawesi's farmers.** Indonesia's rice exports have been small, having never exceeded 1,200 tons. There are three constraints to rice exports. First, under current regulations rice producers may only export premium-grade rice. Second, exports are also limited by production constraints such as farmers' practice of choosing rice varieties based on yield rather than quality; and limited using of post-harvest treatment and milling technology (Suriany, et.al, 2009). Third, few actors in the agricultural sector are interested in exporting rice<sup>13</sup> and the P3KM UNHAS survey also found that a quality grading system is not widely used in Sulawesi's rice trading.

#### 5.1.2. Policy Implications and Recommendations for Rice

**Increasing land productivity is the most feasible option to increase income from rice farming in Sulawesi.** Rice farmers' income remains low because farms are small but increasing the average farm size will take time because it requires existing laborers to move to alternative sectors. Keeping domestic rice prices high to increase farmers' revenue hurts the poor who are the net consumers of rice. There is, however, an opportunity to increase land productivity in Sulawesi because yield per hectare is 21 percent lower than the benchmark regions in East Java. Increasing productivity to East Java levels, means the average farmers' income per hectare will be 21 percent higher (assuming costs and prices stay constant).

**Rehabilitating Sulawesi's irrigation network needs provincial and district government investment in order to increase land productivity.** Irrigation and extension services are two services that fall under the provincial and district governments's responsibilities<sup>14</sup> but are currently under-provided. Investment is needed both to improve the coverage of the irrigation network and to rehabilitate existing networks. Improving coverage needs significant capital and can only be achieved with central government support and coordination. Rehabilitation should be possible with financing from sub-national government budgets.

**Revitalizing extension services is another priority area for Sulawesi's governments because the services could provide farmers the support needed to improve farming practices.** Field research by P3KM UNHAS suggests that Sulawesi's farmers have not fully adopted more advanced farming practices. The UNHAS study suggests that farmers could improve land productivity through using higher quality seeds, using location-specific fertilizer and adopting new farming techniques such as direct seeding and Systems of Rice Intensification (SRI). Encouraging farmers to adopt these farming techniques requires revitalizing the provision of extension services. The provincial and district governments in Sulawesi need to disseminate evidence-based agricultural knowledge and technology and relevant research and development advancements, provide marketing information, and facilitate access to finance.

**Extension services must be adequately resourced.** The re-channeling of the central government fund for extension services – currently channeled as deconcentration fund –

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<sup>13</sup> <http://www.sulsel.go.id/content/beras-sulsel-ditarget-51-juta-ton>

<sup>14</sup> Except for irrigation network that spans across the boundary of provinces, state, or strategic network which falls under the authority of central government.



into regional transfer fund, i.e. as DAK for example, can leverage additional resources for extension services if it includes a requirement to provide matching budget component as a way to ensure the contribution of local governments. It will also fully transfer the management of extension workers to local governments, and avoiding the problem of conflicting directions stemming from a dual funding structure.

Governments should consider using farmers' organizations to deliver extension services. Farmers groups can act as a "knowledge broker" and identify the service needs to their members and link those members to relevant providers or provide those services themselves. One of the conclusions from National Agriculture Panel Survey (PATANAS) is that farmers groups are more effective if they provide services such as operating a rotating saving and credit group (*arisan*), run religious study groups (*pengajian*) and saving-loan group.

## 5.2. Maize

### 5.2.1. Constraints and Opportunities for Smallholder Farming in Maize

**Demand for maize continues to be strong, fueled by the increasing demand from the livestock feed industry.** Demand for maize from the livestock feed industry grew by 11 percent annually over 2009-2013. Since this demand cannot be met through domestic production Indonesia is a net importer of maize, despite official statistics showing a large production surplus. Although Indonesia has not placed an import tariff on maize since 2011, the Ministry of Agriculture (MoA) maintains an unofficial import quota. In order to import maize, a feed miller must obtain an import recommendation from MoA. The number of important recommendations the MoA issues depends on the estimated difference between domestic corn production and feed demand (USDA, 2014).

**Ensuring an uninterrupted supply of quality maize also drives imports.** Although domestic maize prices are often lower than import prices, the volume of maize imported to Indonesia remains significant. For example, the average producer price for maize in Indonesia was below the estimated landed price<sup>15</sup> for imported maize in 2012. Moreover, the average producer prices in the two main production centers in Sulawesi (South Sulawesi and Gorontalo) have always been lower than estimated price for imported maize. The continued high level of maize import may be due to (a) the existence of production deficit as suggested by USDA data but refuted by data from the BPS; and (b) the challenges on relying on a continuous domestic supply of quality maize, as claimed by feed industry sources. The seasonal nature of Indonesia's maize harvest and the limited number of proper warehouses (silos) makes it difficult for producers to maintain a constant supply of maize throughout the year. Furthermore, domestically produced maize face quality issues that stem from poor post-harvest management practices – most farmers do not have drying facilities and use sun drying methods that result in high moisture content (Desianto 2012, USDA 2014).

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<sup>15</sup> Calculated as average international price based on World Bank Commodity Price Database plus additional 25% for estimated cost of freight which is lower bound estimate for freight cost, as provided by Abbassian (2006)

**Sulawesi's maize production has increased significantly since 2005.** Sulawesi's share of national maize production showed increased from 9.2 percent in 2001 to 14.6 percent in 2013. Among the six provinces in Sulawesi, Gorontalo's maize production achieved the fastest growth. According to BPS data, Gorontalo's production increased by 810 percent from 2001 to 2013 – its share of total national maize production increased from 0.9 percent in 2001 to 3.6 percent in 2013.

**Sulawesi's yield per hectare is lower than many other provinces, suggesting an opportunity for improvement.** Maize productivity in West Sulawesi province is the highest in Sulawesi but remains approximately 50% lower than West Java, Indonesia's most productive maize producer. The overall maize yield in Sulawesi is about 20 percent lower than in Java and Sumatra. Southeast Sulawesi's average yield in 2013 was amongst the lowest in Indonesia at only 2.5 tons per hectare.

**Climate, topography and lower levels of hybrid seed adoption are possible reasons for Sulawesi's lower maize productivity.** Existing research suggests that the spread of hybrid seeds led to rapid maize yield increases in the early 1990s but Sulawesi was a late adopter (Kasryno, et.al, 2010, Swastika, et.al 2004). Sarasutha (2002) pointed out that as late as 1989, 75 percent of maize cultivated in Sulawesi used locally bred seed. Kasryno, et.al (2010) concluded that maize yields in South Sulawesi were relatively stagnant until the mid-1990s compared to other regions, such as in Sumatra (Lampung province) and Java regions, areas that had higher hybrid seed adoption rates. Swastika, et.al (2004) found that the adoption rate of hybrid seeds was lower in South Sulawesi than in Sumatra (in Lampung) and in Java.

**Farmers' did not purchase hybrid seeds due to limited access to capital.** Sulawesi farmers who used hybrid seeds achieved excellent financial returns of a revenue-cost ratio of 2 (PSKMP UNHAS (2013), PATANAS (2011), and Hadijah and Subagio (2012)). Total revenue from maize farming remains low, however, leaving little capital for investment for the following season's planting. (See table 4.2 for illustration).

**Table 5.2. Estimated Average Income from Maize Farming in Sulawesi and its proportion to average agriculture household expenditures**

Description	Rp (Million)
Income per hectare per planting season	3.29
Estimated Total Income (assuming average land holding of 1.3 ha based on 2013 agriculture census)	4.27
Estimated annual income (assuming 3 planting season per year)	12.83
Estimated monthly income	1.06
Average monthly expenditures for agriculture household in Sulawesi (SUSENAS 2012)	1.64
% Monthly income from maize farming/monthly expenditures of agriculture household	65

Source: PSKMP UNHAS Field Survey.

### 5.2.2. Policy Implications and Recommendations for Maize

**Sulawesi has the potential to become one of the biggest maize producing regions in Indonesia.** South Sulawesi has always been one of the key maize producing provinces in Indonesia. Gorontalo province's emergence as a key maize producer during the last decade demonstrates the potential of other provinces in Sulawesi to improve their maize production and play a larger role to meet the increasing demand from Indonesia's domestic market. Southeast Sulawesi and Central Sulawesi, in particular, has the potential to significantly increase maize production through improving yields because it has similar agro-climatic conditions with other provinces in Sulawesi.

**Governments should consider establishing partnerships with the private sector to promote high yield maize varieties and other productivity enhancing inputs to farmers.** The corporate sector, such as seed companies and the feed industry, promote hybrid seeds and good farming management practices as part of their marketing strategy. The existence of these promotional activities creates opportunities for public private partnerships, in order to reduce the burden on government research and extension services.

**Farmers' access to finance needs to expand.** Low adoption of productivity enhancing inputs is both a function of farmers' limited knowledge and skills and their limited access to capital. Maize farmers income levels are insufficient to finance productivity enhancing inputs such as hybrid seeds; farmers also only have access to credit that incur relatively high interest rate. Existing government initiatives designed to enhance access to finance for farmers, such as *Kredit Ketahanan Pangan* (Food Security Credit), and through programs such as PUAP (Rural Agribusiness Development Program) need to be strengthened. According to PSKMP UNHAS, only a small number of farmers surveyed received their loans from cooperatives and banks.

**Governments should consider providing incentives to the private sector to provide drying and storage facilities.** Anecdotal evidence suggests that drying and storage facilities provided by the government with good intention are not being used<sup>16</sup>, despite the need for these facilities. Instead of providing these facilities directly, the government should consider encouraging the private or nonprofit sector to supply the facilities through the provision of incentives such as subsidies.

## 5.3. Cocoa

### 5.3.1. Constraints and Opportunities for Smallholder Farming in Cocoa

**Sulawesi's cocoa is mainly sold in the international market.** Indonesia is the third-largest producer of cocoa beans globally, contributing to about 12.5 percent to global production. Approximately 67 percent of Indonesia's production originates from Sulawesi (BPS 2013), which makes Sulawesi the third largest producer of cocoa beans after Cote d'Ivoire and Ghana. The majority of Indonesia's cocoa is exported either as raw beans or processed cocoa (paste, liquor, butter, or powder).

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<sup>16</sup> One of them that was found during PSKMP UNHAS survey is the unutilized power thresher.

**Since 2010, Indonesia has significantly increased the export of processed cocoa.** To promote downstream industrial development, the Government introduced a raw cocoa beans export tax in April 2010. The rate of tax is on a sliding scale between 0 to 15 percent depending on international cocoa price. Export tax ceases if the international cocoa price drops below US\$2,000 per ton, and may increase up to a maximum of 15 percent if the price is above US\$3,500/ton. The policy's impact on Indonesia's export composition was immediate. Prior to the export tax, 77 percent of Indonesia's cocoa exports were raw cocoa beans. The proportion of raw beans declined to 46 percent of total cocoa exports in 2011 and 37 percent in 2012. The increased dominance of processed cocoa in Indonesia's cocoa export market was driven by a combination of increase in processed bean production from utilizing unused capacity and the establishment of new processing facilities.<sup>17</sup>

**Raw beans still constitute the majority of exports that originate directly from Sulawesi, however.** In 2012, Sulawesi exported 84 percent raw beans and 16 percent processed cocoa, indicating that most cocoa processing took place outside of Sulawesi.

**Ageing cocoa trees and pest infestation are two key constraints facing cocoa production in Sulawesi.** A cocoa tree's peak production level is at 10 years of age, after which its yields start to decline. The majority of cocoa trees in Sulawesi were planted after 1980. Many cocoa trees in Sulawesi, therefore, need to be replanted. Smallholder farmers who constitute the majority of cocoa farmers seem hesitant to invest in upgrading. One study shows that only 6 percent of farmers interviewed for a field survey in Central Sulawesi planned to undertake major replanting initiatives (Clough, et.al, 2009). Farmers may be reluctant to replant because it is costly and knowledge intensive. Moreover, the pest infestation is increasingly problematic and reduces incentive to invest in replanting (PSKMP UNHAS, 2013). According to Nishiyama (1996), the spread of cocoa pod borer (CPB) disease was first discovered in the mid-1990s in Sulawesi but the dramatic impact on yields was not observed until after 2004 when yields continued to decline until 2009. All villages that were part of the PSKMP UNHAS field survey and the 2012 PATANAS survey reported the severity of pest infestation in their areas. According to one estimate, severe CPB attacks have infected about 40 percent of cocoa planting areas, and caused yields to decline by 5-80 percent (Wahyudi, 2007).

**The quality of cocoa produced in Sulawesi is also inconsistent, resulting in lower prices.** Sulawesi's cocoa beans has low butter content, is relatively small size, and often has high content of dirt. These quality problems are partly caused by CPB infestation, which causes flat or unfilled beans and the mixing of beans with dirt (MCI, 2010; World Bank, 2006; PSKMP UNHAS, 2013). Moreover, quality issues are exacerbated because Indonesia's cocoa trading system is characterized by the need to fulfill targeted quantities for export. In order to meet export targets, producers mix good beans with beans that were initially rejected for export, which reduced the price of Sulawesi's cocoa in the international market.

**Producers were also reluctant to increase quality through cocoa fermentation.** Sulawesi beans were traditionally exported to the United States. The beans were used as fillers and

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<sup>17</sup> As a consequence of the Export Tax, International exporters are now revising their business strategy. Rather than exporting raw bean for processing overseas, ADM and Cargill are considering opening processing factories in Indonesia. Other new investors include Guanchong Cocoa (Malaysia), JB Cocoa (Malaysia) and Barry Callebaut/PT Comextra Majora (Swiss/Indonesia) (Sendall, 2013).

blended with flavor-adding fermented beans sourced elsewhere. These unfermented beans were sold at the discounted New York terminal price. Although fermented beans are sold at a 10% price premium, farmers remain reluctant to add the processing cost and time to the production process (at least one week). Sulawesi's limited cocoa processing facilities may also limit the demand for fermented beans. According to MCI (2010), the processing industry generally requires a secure supply of fermented beans. An increase in domestic processing should therefore lead to an increase in the demand for fermented cocoa beans.

### 5.3.2. Policy Implication and Recommendations for Cocoa

**Cocoa producers are constrained by production challenges.** Ageing trees and pest infestation have caused yields to decline and made cocoa cultivation less profitable, thus encouraging some farmers to switch crops. Cocoa farmers are less able to take advantage of favorable changes to market conditions, both internationally and domestically.

**Smallholder farmers are also limited by personal constraints.** Concerns about economic security, lack of alternative sources of income, and risk aversion means farmers are reluctant to invest the time and capital needed to replace low-yield cocoa trees. These factors, combined with limited technical knowledge on good agriculture practices, means farmers have not been able to effectively overcome production problems of ageing trees and pest infestation. External support from public and private sector actors is needed.

**The public sector massive investment in the form of GERNAS Kakao is seems to be a step in the right direction; however, the program achievements need to be fully assessed by the independent evaluator.** Between 2009-2013, the Indonesian government invested at least Rp 3 trillion rupiah<sup>18</sup> in the GERNAS Kakao program. The program includes activities that rejuvenate and rehabilitate cocoa trees, train farmers in good agricultural practices, develop new research stations, recruit additional extension workers, and quality improvement initiatives. The government is likely to extend the program to the end of 2014<sup>19</sup>. In the absence of an independent evaluation of the program and because of the limited information available regarding its implementation, this policy note does not assess whether GERNAS Kakao should be continued or not. Public investments in effective programs that assist farmers to overcome production constraints need to be continued, however.

**A public program like GERNAS Kakao needs to be combined with an initiative that facilitates access to finance for smallholders.** A key reason farmers are reluctant to invest in cocoa replanting is the loss of income during the waiting for new plants to grow and the concern that the replanting effort will fail because inappropriate technology was used (for example, side grafting versus scion grafting). Farmers need bridge financing until the next harvest. Moreover, replanting is high risk because of potential spread of pests and as a result financial institutions may not be interested in financing cocoa farming. Farmers needing credit to finance replanting and productivity improvement investment need a third-party guarantor. The Government can potentially become a guarantor perhaps in

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<sup>18</sup> Figures for the whole Indonesia

<sup>19</sup> "Anggaran Meningkat, Gernas Pro Kakao Lanjut 2014". <http://www.antarasulawesiselatan.com/print/27871/profil-antara>

partnership with the cocoa-processing industry, who depends on an uninterrupted supply of raw materials from cocoa farmers.

**Create synergy with private and non-government sector initiatives.** The cocoa sector is quite exceptional in the willingness of downstream private sector actors to assist upstream production actors to secure an uninterrupted supply of quality cocoa. Private-sector companies such as Armajaro, BT Cocoa, Olam, and Mondelez, in cooperation with the Indonesian Cocoa Association (ASKINDO) have implemented programs to assist farmers, sometimes in partnership with non-government organizations. The majority of these programs focus on training farmers in good agriculture practices, establishing links with downstream value-chain actors, strengthening farmer organizations, as well as research and development activities aimed to contain the spread of cocoa pests. These programs offer many valuable lessons that can be integrated into government-sponsored programs.

**Establish a data management system and improve data reliability and accessibility.** Having access to reliable data is critical for improving cocoa planning and management. Unfortunately, government-sourced data and industry-sourced data on cocoa are often inconsistent, a problem faced in accessing reliable for other agricultural commodities. In 2008, Cocoa Sustainability Partnership (CSP), a multi stakeholder partnership for cocoa development, recommended that the GERNAS Kakao program invest in developing a comprehensive data management system, which included information on satellite imaging, weather forecasts, market information, information on the spatial distribution of cocoa production areas, planting conditions, pest infestation, and information on farmer groups. No such database exists and both the establishment and maintenance of such a database would require considerable resources. As an initial step, the Government can disseminate the data from the 2013 agriculture census to provide more accurate data on cocoa cultivation areas and improve the methodology used to estimate total cocoa production levels. Improving the reliability of production data is a small step towards better monitoring of whether public programs for cocoa development is achieving its goals.

**Utilize cocoa middlemen and trader networks as an alternative way of delivering public services to the agricultural community.** Cocoa traders are often viewed with suspicion and are not involved in the delivery of public programs that aim to help farmers. Competition within the cocoa trading sector is strong and margins relatively low and to differentiate themselves, many traders have provided services to farmers such as financing. Traders' close relationship with farmers, driven by mutual economic interest, is a strong platform to deliver services to farmers. For example, traders can potentially serve as a guarantor when farmers apply for financing. A trained trader can also be used to provide information and training to farmers on good agricultural practices, or assist them to develop links with a cocoa processing company that might provide incentives to improve quality. The experience of PEKA (*Peningkatan Ekonomi Kakao Aceh*), a program implemented by Swiss Contact, demonstrates that an inclusive approach towards traders yields good results (De Wolf, 2013).

**Promote of quality improvement through market-based approaches rather than enacting more regulatory measures.** The PSKMP UNHAS survey found that quality control was needed in order to prevent Sulawesi cocoa from being sold at a discounted price because it did not comply with the Indonesian national standard (SNI). Instead of enacting regulatory

measures, the Indonesian government should consider market-based approaches such as using farmer cooperatives to set quality standards. This creates a win-win situation where farmer members can sell their cocoa quickly and receive a share of the premium price received by cooperatives. In the absence of farmer organizations, the PEKA project in Aceh showed that providing incentives for traders to pay premiums for fermented beans is also effective (De Wolf, 2013).

#### 5.4. Conclusion

**Improving agricultural growth in Sulawesi can be achieved by reducing the productivity gap between Sulawesi and the best performing regions in Indonesia.** Average land productivity or yield for rice in Sulawesi is 21 percent lower than in East Java, one of the most productive regions in Indonesia; The gap in maize productivity is even larger – maize yield in West Sulawesi, the regions most productive maize producer, is around 50 percent lower than West Java, which has the highest yield in Indonesia. Cocoa productivity in Sulawesi is high in comparison to other regions, but its currently yield levels is only 70 percent of that achieved during the late 1990s.

**Sub-optimal farming practices such as using poor quality seeds and insufficient investment in replanting cocoa trees contribute to low land productivity in Sulawesi.** The 2010 PATANAS survey, for example, found that only 29 percent of rice South Sulawesi farmers in survey villages used labeled seedling, compared to 68 percent in rice producing villages surveyed in East Java. Several studies also suggest that the adoption of high yielding maize varieties is lower in Sulawesi in comparison to Java or Sumatra. In cocoa commodity, farmers are also not investing in rejuvenating and replanting aged trees.

**Insufficient use of better quality inputs is both a function of farmers' limited knowledge and skills and a function of financial constraints farmers face.** Farmers generally do not generate enough income to save and invest to improve the following harvest's yields. If investments are made, they are financed by high-interest loans. For example, the lack of bridging finance is a key reason for why farmers do not replace ageing and low-yield cocoa trees.

**Farmers cannot take advantage of favorable market conditions if they do not overcome production constraints.** The demand for maize and cocoa is increasing, at least in the medium term. Demand for maize is predominantly from the livestock feed industry, while there is a global structural deficit in cocoa production. Domestic maize and cocoa production capacity does not meet this growing demand. Although Sulawesi's maize and cocoa prices are competitive in the international market, it does not meet quality requirements. Sulawesi maize's high moisture content and the absence of bean fermentation of Sulawesi's cocoa are two key quality problems that need to be overcome. Furthermore, Sulawesi's inability to provide uninterrupted supply of cocoa and maize limits its ability to capture a larger share of the domestic market.

**Rice prices and profits are vulnerable to the national rice policy changes.** Since the early 2000s, the central government shifted its rice policy from price stabilization to promoting high prices for farmers with the result that domestic rice price is higher than the international price. Since Sulawesi's average rice production cost is slightly higher than the



landed price for imported rice, but lower than production cost of other regions within Indonesia, this policy allows Sulawesi's farmers to remain competitive in the domestic rice market. Transport and logistics costs of sending rice out of the island are indeed high, but not prohibitive as has been demonstrated by the substantial quantity of inter-island trade from Sulawesi. The problem with high rice prices is that most farmers in Sulawesi are not net producers of rice because average farm size is small and thus cannot take advantage of the "high-price" policy. Moreover, as a major staple food, high rice prices have a disproportionate negative impact on the poor.

**Sulawesi's provincial and district governments should focus their limited resources on increasing maize and cocoa productivity.** Sulawesi is relatively competitive in the international and domestic markets of both commodities. The existing domestic production deficit implies that increasing output is not expected to lead to a sharp decline in the prices of these commodities. In particular, South-East Sulawesi province has an opportunity to increase maize productivity because its productivity level is amongst the lowest in Indonesia. Gorontalo province's maize productivity increased by 113 percent during the last decade, and sets a strong example of potential results from a concerted effort to improve productivity.

**Improving maize and cocoa yields requires improving farmers' access to finance and improving the provision of extension services.** The government has introduced many initiatives to enhance agriculture and rural financing but these programs need to expand their coverage. Only a limited number of farmers surveyed by PSKMP UNHAS received loans from cooperatives and banks suggesting the limited penetration of these programs. Sulawesi farmers also need to adopt more good agricultural practices, such as using better quality seeds, applying location-specific fertilizer, and adopting PSPSP in cocoa<sup>20</sup>. Extension services are needed so that farmers receive appropriate information on scientific based agricultural practices, technology and knowledge. In the cocoa and maize sectors, opportunities to establish partnerships with the private sector in promoting these practices exist. Taking advantage of public-private partnerships in the provision of extension reduces the government's burden. .

**Improving rice productivity is also important but needs significant public investment.** The two main priorities for Sulawesi's governments are expanding Sulawesi's irrigation networks, rehabilitating existing networks and revitalizing extension services. Expanding irrigation coverage, however, require significant capital and can only be achieved if there is coordination across all levels of government. Extension services needs to be adequately resourced and can be delivered through networks such as farming organizations.

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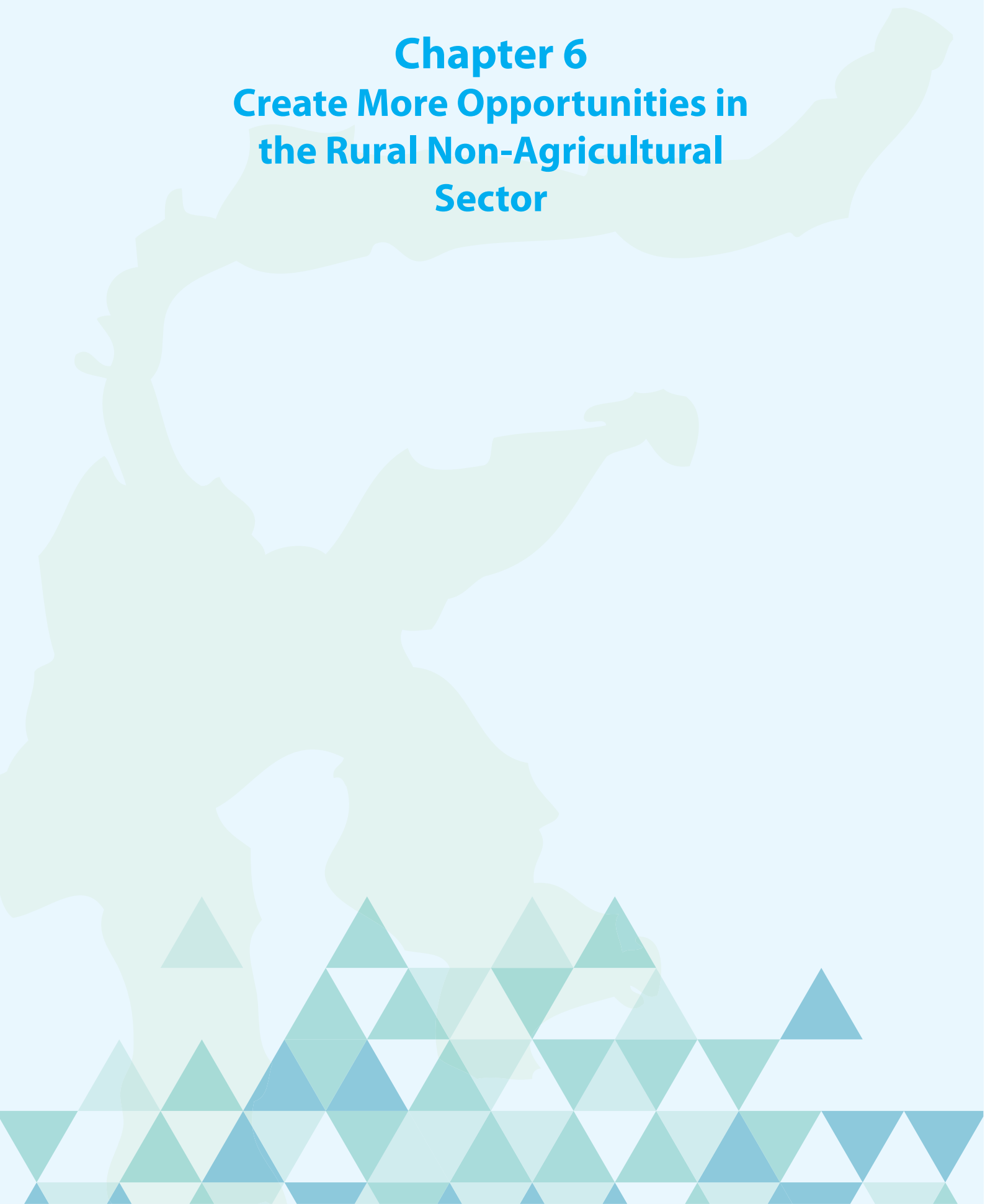
<sup>20</sup> "Panen Sering, Pemupukan, Sanitasi dan Pemangkasan"; translated "frequent harvesting, application of fertilizers, sanitation and pruning"





# **Chapter 6**

## **Create More Opportunities in the Rural Non-Agricultural Sector**



**To reduce agricultural sector labor surplus, more opportunities in the rural non-agricultural sector needs to be created.** As discussed in Chapter 4, one of the key reasons for low income in the agricultural sector is the low labor productivity driven by the large size of agriculture labor. Thus agricultural workers need to shift to more productive, higher income, non-agricultural sectors. In particular, more non-agricultural sector opportunities are needed in rural areas. This report uses Davis's (2007) definition of 'non-agricultural' to include non-agricultural income generating activities, either through wage employment or self-employment. Rural non-agricultural income sources can come from rural service, rural trade, rural manufacturing, as well as income originating from transfers and other non-labor sources.<sup>21</sup>

This chapter assesses the contribution of the rural non-agricultural sector to Sulawesi's economy, its potential in providing alternative higher income employment for the rural poor and policy measures that foster its development.

### 6.1. The Contribution of the Rural Economy in Sulawesi

**The rural economy contributes to more than half of Sulawesi's economy.** The contribution of rural GDP in Sulawesi declined from 57.3 percent in 2001 to 55.2 percent in 2011,<sup>22</sup> reflecting the trend that Sulawesi's rural economy has been growing at a slower rate than the urban economy. Rural economic growth increased by 35 percent in 2000-06. During this period, Sulawesi's rural growth rate was faster than its urban growth rate, and the national growth rate. Between 2006-11, the region's rural economy grew by a further 37 percent. Over this period, the rate of urban growth exceeded rural growth as a result of the booming tertiary sectors.<sup>23</sup>

**Per capita rural GDP is increasing more quickly than per capita urban GDP but in 2011 was still only two-thirds of per capita urban GDP.** Per capita GDP in rural Sulawesi increased from Rp 3.3 million in 2001 to Rp 5.4 million in 2011, representing 83 percent of Sulawesi's overall per capita GDP and 62 percent of per capita GDP in urban Sulawesi. North Sulawesi has the highest rural GDP per capita of Rp 7.0 million, while Gorontalo has the lowest rural GDP per capita of Rp 2.4 million.

**The agricultural sector is the highest contributor to Sulawesi's rural economy, although its share is declining.** The share of agriculture in the rural economy declined from 56 percent in 2001 to 47 percent in 2011. Conversely, industrial sectors increased from 20 percent of Sulawesi's rural economy in 2001 to 24 percent in 2011, and the share of tertiary sectors increased from 23 percent to 29 percent over the same period.

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<sup>21</sup> As a comparison, Junior Davis (2004) defines the 'rural non-farm economy' as comprising "all those non-agricultural activities which generate income to rural households (including income in-kind and remittances), either through waged work or in self-employment," while Elbers & Lanjouw (2001) uses the term 'non-farm' and 'non-agricultural' interchangeably. The latter, however, defines 'non-agricultural income' as comprising income derived from home businesses and wage employment, while defining 'non-agricultural employment' as only including "those individuals with wage employment in the non-agricultural sector as a primary occupation." Araujo, et al. (2002) and Kundu's (2003) definitions of 'non-farm' align closely to that of Benjamin Davis (2007).

<sup>22</sup> The share of rural GDP is estimated by taking the proportion of per capita expenditure of rural workers based on their employment sectors.

## 6.2. Rural Non-Agricultural Work

**The employment rate in rural Sulawesi increased from 91 percent in 2001 to 98 percent in 2011.** Sulawesi's rural employment rate in 2011 is similar to the region's overall employment rate but higher than its urban employment rate and Indonesia's national employment. Recent trend shows a declining gap between rural and urban employment rate with only 3 percent difference in 2011. The convergence of urban and rural employment rates in Sulawesi reflects the rapid growth of the urban economy, which now provides more jobs than the rural economy.

**Rural laborers predominantly work in the agricultural sector.** In 2011, around 60 percent of rural workforce was employed in agriculture. The number of people employed in this sector, however, was getting smaller in the higher quintiles. Within the same year, there was around 77 percent of rural workforce in the lowest quintile that worked in agriculture compared to 37 percent in the highest quintile. This composition reflects the positive relationship between rural non-agricultural employment and welfare as indicated by the household consumption per capita.

**Even though the majority of rural employment is in the agricultural sector, rural household income is predominantly sourced from non-agricultural activities.** According to the 2011 Susenas household survey, approximately 55 percent of total primary household income in rural Sulawesi is from non-agricultural sectors. On average, non-agricultural activities contribute to 42 percent of individual household income (Susenas, 2011). According to the 2007 IFLS survey, non-agricultural activities contribute to 67 percent of total rural household income (revenue from primary sources and secondary sources such as rent) in South Sulawesi. The average proportion of non-agricultural income per individual household in South Sulawesi is 54 percent (IFLS, 2007).

**An increase in the share of non-agricultural income correlates with higher consumption.** According to the 2007 IFLS survey of South Sulawesi households, households in the highest consumption quintile source approximately 79 percent of its income from non-agricultural activities. Conversely, households in the lowest consumption quintile source only 44 percent of its income from non-agricultural sectors. Income from non-agricultural wage and self-employment makes up the largest portion of non-agricultural income across quintiles. Meanwhile, income from transfers and other non-labor sources in most quintiles is a relatively small contributor to rural income in South Sulawesi.

**Average non-agricultural wages is almost twice the average agricultural sector wages.** In 2011, average rural non-agricultural wage was Rp 1,380,301 per month, significantly higher than rural agricultural wages of Rp 763,391 per month. Non-agricultural sectors' higher income is probably the main reason that the rural labor force in Sulawesi is shifting from agricultural to non-agricultural activities. In 2001-11, the proportion of households in the highest consumption quintile that derive their income from non-agricultural employment increased by 21 percent whereas it only increased by 10 percent in the lowest quintile. This labor shift itself was largely led by young workers aged between 15 to 44 years old (87 percent). In addition to wage and income, other factors that may push rural laborers to shift to non-agricultural activities include land constraints, high risk associated with farming, and weak financial systems to support those in the agriculture sector.

**The majority of primary income in rural non-agricultural sector is derived from the provision of social services.** In 2011, social services sector contributed 43.5 percent of total primary income in non-agricultural rural Sulawesi, followed by trade, restaurant, and hotel sector with a share of 14.2 percent. The social services sector consists of public administration, education, health and social work, other community, social, and personal service activities, and private households with employed persons. Of the 43.5 percent from social services, almost half comes from education and more than one-third comes from public administration.

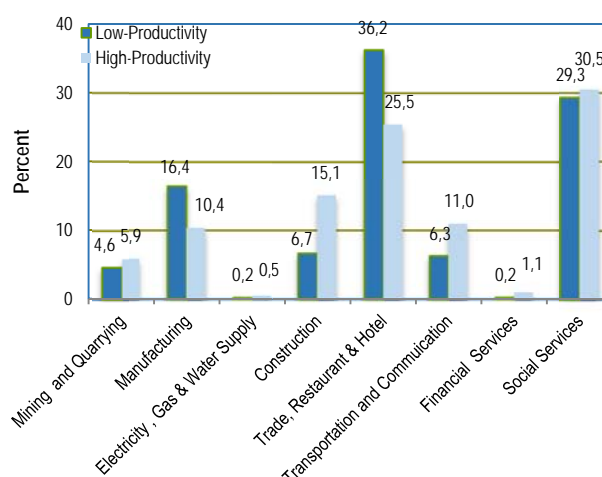
### 6.3. Profile of Rural Non-Agricultural Workers

**Within the non-agricultural sector, wages differ significantly between those in high productivity and low productivity employment.** Elbers and Lanjouw (2001) divide non-agricultural employment into low- and high-productivity non-agricultural employment. Laborers working in low-productive employment are those that earn less than the average monthly wage earned by agricultural laborers in each province.<sup>24</sup> Under this definition, the average monthly income of those working in low-productivity non-agricultural sectors is Rp 306,548 per month and high-productivity non-agricultural sector is Rp 1,818,300 per month. Average monthly agricultural sector income—including self-employed, home businesses and family workers—is Rp 606,608 per month.

**The majority of non-agricultural workers in rural Sulawesi work in the high-productivity sector.** In 2011, 54 percent of those working in non-agricultural sectors as their main occupation were in high-productivity jobs. Approximately 30 percent of this group worked in social services, another 25 percent worked in trade, restaurants, and hotels and 15 percent worked in construction. Around half of those working in the high-productivity segment worked as employees and another quarter were self-employed.

**A large proportion of workers in the low-productivity non-agricultural sector are underemployed and engaged in secondary jobs.** This fact aligns with the push factor that was discussed previously in which risk and insecurity in agriculture are part of the reasons why workers are also involved in non-agricultural activities. Around 36.1 percent of low-productivity workers work less than 35 per week, compared to 19.4 percent of those employed in high-productivity jobs. The proportion of workers participating in secondary employment is higher in low-productivity sector compared to the high-productivity sector.

**Figure 6.1. Share of employment in low- and high-productivity work by sector, 2011**



Source: World Bank staff calculations from Susenas data, BPS.

<sup>24</sup> Average monthly wage in agriculture is Rp 604,900.

The proportion of workers who have engaged in secondary employment but are still underemployed is also higher for low-productivity sector (5.6 percent) compared to high-productivity sector (3.2 percent).

**The majority of those engaged in high-productivity rural non-agricultural employment is male and tend to be in smaller households.** Over three quarters of those working in high-productivity jobs were men while 58 percent of workers in low-productivity jobs were women. More than half of the workers in the high-productivity group were in households with four or fewer members.

**People working in high-productivity non-agricultural sectors have higher education and more experience.** About 44 percent of workers in the high-productivity segment completed at least senior secondary education, averaging 9.8 years of schooling. In comparison, only 11.2 percent of those primarily employed in agriculture and 30.5 percent of those engaged in low-productivity non-agricultural activities have finished senior secondary school. Furthermore, 73 percent of workers in high-productivity sectors are above 30 years of age suggesting that experience is important in gaining employment in higher-productive sectors. In comparison, low-productive sector workers are younger: only 42 percent of workers in low-productivity sectors are over 30 years of age.

**Workers in the rural non-agricultural sectors (non-employers) have better access to credit and capital than people working in agriculture.** About 19.0 percent of workers in high-productivity non-agricultural and 17.6 percent of workers in low-productivity non-agricultural employment or a member of their household have received credit. In comparison, only 9.8 percent of agricultural workers have received credit. Furthermore, approximately two-thirds of high- and low-productivity workers reside in areas that have non-agricultural revolving loan fund schemes.

**People working in high-productivity non-agricultural jobs have good access to infrastructure.** Around 72.7 percent of high-productivity workers reside in areas with decent or good condition roads and 40.9 percent live within 15 km of a district capital. Nearly one-third live in areas that are both within 15 km of a district capital and have access to decent or good condition roads, significantly higher than those working in low-productivity jobs (26 percent) and agriculture (15 percent).

**Age, gender, education level, poverty, and health are factors that influence whether a person is likely to work in rural non-agricultural sectors and whether they are likely to be employed in high-productivity or low-productivity sectors.** A 1.0 percent increase in the mean age of the rural population decreases the share of rural non-agricultural employment by 0.7-0.8 percent. A 1.0 percent increase in the share of adults with at least senior secondary education correlates to a 0.9 percent increase in the level of rural non-agricultural employment and in rural high productivity non-agricultural employment. Lower poverty and morbidity rates also correspond to a higher share of rural non-agricultural and high-productivity sector employment.

**Workers with better access to good quality roads are more likely to be employed in rural non-agricultural sectors. Workers that reside closer to district capitals are more likely to be employed in high-productivity rural non-agricultural sectors.** A 1.0 percent increase in

the share of villages with decent or good roads increases rural non-agricultural employment by 0.2 percentage points. This trend suggests that high-productivity employment opportunities are connected to urban areas such as district capitals.

#### 6.4. The Relationship between Rural Non-Agricultural Employment and Poverty and Inequality

**Non-agricultural workers have higher consumption than agricultural workers.** The average agricultural wage laborer spends Rp 376,914 per month, or roughly two-thirds of the average monthly expenditure by their non-agricultural counterparts (Rp 560,430). The per capita expenditure is also higher for low-productivity non-agricultural workers.

**A smaller proportion of non-agricultural workers in rural Sulawesi are poor.** In 2011, about 13.8 percent of agricultural workers in rural Sulawesi lived below the poverty line. In comparison, only 6.6 percent of workers employed in the non-agricultural sector are poor. Although the overall rate of poverty amongst non-agricultural sector workers is lower than agricultural workers, there are specific non-agricultural sectors have very high poverty. For instance, 16 percent of self-employed people working in the mining sector are living in poverty. The non-agricultural sectors with the highest poverty levels are manufacturing (12.3 percent) and construction (10.9 percent).

**Income inequality is higher amongst households with primarily non-agricultural sources of revenue.** Although 55 percent of primary household income in rural Sulawesi is derived from non-agricultural activities, the distribution of that income is less equal than agricultural income. The Gini (Gk) coefficient that measures inequality – a higher Gini coefficient indicates greater inequality – is higher for non-agricultural income (0.7551) than agricultural income (0.658). Several studies that analysed Sulawesi's Gini decomposition by income source (Rao, 1969; Lerman and Yitzhaki, 1985; Podder, 1993) indicate that income from primarily non-agricultural employment accounts for 68.4 percent of total inequality in rural Sulawesi, and that a 1.0 percent increase in non-agricultural sources of income will increase overall inequality by 0.13 percentage points.

**Table 6.1. Results of Gini decomposition by income source in rural Sulawesi, 2011**

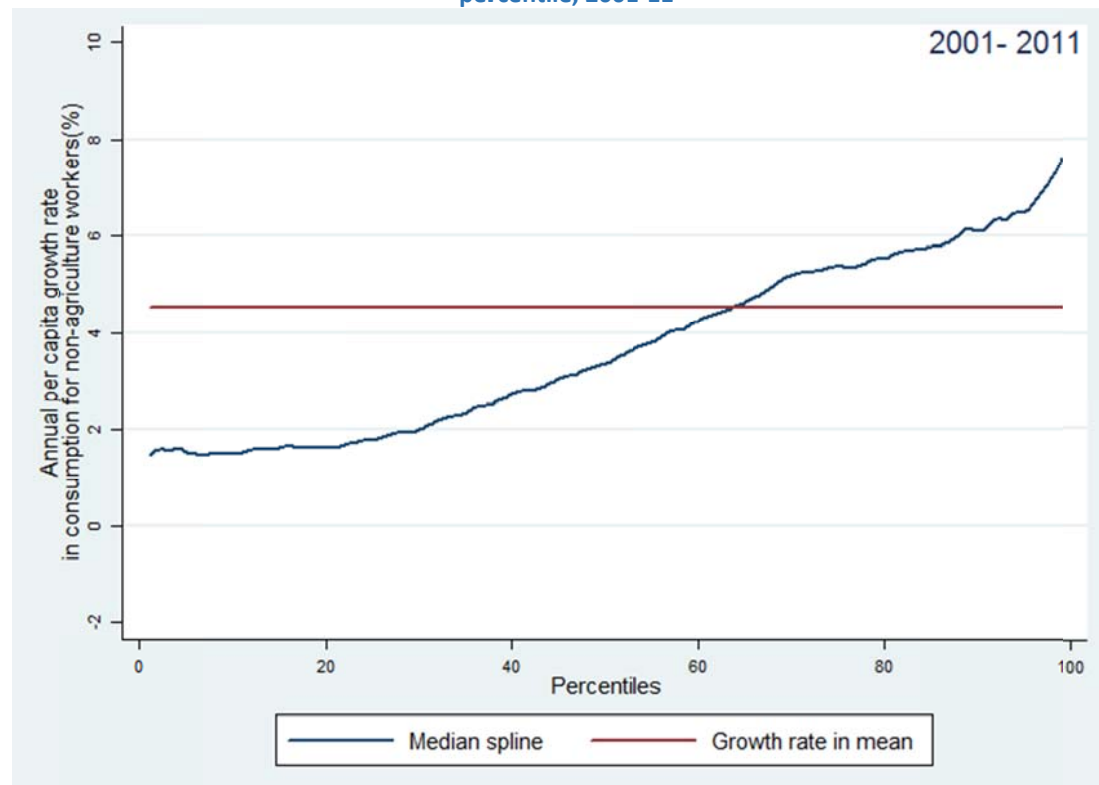
	Agriculture	Non-agricultural	Total
Share of total rural household primary income (Sk)	0.45	0.55	1.00
Gini coefficient (Gk)	0.66	0.76	0.50
Gini correlation (Rk)	0.53	0.82	1.00
Contribution to overall Gini coefficient (Sk*Gk*Rk)	0.16	0.34	0.50
% Contribution to overall Gini coefficient (Sk*Gk*Rk/G)	31.6%	68.4%	100%
Marginal Effect (% Change in Gini from a % change in income source) (Sk*Gk*Rk/G-Sk)	-0.13	0.13	0

Source: World Bank staff calculations from Susenas, BPS.

**Inequality in consumption has also increased amongst households with primarily non-agricultural sources of revenue.** Although per capita monthly consumption for all non-

agricultural sector workers increased between 2001-11, the upward sloping Growth Incidence Curve (GIC) indicates that the richer percentiles experienced greater growth in consumption. The real per capita consumption of non-agricultural sector workers in the top 20<sup>th</sup> percentile increased by 6 percent, significantly higher than the bottom 40<sup>th</sup> percentile, which only increased by 2 percent.

**Figure 6.2. GIC of per capita consumption for non-agricultural workers in rural Sulawesi, by percentile, 2001-11**

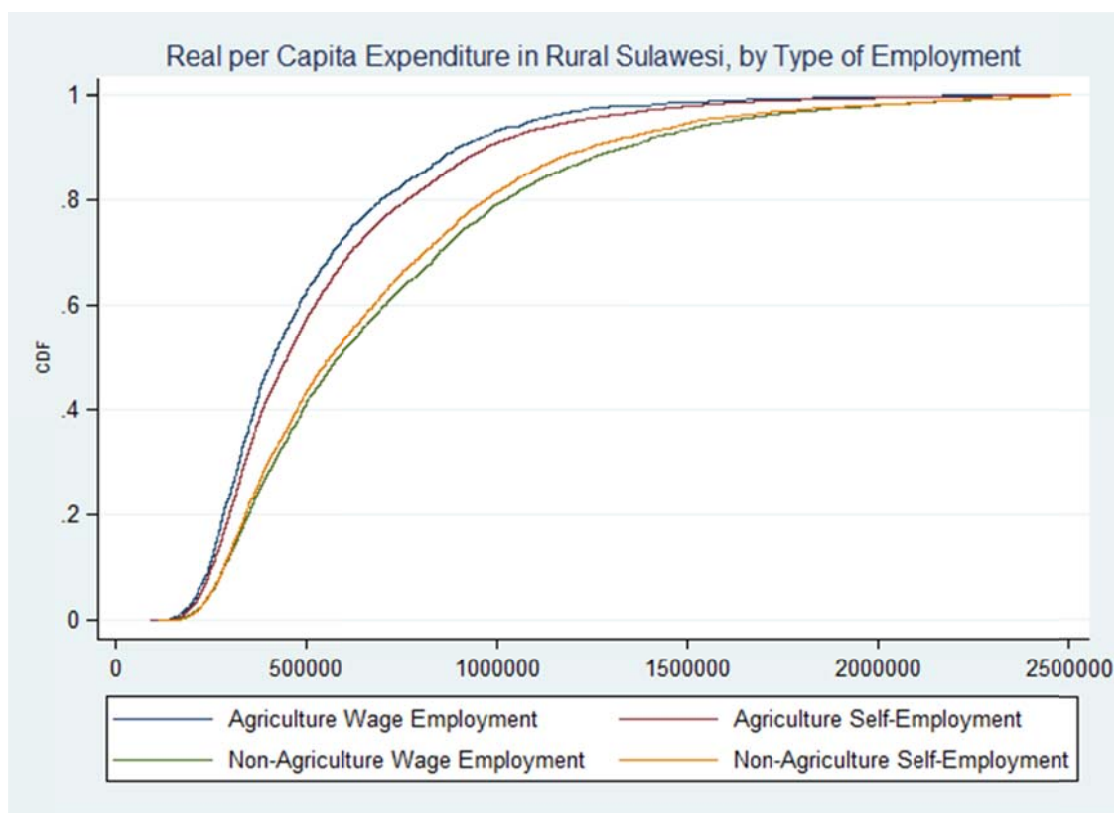


Source: World Bank staff calculations from Susenas, BPS

**Inequality, measured by consumption, amongst non-agricultural workers is higher than those employed in other sectors.** The cumulative distribution graph in Figure 6.4 shows that the distribution of per capita consumption of people in non-agricultural employment (includes self-employment) is around Rp 300,000 is larger for higher percentiles, reflecting higher inequality for non-agricultural sectors in comparison to agricultural sector workers. The existence of higher inequality in the non-agricultural sector is consistent that monthly per capita household consumption within the non-agricultural sector varies significantly between Rp 389,187 for construction sector households to Rp 671,902 for financial services sector households.



Figure 6.3. CDF of per capita consumption across rural employment types in rural Sulawesi, 2011



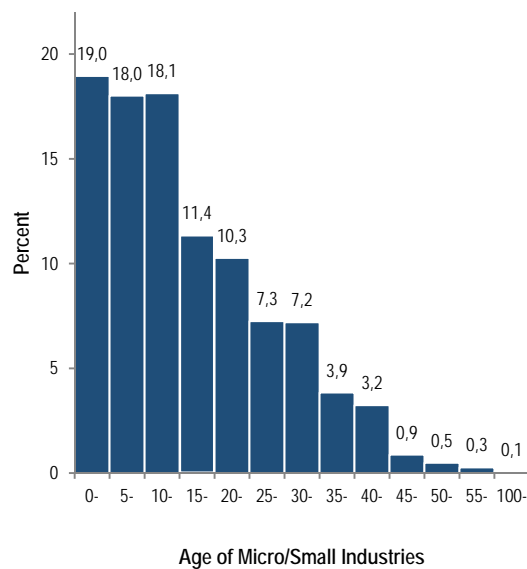
Source: World Bank staff calculations from Susenas, BPS.

### 6.5. Profile of Rural Non-Agriculture Enterprises in Sulawesi

**Sulawesi has the second highest number of rural businesses per 1,000 people in Indonesia.** On average, there were 20.9 rural businesses per 1000 people in Indonesia in 2011. Java and Bali has the highest number of businesses with 24.9 per 100 people; followed by 23.8 in Sulawesi, 20.7 in Sumatra, 19.3 in Kalimantan and 17.8 in eastern Indonesia. In Sulawesi, almost half of these rural businesses are small convenience stores (*toko kelontong*), with another 44 percent made up of small and micro industries (MSIs) at (44.3 percent). Among provinces in Sulawesi, Southeast Sulawesi has the highest rural business density with 33.1 businesses per 1,000 people, followed by 24.6 in West Sulawesi, 24.5 in North Sulawesi, 24.1 in Gorontalo, 22.4 in South Sulawesi and 18.9 in Central Sulawesi.

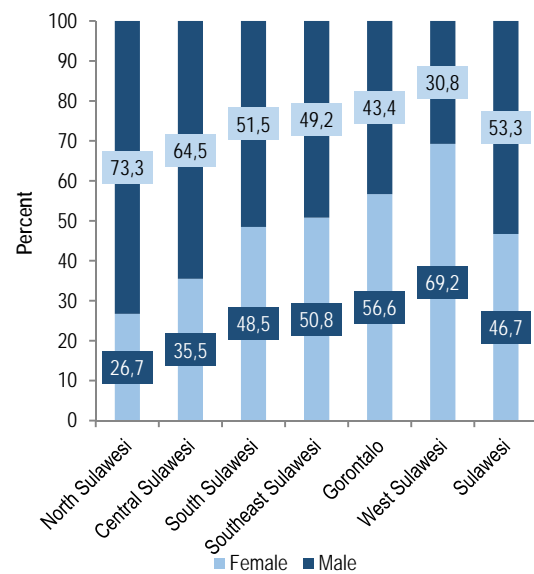
**The majority of micro and small industries (MSIs) in rural Sulawesi that existed in 2011 were owned by males and had been operating for less than 15 years.** About 93 percent of MSIs in rural Sulawesi are micro-sized and 91.5 percent are proprietorships. Forty percent of MSIs are located in South Sulawesi, while a further 20.6 percent are situated in Southeast Sulawesi. Moreover, 55 percent of MSIs had been operating for less than 15 years, with 19 percent less than 5 years old. Around 53 percent of MSIs in rural Sulawesi were headed by males. Roughly two-thirds of rural MSIs owners had primary education or lower, while 15 percent had junior secondary education, 15 percent had senior secondary education, and only 1.2 percent of MSI owners had tertiary education.

**Figure 6.4. Distribution of MSIs in rural Sulawesi by age of enterprise, 2011**



Source: WB Staff estimation from Survei Industri Mikro dan Kecil, Quarter 1, 2011

**Figure 6.5. Gender breakdown of rural MSI owner in Sulawesi, by province, 2011**

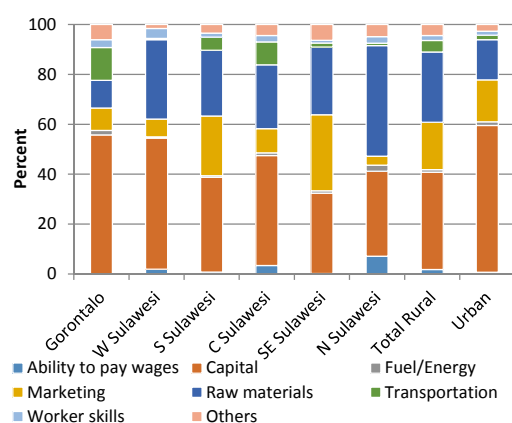


**The food industry is the dominant MSI sector.** Approximately 42 percent of MSIs were in the food sector, with a further 24 percent in the wood products sector and 12 percent in the textiles sector.

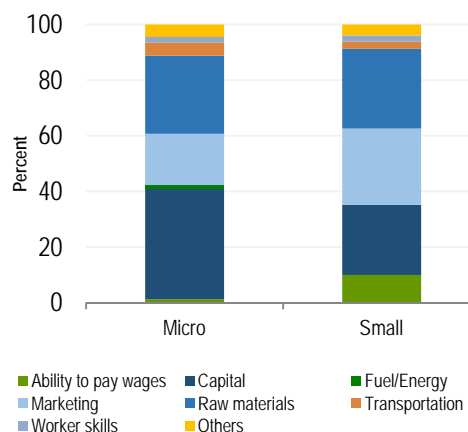
## 6.6. Constraints to Rural Non-Agriculture Micro and Small Industries Operation

**The majority of rural micro and small industries (MSIs) in Sulawesi faces operational constraints, particularly in accessing capital and raw materials.** In 2011, about 82 percent of rural MSIs in Sulawesi said they faced constraints in their operations. According to Micro and Small Industry (MSI) survey, 39 percent said the main challenge faced was access to capital. Approximately 28 percent of respondents said raw materials was their main constraint while 19 percent said that marketing of products was the MSI's main problem. The scale of the industry influenced the type of constraints faced: capital was the major constraint faced by micro industries (40 percent), small industries identified raw materials (28.7 percent) and marketing (27.4 percent) as their main constraints.

**Figure 6.6. Breakdown of main constraints faced by MSIs in rural Sulawesi, by province, 2011**



**Figure 6.7. Breakdown of main constraints faced by MSIs in rural Sulawesi, by scale, 2011**



Source: WB Staff estimation from Survei Industri Mikro dan Kecil, Quarter 1, 2011

**Most rural MSIs are financed solely from the owner's personal resources.** Only one-fifth of rural MSIs in Sulawesi utilize external or borrowed resources. Debt represents on average 55.2 percent of the MSIs' total capital, for those that borrow. Micro industries heavily rely on of personal loans (40.9 percent), while most small industries borrow from banks (54.8 percent). Over half of MSIs who had never borrowed from a bank stated that they were not interested (52.2 percent); around 16 percent said they did not have the knowledge regarding the procedures and over 15 percent said they did not have the collateral.

**Poor infrastructure may exacerbate the problems faced by rural MSIs in Sulawesi.** According to the Local Economic Governance survey by KPPOD (Regional Autonomy Watch), which surveyed small to large enterprises in both urban and rural areas, infrastructure was ranked amongst the top three obstacles faced by 46.5 percent of sampled business entities in North Sulawesi, South Sulawesi and Gorontalo (2007), and by 76.2 percent of sampled business entities in West, Central, and Southeast Sulawesi (2010). In West, Central, and Southeast Sulawesi, 28.5 percent of sampled firms have access to poor quality roads, while 17.0 percent experienced frequent power outages. The lack of, or inadequate supply of street lighting and water were also common problems experienced by firms in both rural and urban areas in 2010. Such inadequacies in infrastructure, particularly those related to poor quality roads, may contribute to the marketing and transportation difficulties faced by many rural MSIs in 2011.

**Poor local governance may also adversely affect rural MSI operations.** According to the KPPOD, one quarter of firms sampled in North Sulawesi, South Sulawesi and Gorontalo in 2007 and half of the firms sampled in West, Central, and Southeast Sulawesi in 2010 considered their interaction with the local government to be among the top three problems they faced. Other key constraints identified by the KPPOD were related to land availability, business licenses, and transaction costs.

## 6.7. Potential Policy Options

**Developing rural economic centers by strengthening rural non-agricultural enterprises is a key policy priority for developing the rural economy in Sulawesi.** Low-productivity non-agricultural activities are currently performed in more remote locations, while high

productivity activities tend to be located in areas closer to urban areas such as district capitals. Sulawesi therefore needs to develop viable and vibrant rural economic centers by strengthening and developing rural non-agriculture enterprises to absorb agricultural labor surplus in the rural area itself. At the same time, the regions need to build better connectivity to larger markets or urban areas, which, could become alternative sources of rural employment. Improved connectivity may encourage short-distance commuting instead of mass migration of the workforce to urban areas.<sup>25</sup>

**Improving infrastructure to facilitate mobility and connectivity should become Sulawesi governments' key task.** Existing empirical evidence shows that the availability of infrastructure has a strong association with high-income non-agricultural employment. Need for rural infrastructure development is further discussed in Chapter 9.

**Improving human capital such as education and skills is also critical.** The rural employment rate in Sulawesi is already high at 98 percent, thus policies need to focus on the quality of the employment available. In order for rural workers to access high-productive employment opportunities, their education and skills levels must improve. Moreover, income generating initiatives also need to focus on women who are disproportionately working in low-productive non-agricultural sectors. Governments, therefore, need to establish learning centers to provide relevant hands-on training for rural communities. Formal vocational training or pre-employment programs may also help those leaving secondary school. Local governments can also provide incentive programs such as developing employment guarantee programs with rural businesses to attract more young people into the non-agricultural sector upon completing their education.

**Strengthening the links between agricultural and non-agricultural activities needs to continue.** Agro-processing is one approach for promoting links between agricultural and non-agricultural activities in Sulawesi. In this context, local governments need to strengthen their role in creating an enabling environment for rural enterprise participation, promoting competition among enterprises, and providing access to rural finance such as rural cooperatives, rural banks, and micro-credit institutions.

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<sup>25</sup> Local governments in the provinces of Zhejiang in China have played an important role in fostering inclusive development, creating markets to improve connectivity with global networks. Through his report Hamaguchi (2008) indicates that Zhejiang province, originally a poor region not only due to its agricultural conditions, but because of a lack of infrastructure, is now known for the strong entrepreneurship of its small- and medium-sized local firms. The economy was gradually developed around light industries, the production of which was distributed by travelling merchants of local origin. As these industries grew, the local government established huge wholesale markets to sell their manufactured goods. These markets attracted large numbers of retailers, both domestic and foreign, seeking low price merchandise. Producers of similar products from other parts of China are now increasingly dependent on Zhejiang's wholesale markets. As a consequence, local clusters of firms in Zhejiang have developed and diversified.



# **Chapter 7**

## **Promote Greater Inclusiveness in the Extractive Industries in Sulawesi**



**As identified in Chapter 4, the extractive industries (EI) have played an important role in Sulawesi's fast economic growth over the past decade.** Despite EI's importance to Sulawesi, however, its growth has not always translated into real benefits to the island's communities. Although EI is responsible for approximately 6.8 percent of the island's gross regional domestic product (GRDP) in 2013, it only employs 1.76 percent of Sulawesi's work force. Moreover, the economic multiplier effect of EI is relatively low compared to other sectors.

**A key priority for Sulawesi is to ensure that Sulawesi maximizes the economic benefit from the EI and to ensure that its development is inclusive.** This chapter provides a comprehensive analysis of the extractive industries in Sulawesi. This chapter describes the main activities within EI and its various contributions to the economy including employment, revenue, and human development. This chapter also assesses the risks of having a large EI and proposes recommendations on how to improve the industry's inclusiveness in Sulawesi.

### **7.1. Description of Extractive Industries in Sulawesi**

**Sulawesi has substantial natural resources: it is one of the world's key nickel producers and a small producer of gold and oil and gas.** The majority of Indonesia's nickel mining operations and a substantial portion of Indonesia's ferro-nickel production capability is in Sulawesi. In addition to nickel, gold mining and natural gas extraction are also growing industries for the region. Artisanal and small-scale mining (ASM) operations, particularly gold, employ a significant numbers of local workers.

**Several Sulawesi districts have long-term large-scale nickel mining operations.** Nickel price rises in 2002-2008 attracted new operators to Sulawesi. Furthermore, domestic companies increased their investment, particularly from PT Aneka Tambang (Antam). Antam is Indonesia's main state-owned mining company and has been growing quickly over the past decade. Antam mines nickel ore for export and produces ferro-nickel in a smelter that the company has been operating in Sulawesi since 1973. Antam shares many similarities with nickel producer PT Vale because both are state-owned companies aiming to modernize and internationalize their operations.

**Table 7.1. Extractive industry production and revenue estimates, 2011**

Commodity/Producer /Units	Production	Revenue (US\$)
<b>Nickel<sup>1</sup> (t)</b>	<b>219,900</b>	<b>4,041,843,000</b>
PT Antam <sup>2</sup> (t)	56%	2,250,408,000
PT Vale (t)	30%	1,242,555,000
Other companies	14%	548,880,000
<b>Gold (oz)</b>	<b>202,579</b>	<b>339,319,825</b>
PT Tokatinding (oz)	79%	268,000,000
PT Lanut - J Resources (oz)	21%	71,319,825
Artisanal / Small-scale	Unknown	Unknown
<b>Oil &amp; Gas</b>		
Donggi Senoro - Associated gas fields (mt)	2	TBA
Sengkang - Energy World Corp (MW)	315	TBA
<b>Total</b>		<b>4,381,162,825</b>

Source: World Bank staff estimates (includes new supply from Donggi Senoro and Tokatinding); Annual reports and forecasts. 1. Estimates only include companies with available annual reports 2. State-controlled company

### Indonesia is the world's largest

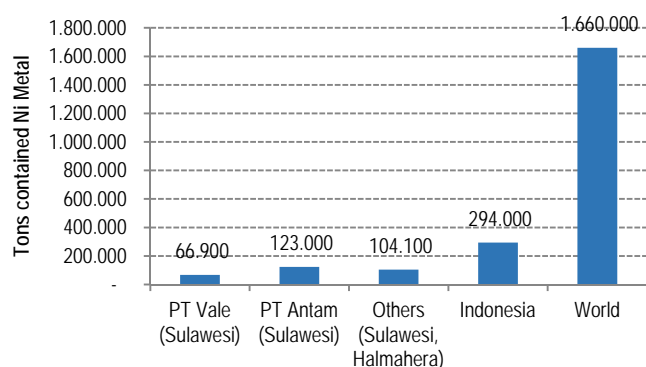
### Nickel producer and Sulawesi

### accounts for most of the country's production.

Indonesia produces 17.7 percent of the world's nickel, estimated at 294,000 tons, most of which comes from Sulawesi. Two large Sulawesi operators, Antam and Vale, produce 65 percent of Indonesia's nickel output. Antam is Indonesia's largest nickel producer and its nickel operations are all in Sulawesi.

Antam produces approximately 30 percent (or 123,000 tons) of Indonesia's total nickel production. Some of Antam's nickel is exported as high- and low- grade concentrate. Some of the nickel is used in its own smelters to produce ferro-nickel. PT Vale is Sulawesi's second largest producer with an annual production of 67,000 tons.

**Figure 7.1. Nickel production, 2011**



Source: World Bank estimates, Annual Reports, Survey Data, BOIC, AusAID, London Metal Exchange.

### Sulawesi has attracted attention for the region's potential to extract other resources, such as gold and natural gas, but is limited by regulatory uncertainty.

Gold mining remains relatively small. According to official statistics, Sulawesi only produced 6 tons of gold from two mines. Gold exploration has been limited in recent years by risks associated with uncertainty in the policy and regulatory framework. There has also been significant interest in Sulawesi's potential to generate liquefied natural gas (LNG). Although exploration activity has increased, Sulawesi is not considered an important driver of LNG growth in Indonesia.



## 7.2. The Opportunities and Dangers of Resource Growth

Policy makers regulating the extractive industries (EI) face the ‘**resource paradox**’ challenge, whereby a region is well-endowed with natural resources but fails to leverage those resources into long-term inclusive development.<sup>26</sup> One potential cause of the “resource paradox” is the so-called ‘Dutch disease’, where reliance on a booming natural resource sector may make other sectors such as manufacturing less competitive. Apart from ‘Dutch disease’, other reasons for the resource paradox include potential corrosive impact of natural resources on institutions and governance standards including removing incentives for reforms and encouraging rent-seeking.

**The Indonesian government needs to both maximize the economic benefits of EIs and leverage these benefits for sustainable inclusive development.** The government faces two challenges in achieving the two goals. First, it needs to ensure that benefits from natural resource development are not being offset by costs associated with potential negative socioeconomic impacts. Second, resource operations are often a source of community dissatisfaction because of debate over the distribution of benefits from EI. It is critical therefore to align private and public investments and use EI resources to reduce poverty and maximize the benefits for the communities.

**The main risk associated with natural resource based growth is the ‘Dutch disease’.** Typically, ‘Dutch disease’ has two effects:

- **Spending effect:** a booming resource sector draws in foreign currency and causes domestic consumption (private and public) to increase, increasing the prices of non-tradable goods. This may cause real exchange rate to appreciate, which in turn may reduce the competitiveness of other sectors.
- **Resource movement effect:** labor and capital are drawn to the resource sectors and away from other sectors, resulting in the shrinking of those sectors.

**There is no evidence that the spending effect is taking place in Sulawesi because the cost of inputs for construction—a non-tradable sector—is not higher in EI-intensive districts<sup>27</sup>.** To test whether a spending effect exists, the research team conducted a regression analysis comparing the size of the extractive industries in each district in Sulawesi (proportion of total district GRDP generated by EI) against the local price level of non-tradable goods (construction price index). The construction price index is used as the proxy for the price of on-tradable goods because the cost of construction is a function of local wage levels and the price of inputs. A spending effect exists when local wages and the price of other inputs increase in districts that have higher EI activity. The regression analysis found no statistically significant correlation between each district’s share of GRDP generated by EI and construction prices.

**There is also no evidence a resource movement effect exists in Sulawesi because manufacturing sector employment has not decreased in areas where EI dominates the**

<sup>26</sup> See for example Rents to Riches: The Political Economy of Natural Resource Led Development, World Bank 2012

<sup>27</sup> The following equation is used to test the spending effect in Sulawesi

$$Inflation_{i,t} = \alpha_0 + \alpha_1 Smining_{i,t} + \alpha_3 IKK_{i,t-1} + \delta_t + \varepsilon_{i,t}$$

Where Smining is share of mining GRDP for district i at time t, IKK is construction cost index. The result shows that inflation is not affected by share of mining GDP, but it is affected by construction cost index last year as well as by the dummy variables.

**district's economy.** To test whether a resource movement effect exists, this study conducted a regression analysis comparing the size of the extractive industry (proportion of total district GRDP generated by EI) and changes in the share of workers employed by the manufacturing sector. A resource movement effect exists if a district with a large share of GRPD generated by EI (that is, the economy that is dominated by EI) has a smaller share of its labor force working in the manufacturing sector. If this phenomenon exists, it suggests that labor is moving to the extractive industries away from manufacturing. The regression analysis found no statistically significant correlation between Sulawesi districts' share of mining GDP and the change in the share of manufacturing employment growth<sup>28</sup> (Table 7.2).

**Table 7.2. Dutch Disease Panel Regression**

VARIABLES	Inflation	Changes in share of employment	Standard errors in parentheses
Lag 1 of construction cost index	-0.235***		*** p<0.01, ** p<0.05, * p<0.1
	(0.04)		
Share of mining GDP	-0.0274	-0.0389	
	(0.13)	(0.16)	
2007b.year	0	0	
	0.00	0.00	
2008.year	10.65***	0.582*	
	(0.75)	(0.32)	
2009.year	10.05***	1.169***	
	(1.92)	(0.32)	
Lag 1 of log employment		-4.062***	
		(0.43)	
Constant	46.82***	31.81***	
	(5.84)	(3.52)	
Observations	190	200	
R-squared	0.902	0.508	
Number of districts	68	69	

Source: World Bank Staff calculations.

### 7.3. Economic Contribution of Extractive Industries

Extractive industries' direct contribution to Sulawesi's GDP growth, volatility, and inequality

In 2011, extractive industries (mining and quarrying) accounted for 6.3 percent of Sulawesi's GDP and between 4.8 and 7.6 percent of GDP in four provinces: North, Central, Southeast and South Sulawesi. The sector's contribution to Sulawesi's economy was relatively stable in 2000-11, going from 7.0 percent to 6.3 percent of Sulawesi's GDP. At the national level, mining and quarrying represented 7.4 percent of GDP in 2011, in real terms. While important in North, Central, Southeast and South Sulawesi, EIs are marginal in West

<sup>28</sup> To test the resource movement effect, the model employed is

$$EM_{i,t} = \beta_0 + \beta_1 Mining_{i,t-1} + \beta_2 Employment_{i,t-1} + \varphi_t + \omega_{i,t}$$

Where EM is employment from non-EI to EI districts, employment is defined as share of labor force employed in manufacturing.

Sulawesi and Gorontalo, although projects currently under development in West Sulawesi may change this.

**The overall EI sector contribution to real growth in 2001-11 was 6.0 percent in Sulawesi; its contribution was highest in Central and Southeast Sulawesi, accounting for 25.0 and 27.6 percent of growth, respectively.** This possibly reflects the impact of stable large producers such as Antam and PT Vale in these locations. Other provinces have seen the extractive sector's contribution to growth remain small or decline. Mineral reserves in these areas are likely to be less significant. Marginal producers may also be more price-sensitive and susceptible to the downturn in nickel prices post-global financial crisis.

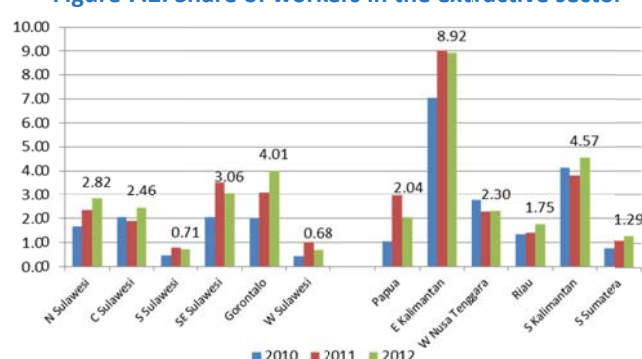
**Growth in the extractive sector has been accelerating in Central and Southeast Sulawesi in recent years. However, districts more reliant on EIs are more likely to experience volatile growth.** Central and Southeast Sulawesi saw mining sector growth accelerate to more than 35 percent in 2011. Extractive sector growth in these two provinces appears to be dependent on the world nickel price: the relative slowdown in 2008-09 probably resulted from its collapse. Growth in 2010-11 may be linked to the decision to grant mining licensing authority to local governments in 2009. Both provinces are home to nickel mining and there has been a proliferation of new entrants in the nickel sector since 2009. Across Sulawesi, districts with a higher share of mining GDP tended to experience more volatile growth in 2000-10, although the association is weak.

## Employment in the extractive industries

**Despite an overall increase, the share of workers in the extractive sector remains low at 1.76 percent of the labor force.**

The share of extractive industry workers in Sulawesi has risen but still stands below other extractive producing provinces; these differences are likely to stem from the different sizes of the mining sectors in these places.

**Figure 7.2. Share of workers in the extractive sector**



Source: BPS Sakernas, World Bank calculations.

**Informality dominates the extractive sector, with more than half the sector's workers being in informal jobs.** Total employment in Sulawesi was 94.7 percent of the labor force in 2012, with the EI sector absorbing only 1.8 percentage points of the total. The number of formal workers in the sector increased from 0.51 percent in 2010 to 0.96 percent in 2012, corresponding to 37,000 more formal EI workers. However, this number is still lower than that of informal workers.

**Table 7.3. Employment in the extractive sector in Sulawesi, 2012**

SAKERNAS (% of labor force)	Sulawesi	North Sulawesi	Central Sulawesi	South Sulawesi	Southeast Sulawesi	Goront alo	West Sulawesi
Formal EI sector workers	0.96%	1.46%	1.37%	0.54%	1.71%	1.23%	0.21%
Informal EI sector workers	0.80%	1.37%	1.09%	0.17%	1.34%	2.78%	0.47%
Total EI Workers	1.76%	2.82%	2.46%	0.71%	3.06%	4.01%	0.68%
Total labor force	8,109,732	1,060,969	1,279,717	3,657,419	1,043,390	479,702	588,535
<b>SUSENAS</b>							
Female workers (% of Labor Force)	0.09%	0.04%	0.10%	0.04%	0.24%	0.16%	0.07%
Female workers (% of Total EI workers)	7.43%	2.41%	7.28%	7.93%	11.41%	6.09%	18.25%

Source: BPS Sakernas and Susenas, World Bank staff calculations.

**Male workers dominate jobs in the EI sector; the sector's workers usually have low educational attainments.** Only 7.4 percent of EI jobs go to female workers (Table 7.2). Interviews indicate that field work (excavation, drilling, processing, security, etc.) is usually carried out almost exclusively by men, while administrative jobs (reception, finance and accounting, etc.) are generally carried out by women. Most of the sector's workers are between 15 and 45 years old, with low educational attainments: those below or at junior high school level accounted for 71.2 percent of the total in 2012. Surveyed companies declare favoring local employment in an effort to improve their relationship with local governments and communities. Large companies employ local and non-local labor (including expatriates), while the small to medium companies generally only employ local labor.

**Table 7.4. Demographic characteristics of EI workers, 2012**

	2008	2010	2012
<= SMP	74.0	73.7	71.2
SMU	23.4	22.7	24.7
University	2.7	3.7	4.1
<b>Age group</b>			
15 – 30	44.7	42.1	42.7
31 – 45	39.7	41.9	42.8
46 – 60	13.3	14.2	11.8
> 60	2.3	1.8	2.7

Source: BPS Sakernas, World Bank calculations

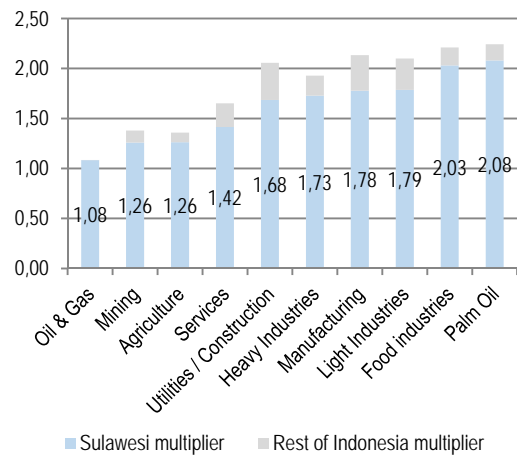
Note: Figures are in percent

**Companies report having difficulties finding specific skills locally and as a result many locals are employed in low ranking positions.** Companies declare that the biggest obstacle they face in employing local people is the shortage of skills and qualifications. The proportion of local workforce occupying managerial and top positions is usually low. The local workforce tends to be employed

as field workers, heavy equipment operators, administrative staff, catering staff, security staff, drivers, office boys, receptionists, and in positions that do not require specific skills. Middle to upper management positions tend to be filled by non-local workers, these positions include: the general manager, division heads, internal auditors, and quality controllers.

In order to assess the overall significance of EIs in Sulawesi's economy it is necessary to study these industries' links with other sectors. We compute gross outcome multipliers, which estimate the overall economic activity generated by the demand for EI products. This is based on the idea that to produce Rp 1.0 worth of EI products to meet final demand, EI companies will use intermediate inputs from companies that will in turn use inputs in their production. Hence, to meet Rp 1.0 of final demand for their products, EI companies will have to produce Rp 1.0 (*initial effect*), their suppliers will have to produce the inputs they use (*the first round effect*) and in turn their suppliers to produce the inputs EI suppliers use (*the industrial support effect*).

**Figure 7.3. Inter-regional economic multipliers by economic sector, 2005**



Source: World Bank, BPS.

The economic multiplier associated with EIs in Sulawesi is low compared with other economic sectors, indicating an “enclave style development” for EI, with little linkages to other economic sectors. For Rp 1.0 of final demand, EIs generate Rp 1.26 of output in Sulawesi through production linkages, bringing EI GDP contribution from 6.3 to 7.4 percent. Figure 7.3 presents economic multipliers for the different sectors in Sulawesi, distinguishing between the economic activity in Sulawesi and in other parts of Indonesia. The latter are generally low indicating that companies in Sulawesi mostly use intermediate inputs produced on the island. The extractive sector multiplier in Sulawesi, with a value of Rp 1.26, indicates that to satisfy Rp 1.0 of final demand the EI sector generates an extra Rp 0.26 of output, decomposed as described below:

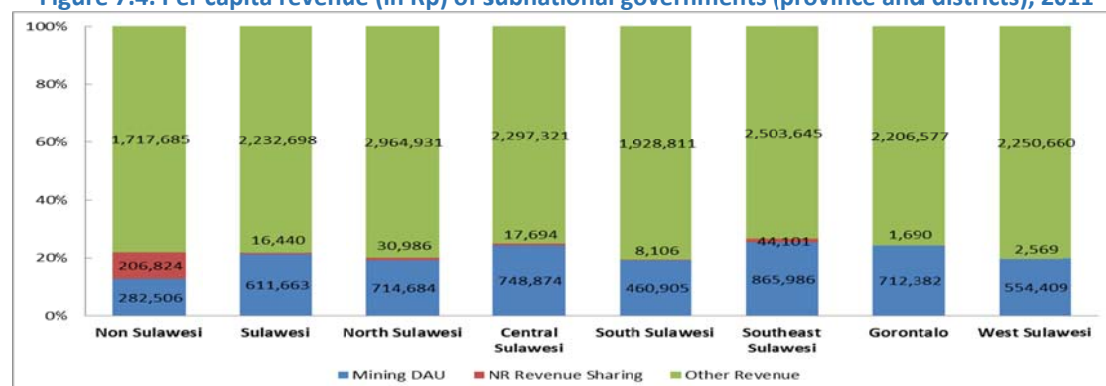
- Rp 0.09 generated in the EI sector itself, meaning that the sector provides intermediate inputs for itself (e.g. mining contractors doing land clearing and preparation)
- Rp 0.10 generated in the services sector (e.g. security and accounting firms working for EI companies)
- Rp 0.04 generated in the utility and construction sector (e.g. electricity purchased for operations and construction of factory and office buildings)
- The remaining Rp 0.03 is generated in oil & gas, heavy industries, and manufacturing

#### 7.4. Fiscal Contribution of Extractive Industries

The most significant sources of revenue from EI companies are royalties, land rent, and corporate income tax. Revenues generated by royalties and the land rent are returned to provinces through the natural resource revenue-sharing fund. This fund contains revenue from EIs, as well as others, such as forestry and fisheries. However, in 2011, 96 percent of the non-tax revenue sharing fund came from EI revenues: the following analyses consider

the whole fund and do not disaggregate it. Corporate income tax revenues from EI accrue to the General Allocation Fund (DAU) and are then redistributed across to all local governments, not only producing districts, according to a formula.

**Figure 7.4. Per capita revenue (in Rp) of subnational governments (province and districts), 2011**



*Source: WB staff calculation based on Ministry of Finance data.*

**Transfers from the center linked to EI revenue represented 22.0 percent of total local governments' revenue in Sulawesi in 2011, or Rp 11.07 trillion.** This measure takes into account natural resources non-tax revenue-sharing, as well as an estimate of the share of the DAU attributable to natural resources<sup>29</sup>. This decomposition is presented for 2011 as it is the most recent year for which data are available. Of this, DAU from EI represents 21.4 percentage points (Rp 10.78 trillion) and non-tax revenue-sharing 0.6 percentage points (Rp 290 billion). To understand the local impacts and significance of EI revenue the analysis focuses on non-tax revenue-sharing which, even if it accounts for a little share of the EI revenue, is clearly attributable to EI and varies across districts as producing districts are entitled to more than non-producing ones. The provinces where the per capita EI-linked revenue is the highest are: Southeast Sulawesi (Rp 910,087), Central Sulawesi (Rp 766,568) and North Sulawesi (Rp 745,670).

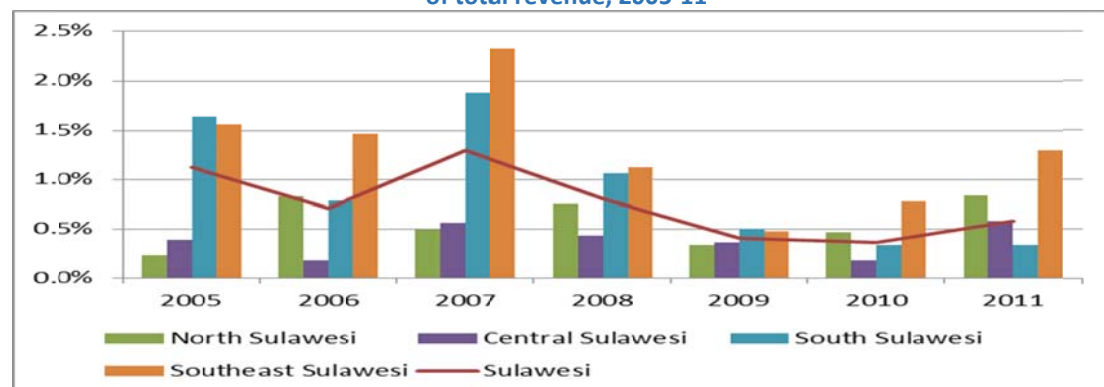
**Natural resources non-tax revenue-sharing only represented 0.6 percent of local governments' revenue in 2011, and its value has been declining over the years.** After having peaked in 2007, the amount of non-tax revenue-sharing has decreased both as a share of the total revenue and in value. It went down from Rp 385 billion in 2007 to Rp 290 billion in 2011, in current terms. The peak of 2007 corresponds to the high growth years of the nickel industry and high global demand for minerals. The subsequent slump corresponds to years where sector growth slowed during the global financial crisis; the nickel sector may have been particularly affected because of slowing demand from China.

**An estimation of the potential for nickel royalties collection in Central and Southeast Sulawesi indicates that there may be significant leakages.** To estimate the revenue potential from nickel revenue-sharing, we use the value of nickel ore and ferro-nickel exports for 2011. We use the 4 percent rate for royalties and estimate that 10 percent of the exports value can be deducted as costs incurred by the producers. Finally, 80 percent of the total royalty potential should accrue to local governments according to revenue-sharing rules. On this basis, we estimate a royalty potential of Rp 336,421 billion for nickel,

<sup>29</sup> Estimated "mining DAU" is calculated as 26% of the mining related net domestic revenues minus the funds distributed through to natural resource revenue sharing

compared with the actual amount of non-tax revenue-sharing received of Rp 161,258 billion, for all mining commodities, representing only 48 percent of the nickel potential. This order of magnitude is consistent with the findings of other World Bank research estimating that, at the national level, between 28-51 percent of potential coal non-tax revenue (from royalties) in 2011 was not collected<sup>30</sup>.

**Figure 7.5. Natural resources revenue-sharing of subnational governments in Sulawesi, percentage of total revenue, 2005-11**



Source: Ministry of Finance

## 7.5. Extractive Industries and Human Development

**Socio-economic impact assessments of various mines have found that incomes and welfare in a localized area around the operations improve, in some cases significantly.** At the aggregate level, this usually follows households that have jobs with the mine or rely on the mine for a significant share of their household income. Aggregate data can hide serious pockets of inequality, particularly that of the historic or indigenous communities, whose welfare situation can be masked by a number of relatively highly paid immigrants.

**To assess the aggregate impact of extractive industries on expenditure levels and poverty at the district level we used regression analysis.** The chosen specification allows to test whether changes in different gross regional domestic product (GRDP) categories between 2002 and 2008 are associated with changes in per capita household expenditure and poverty measures over the same period. The categories of GRDP are agriculture, mining (including oil and gas), and all other GRDP components. The hypothesis to be tested with this model is whether an increase in EI activity in a district has a significant impact on these indicators over a period encompassing the commodity boom (2002-07).

**Increases in the three GRDP categories (agriculture, mining, and other) are associated with increased household expenditure. However, increases in mining GRDP are not associated with poverty reduction, while increases in agricultural and other GRDP are.** In a district, a 1 percent increase in agriculture, mining, and other GRDP is respectively associated with increases of 0.11, 0.06, and 0.13 percent in average household per capita expenditure, controlling for district population size and the share of urban population. However, there is no statistically significant association between increases in mining GRDP and reductions of the poverty rate or gap, while agriculture and other GRDP increases are both associated with

<sup>30</sup> World Bank (2014), *Improving Mining Non-Tax Revenue Administration*



poverty rate/gap reductions. On average, districts that experience an increase in mining activity tend to experience larger increases in household expenditure but no faster poverty rate reduction than they would have in the absence of mining growth.

**Within EI districts,<sup>31</sup> EI households<sup>32</sup> have higher levels of per capita expenditure than non-EI households, but they have lower net enrollment rates in junior high school.** Average per capita expenditure for EI households in 2010 is Rp 482,609, while it is Rp 419,505 for other households, indicating that people working in EI may be financially better off. Measured human development indicators do not show any statistically significant difference across the two groups, with the notable exception of junior high school net enrollment rate (NER). The NER is more than 4 percentage points lower for EI households. This may be explained by the fact that in some mining communities, especially where informal mining is important, young people sometimes leave school early to work in the informal mining sector. This may also explain the low educational attainments of most mining workers.

**The number of illegal artisanal and small-scale mining (ASM) miners in some areas of Sulawesi has decreased in recent years.** Not all ASM operations are illegal, as ASM miners are allowed to apply for IPRs (people's licenses) since the 2009 mining law. Local governments in North Sulawesi estimate that illegal mining has decreased in recent years thanks to ASM miners obtaining these licenses. The number of illegal gold miners in North Sulawesi is still estimated to be around 5,000 people. Significant reduction of the number of illegal miners has also occurred elsewhere: according to the Ministry of Mines and Energy Resources in Southeast Sulawesi the number of illegal gold miners decreased from 2,000 in 2009 to 100-200 people in 2012.

**Interviews in North Sulawesi indicate that artisanal and small-scale mining practices present risks for miners, surrounding communities and the environment, especially in gold extraction.** This is independent of whether or not these ASM operations are legal. In fact, interviews indicate that many ASM miners with an IPR license operate without environmental permits. The environment office (*Dinas*) in North Sulawesi points out that ASM miners use hazardous substances such as cyanide and mercury in their production processes, notably for smelting. These materials are not disposed of with the necessary care, and are often released in ponds or streams, which they contaminate and thereby affect surrounding communities.

## 7.6. The Political Economy of Resource Growth and Governance Challenges

**The problems linked to resource growth can also have adverse governance effects.** Research has been increasingly looking into how resource growth can hamper development through political and governance related channels. Natural resources generate revenue windfalls that may lessen the incentives for institutions to become more inclusive, transparent, and efficient.

**Anecdotal evidence suggests that rent-seeking behavior may be an issue in Sulawesi and threaten governance quality. However, it was not possible to test this hypothesis and further research is needed.** Officials have been accused by civil society organizations of

<sup>31</sup> Defined as a district where the EI sector account for more than 5 percent of GRDP

<sup>32</sup> An EI household is defined as a household having one or more member(s) working in the EI sector



misusing third-parties donations received from EI companies.<sup>33</sup> Such accusations could be indicators that corruption has grown because of mining rents. In the absence of comprehensive data on the number of cases brought to trial and their outcomes, however, it is not possible to assess the exact magnitude of these issues.

### Governance challenges: licensing and oversight of extractive companies

**Adverse governance impacts may be reinforcing several institutional shortcomings in EI oversight.** Analyzing Indonesia's mining legislation, Gandataruna and Haymon (2011) point out that low capacity of local governments has "led to legal uncertainty, poor administrative practices, a lack of coordination across government departments and a dramatic increase in illegal mining activity" and that companies who lacked capabilities and experience have been allowed to operate and export. Furthermore, they point out that the proliferation of illegal mines, operating within the concessions of legal companies, "would only have been possible with the support of local officials, presumably for financial reward".

**Field research<sup>34</sup> indicates that some new small and medium size companies (IUPs) in Sulawesi do not appear to be complying with legal obligations, or operating in a way conducive to inclusive and sustainable development.** Many new mining permits (IUPs) are overlapping with other concessions, and some companies may be conducting mining operations without permits. There are reports of non-transparent practices regarding export permits and quotas: some companies have been reported to export their product under another company's name to overcome export limitations. Local government agencies report nonpayment or under-payment of taxes and royalties. Lastly, there are reports of damaged public roads as a result of their being used by overloaded mining companies' trucks. Larger companies tend to develop their own infrastructures, limiting their use of public facilities.

**Sources report that some of these practices have a negative impact on communities' livelihoods through environmental degradation.** Some new entrants in Central and Southeast Sulawesi seem to be disregarding international standards, and operate in a way not conducive to inclusive and sustainable development. Environmental degradation caused by these practices could cause loss of livelihoods and have adverse consequences on the population. There are reports of sediments spilled by mining companies not operating in an environmentally conscious way: these sediments threaten livelihoods, for instance by destroying rice paddies and rendering fishing impossible close to the coast. If these practices are not investigated and infringers sanctioned, livelihoods may be affected in the long term and communities may suffer even after the mining operations close down.

**These practices seem to go largely unsanctioned as a result of the limited capacity of local governments.** Gandataruna and Haymon (2011) point out that the "limited capacity of regional governments to enforce mining regulations" and the entry of low quality investors may lead to a rapid depletion of the country's mineral resources and cause significant environmental damage while generating low levels of revenue for the state.

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<sup>33</sup> For instance: "Gubernur Sultra: Sumbangan Pihak Ketiga Masuk APBD", Kompas Kendari, February 19, 2013

<sup>34</sup> Source: interviews conducted by World Bank and Hasanuddin University teams, Jan-Apr 2013

## 7.7. Potential Policy Options

**In order to improve the contribution of extractive industries to inclusive development in Sulawesi, this study propose recommendations structured around four pillars. The main recommendations are presented below.** A detailed and comprehensive list of recommendations can be found in the policy note (SDD PN 6), which also identifies the stakeholders who could be involved in the implementation of each recommendation.

**The first pillar focuses on expanding economic opportunities and mitigating adverse impacts of EI growth today, so that the EI sector can contribute more to improving people's livelihoods in the short term.** Targeted professional training could help local communities acquire the professional skills needed by the EI sector and help local residents to access better jobs. Industry-wide corporate social responsibility best practices could be promoted to small- and medium-scale firms: for instance, by encouraging these organizations to provide training or health facilities to communities. Trainings could be offered to people engaging in ASM (artisanal and small-scale mining) to reduce environmental degradation and other health and safety risks.

**Maximizing the benefit of extractive industry to the economy would be better achieved through fiscal means, by optimizing revenue collection and improving spending patterns, rather than through production-side policy, such as the downstream processing requirements.** While such policy could increase forward linkages of the extractive industry, it also creates net welfare losses at least in the medium term. A study by USAID (2013) estimated that the net welfare losses for Indonesian economy as whole from the restriction on unprocessed nickel could go up to USD 781 million, if the policy does not result in additional processing investment which could happen due to low financial profitability of investment in downstream processing. In the best case scenario when all new processing investment become operational as expected, the net gain will only start in 2020. Downstream processing could become economical if there is a focus on creating sustainable competitive advantage. The relevant competitive factors are energy supply and infrastructure rather than ore availability. Downstream processing worldwide has suffered from declining margins as a result of a large increase in the smelting capacity in China in the 2000's. The extent of the margin decline depends on the commodity: in the case of nickel pig iron (NPI) and sponge iron, smelting could still possibly be economical. Building smelting capacity in Sulawesi could make sense if the infrastructure situation improved, and the necessary complementary factors were available. Antam's case provides a good illustration of the current shortage: it has been smelting nickel in Sulawesi since 1973 without grid electricity, and to this day is still using high cost diesel generators.

**The second pillar focuses on investing mineral resources rents for the future.** There is a need for broader and longer-term programs to realize the potential benefits from EI and mitigate the temporary nature of the revenues they generate. Such programs could address low educational attainment, professional skills shortage and gender imbalances identified. Setting up foundations, trusts and funds (FTFs) should be considered in Sulawesi: they could be managed by EI companies or third parties. Lastly, a resource corridor pilot project could be developed to showcase how resource corridor strategy could work.

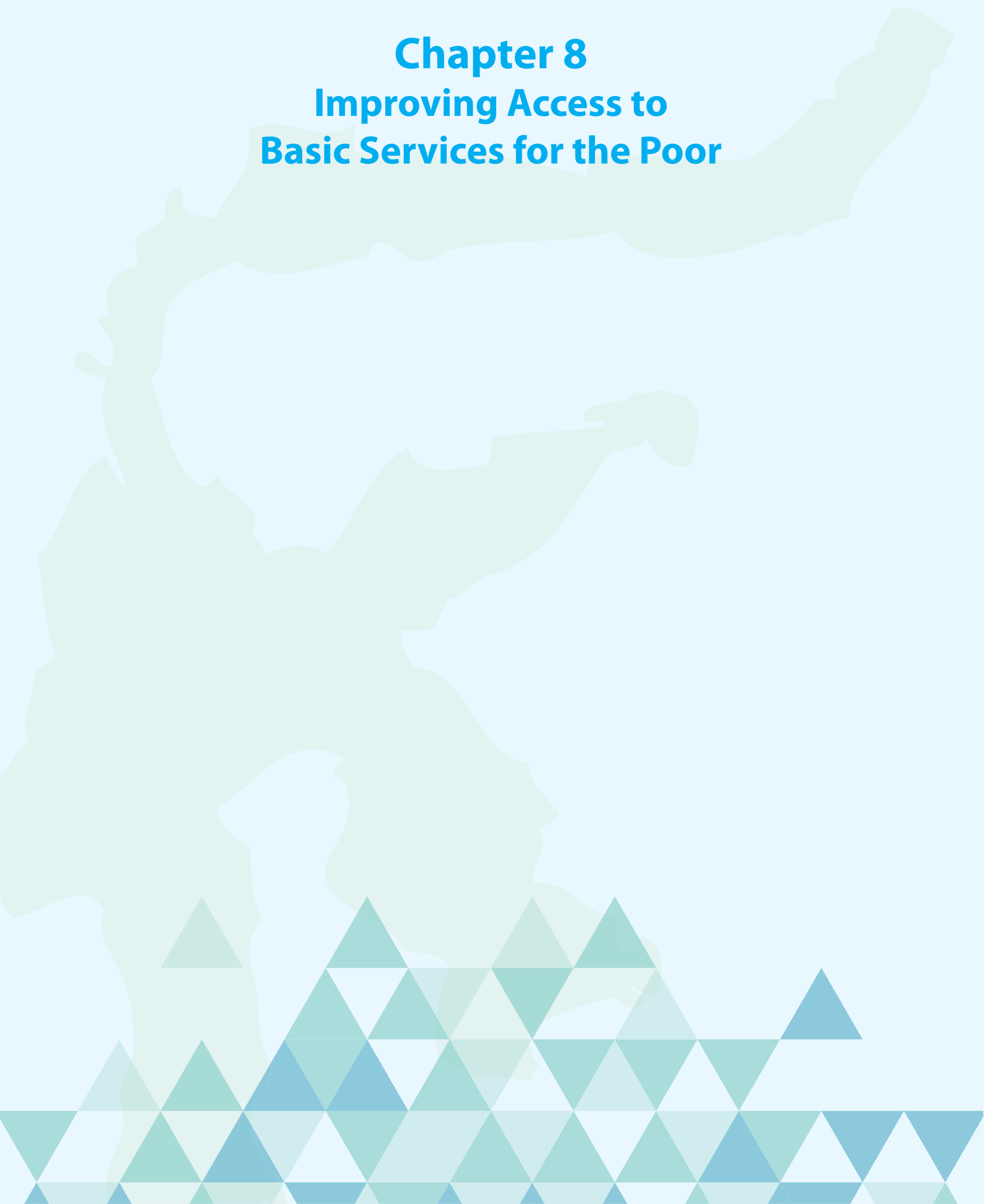
**The third pillar focuses on optimizing revenue collection.** To do so, the mining office and the revenue office (*Dinas*) should play a greater role in the non-tax revenue collection process including collection, control, and compliance. To help local governments support non-tax revenue collection, cooperation between government agencies should be fostered, notably with customs on sharing export data in order to check the production figures reported by companies. It is also important to address issues regarding the tracking of the origin of companies' non-tax payments to enable a more proper revenue-sharing to the producing regions.

**The fourth pillar focuses on improving the oversight and transparency of extractive industries.** Improving the governance of the extractive sector is key to addressing some of the most critical issues identified, such as the proliferation of smaller actors with detrimental mining practices. A gap assessment of the "Clean & Clear" process should be conducted. National audit agencies (BPK, Inspectorate) should receive training and be given mandates to conduct compliance audits of EI licensing procedures. At the subnational level, governments should systematically address EI issues in planning documents. The attractiveness of mining and environment inspectors' positions should be improved, and their capacities strengthened. Lastly, programs should be developed to increase citizens' awareness of issues posed by EI development, an Extractive Industry Transparency Initiative (EITI) standard which ensure full disclosure of taxes and other payments made by extractive companies to the government should be implemented, so that ultimately citizen could push these issues forward to their local governments.



# **Chapter 8**

## **Improving Access to Basic Services for the Poor**



**As identified in Chapter 4, one of the key constraints to inclusive growth is education and skills levels particularly amongst the poor.** As identified in Chapter 6 and 7, improving education and skills levels is key to obtaining employment opportunities in non-agricultural sectors, in both rural and urban areas. A key constraint to improving human capital in Sulawesi is the effective provision of basic services, particularly health and education services.

**This chapter seeks to analyze health and education outcomes in Sulawesi and identify the main constraints for effective service delivery,** particularly in providing services for the most vulnerable segments of the population. This chapter also provides a set of recommendations to improve basic service delivery in Sulawesi.

**Under decentralization, sub-national governments have primary responsibility for managing education and health services.** In education, districts are responsible for providing primary, junior secondary, early childhood, and non-formal education. Provinces hold responsibility for delivering senior secondary and vocational education, while the central government delivers tertiary education, and providing overall guidance on the level of financial support provided for each level of education. In health, districts are responsible for allocating resources to and managing hospitals and primary care. Provinces play a key role in coordination, training, and provide oversight for the management of provincial-level hospitals.

### 8.1. Service Delivery Performance in Sulawesi<sup>35</sup>

**This chapter first assesses and compares Sulawesi's performance in five education and health output indicators against the performance of four regions in Indonesia: eastern Indonesia, Java and Bali, Kalimantan, and Sumatera.** The five selected indicators are:

- Net enrollment rate (NER) at junior high schools (SMP).
- Net enrollment rate at senior high schools (SMA).
- Share of births assisted by skilled workers.
- Immunization coverage.
- Utilization rate of medical facilities.

Output indicators are used in this assessment because they are more responsive to policy changes than outcome indicators, which often only change over much longer periods of time. For example, a successful education program can change enrollment rates (output indicator) almost instantly, while it can take many years to effectively change the problem solving skills of the students or the literacy rate (outcome indicators) in the region. A second reason for using output indicators is that there is limited data measuring outcomes available at the regional level. For instance, indicators such as standardized test scores (e.g., PISA<sup>36</sup>) or maternal and infant mortality rates are not available at the district level.

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<sup>35</sup> The data used for this section is 2012, unless indicated otherwise.

<sup>36</sup> Program for International Student Assessment, OECD.

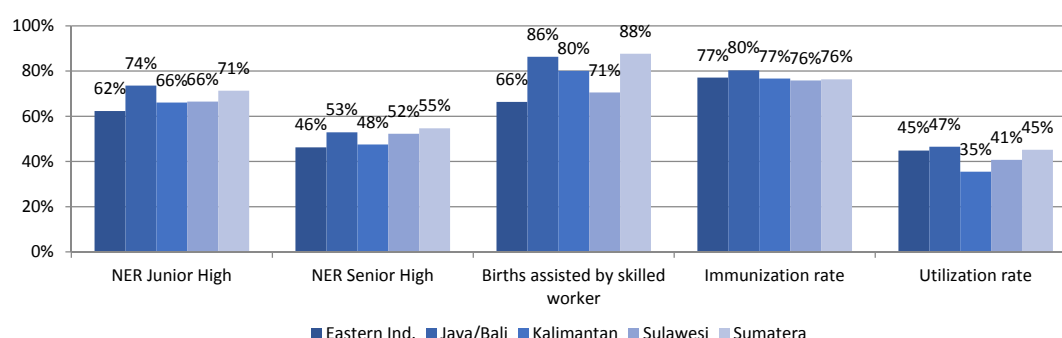
**Table 8.1. Service delivery performance indicators**

Type of services	Indicators	Description
1. Education	Net enrollment rate (NER) in junior high schools (SMP)	Junior high school age children who are enrolled in junior high school as a proportion of all junior high school children
	Net enrollment rate (NER) in senior high schools (SMA)	Senior high school age children who are enrolled in senior high school as a proportion of all senior high age children
2. Health	Share of births assisted by skilled workers	Share of total births for which one of the following is present: doctor, midwife, paramedic
	Immunization coverage	Share of children under 5 having completed at least one of the required immunizations (BCG, DPT, Polio, Measles, and Hepatitis B)
	Utilization rate of medical facilities	Share of people among those sick over the last month who have visited a formal health facility

Source: World Bank definition based on Susenas available data.

For three of the five indicators, Sulawesi has an average performance in comparison to other regions. For two health indicators, Sulawesi performs poorly in comparison to other regions. Sulawesi's NER in junior high schools (66 percent) and senior high schools (52 percent) are lower than Java and Bali and Sumatera and higher than Kalimantan and eastern Indonesia. Immunization coverage across all five regions are similar, thus Sulawesi's 76 percent is comparable to all other regions. Sulawesi performs more poorly on the other two health indicators, however. With only 71 percent of births in Sulawesi assisted by skilled workers, the region lags significantly behind other regions. In particular, Sulawesi is 17 percentage points lower than Sumatera and 15 percentage points behind Java and Bali. Only eastern Indonesia performs worse in this indicator where a skilled worker assists only 66 percent of births. Sulawesi's health services utilization rate is also low. At 41 percent, only Kalimantan has a lower utilization rate.

**Figure 8.1. General population - Key service delivery indicators, Sulawesi and other regions, 2012**

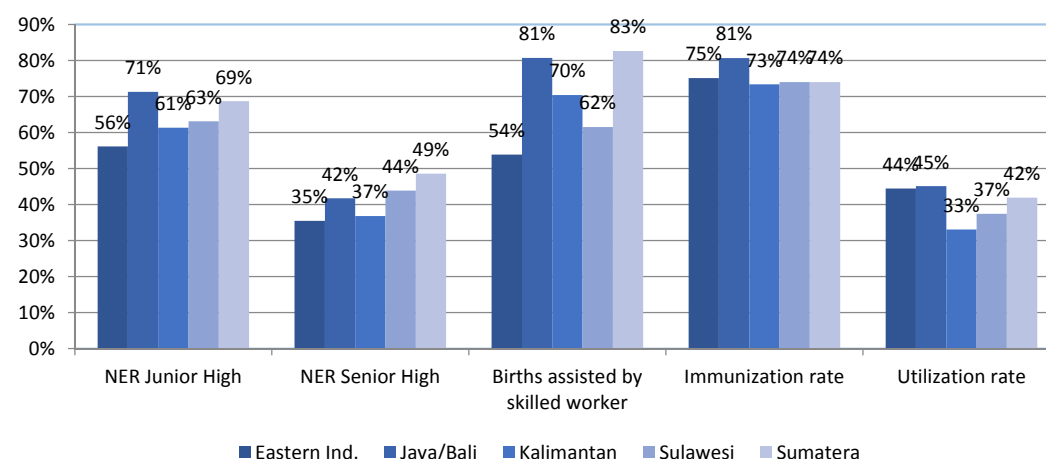


Source: Susenas, World Bank estimates.

If the analysis is restricted to the poorest 40 percent – as measured by expenditure levels – Sulawesi performs well in the NER for senior secondary school, remains average for NER for junior secondary school and immunization rate, and performs poorly in two health

**output indicators.** Sulawesi's ranking amongst Indonesia's five major regions does not change significantly when the analysis is focused on the *poorest 40* percent. Sulawesi only improved in the NER in senior high schools where it is ranked second at 44 percent, only 5 percent behind Sumatera, which has the highest NER of 49 percent. Only 62 percent of the *poorest 40*'s births were assisted by skilled health workers in Sulawesi, significantly less than the 81 percent in Java and Bali and 83 percent in Sumatera.

**Figure 8.2. Vulnerable population - Key service delivery indicators, Sulawesi and other regions, 2012**



Source: Susenas, World Bank estimates.

**The *poorest 40* have lower access to basic services than the overall population, but the difference in access has reduced between 2001 and 2012 (figure 8.1 and 8.2).** For instance, in 2012, the NER for senior secondary education was 8.4 percentage points higher in the overall population than in the *poorest 40*. For instance, Java and Bali and eastern Indonesia both managed to achieve a greater reduction in the gap in immunization coverage and utilization rate. The gap between the *poorest 40* and the general population for the proportion of births attended by a skilled health worker actually increased from 0.3 percent in 2001 to 9 percent in 2012. Although the proportion of births of the *poorest 40* attended by a skilled health worker increased between 2001- 2012, the growth for this indicator was faster for the general population over the same period.

**Based on the five indicators assessed, the deliver of education services has seen larger improvements than health services between 2001-2012. The improvements in basic services have also been pro-poor, except for the share of births attended by skilled workers, which has improved more slowly for the *poorest 40* than the general population.** The senior high school NER improved dramatically in most provinces: Gorontalo's overall senior secondary NER increased by 131 percent and by 241 percent for the *poorest 40*. At the individual provinces, health indicators have also improved by a smaller margin than education indicators. The share of births assisted by skilled workers has increased by 100 percent in North Sulawesi and 85 percent in South Sulawesi, but has seen more modest improvements in other provinces on the island. There has been no significant improvement in immunization coverage in any province and has even decreased for the *poorest 40* in North and Central Sulawesi. Most health and education indicators achieved greater improvements more for the *poorest 40*, albeit usually starting from a lower base. This indicates a trend of the *poorest 40* converging with the rest of the population.



**Performance of districts in all five indicators varies widely, but the variance is particularly large for health indicators.** The divergence of NER for senior secondary education is higher than junior secondary education. Amongst the health indicators, the variation between districts is the highest for the share of births assisted by skilled workers. For example, 99 percent of births were assisted by a skilled worker in the city of Tomohon (in North Sulawesi). In stark contrast, a skilled health worker assisted only 25 percent of births in Wakatobi district (Southeast Sulawesi). Conversely, district immunization coverage values tend to be clustered around the mean.

## 8.2. Demand-side Constraints

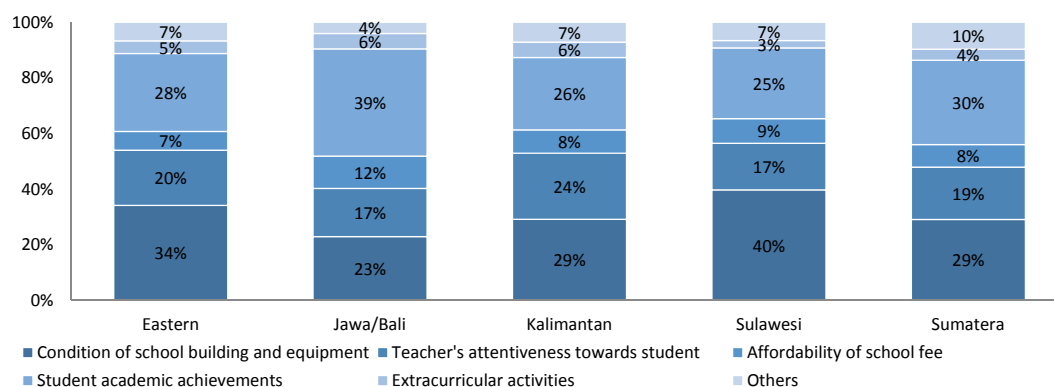
**A key demand-side constraint was that despite disparity between the quality of services provided (as shown in the assessment of indicators above), users' satisfaction in Sulawesi was quite high in 2006.**<sup>37</sup> In fact, across Indonesia users' satisfaction was high across Indonesia. In 2006, 91 percent of users in Sulawesi were satisfied or somewhat satisfied with education services and 93 percent were satisfied with health services. Users' satisfaction in Java and Bali was also at 91 percent for education and only 2 percentage points higher for health services. Satisfaction was high even in eastern Indonesia, which scores low on most performance indicators, with 82 of the population satisfied or somewhat satisfied with education services and 83 percent reported satisfaction or somewhat satisfaction in the health services received. The high levels of reported satisfaction may be exaggerated due to courtesy bias, low expectations, and optimistic predispositions (Lewis and Pattinasarany, 2009). Previous research argues that: "it certainly seems reasonable to assume that the probability of citizen satisfaction is related to the actual quality of services. However, the likelihood that citizens are satisfied is also influenced by many other factors such as expectations, predispositions, and governance conditions"(Lewis and Pattinasarany, 2009). Thus, while user satisfaction is not a perfect proxy "objectively" measure quality of public service, low user expectations may raise the risk that insufficient pressure is put on politicians and local bureaucracy to improve the quantity and quality of services provided.

**In 2006, education services users in Sulawesi were most concerned with the condition of school buildings and equipment but were less concerned with students' achievements, particularly in comparison to other regions.** Amongst the five regions, Sulawesi had the highest proportion of people, at 40 percent, who cite the condition of school buildings and equipment as the most important aspect that needed improvement. Only 25 percent of respondents in Sulawesi mention students' academic achievements as their main concern. In regions with better education indicators, a larger proportion of respondents cite students' achievement as their main concern. For example, 39 percent of respondents in Java and Bali said the aspect that most needed improvement was students' achievement. Only 9 percent of respondents in Sulawesi mention school fees as the main issue that needed to be addressed.

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<sup>37</sup> The last year for which data are available. The GDS survey has not been updated since then.

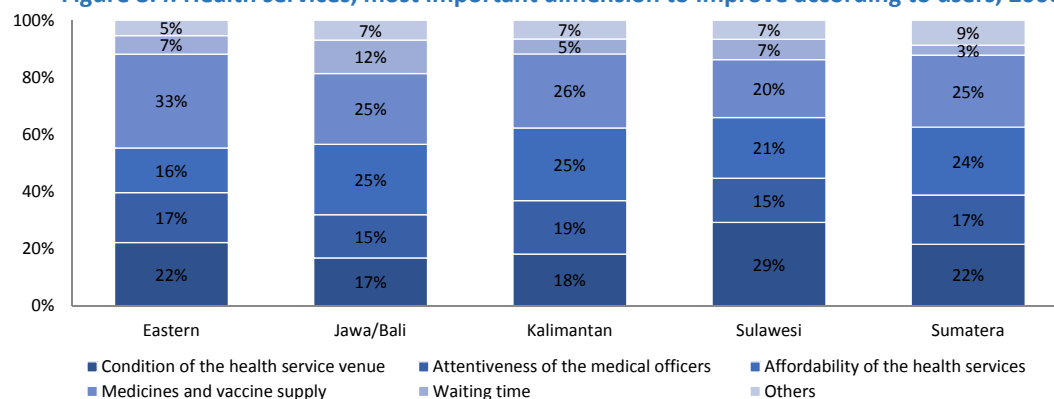
**Figure 8.3. Education services, most important dimension to improve according to users, 2006**



Source: GDS 2<sup>nd</sup> edition, World Bank estimates.

The top health issue respondents in Sulawesi were most concerned about was the condition of health service venues. Approximately 29 percent of Sulawesi respondents indicated that the condition of health service venues was the most important aspect that needed improvement. Physical condition of health facilities was less important in other regions. For instance only 22 percent of respondents in eastern Indonesia considered it their most important concern. For eastern Indonesians, their main concern (33 percent) was the availability of medicines and vaccines. In contrast to education, the affordability of health services was a relatively important issue. In Sulawesi, 21 percent of people cited affordability as the most important issue that needed improvement, while only 9 percent raised education affordability as an issue.

**Figure 8.4. Health services, most important dimension to improve according to users, 2006**



Source: GDS 2<sup>nd</sup> edition, World Bank estimates.

The majority of respondents said they would be willing to pay more for better quality health and education services. Even though many respondents raised affordability as a health issue, most also said they would be willing to pay more to receive better services. This pattern indicates that although most users declared they were satisfied with current services, they did recognize that these same services could be improved and were willing to invest their own resources, both money and time (such as participating in social accountability initiatives) to achieve that improvement.

The proportion of total household expenditure spent on out-of-pocket (OOP) education expenditure is higher than OOP health expenses. In 2012, the average per capita spending on OOP education expenses in Sulawesi was Rp 74,000 and Rp 45,000 on OOP health

expenses (current IDR). This means that 6.2 percent of household income was spent on education and 2.5 percent was spent on health. There is generally a greater variation in health spending across households. Families experiencing specific events such as illnesses and accidents may have to allocate a higher share of their spending on health services.

**Although the poorest 40 percent spent less on OOP education and health expenses, education represent a larger share of their total expenditure.** The poorest 40 percent spent an average of Rp 36,000 per person on OOP education expenditure and Rp 12,000 per person on OOP health expenses. As a share of total household expenditure, education represented 7.8 percent of the total household expenditure, which is higher than the 6.2 percent of the total household expenditure spent on OOP education expenses by the average Sulawesi household.

### 8.3. Supply-side Constraints

**This section analyzes a series of supply-readiness indicators to show where the supply of basic services is lagging behind and in which dimensions the largest gaps exists.**<sup>38</sup> This section also analyzes the impacts the supply-readiness may have on service delivery performance. This analysis uses a set of education and health indicators the measure three dimensions of supply-readiness: availability and accessibility of facilities, presence and qualification of personnel, physical characteristics of facilities.

**Table 8.2. Education supply-readiness indicators**

Dimension	Indicator	Description
1. Availability and accessibility of facilities	Access to SMA (10 km)	Share of population living in village with access to a senior high school (SMA) within 10 km
	Access to SMP (6 km)	Share of population living in village with access to a junior high school (SMP) within 6 km
2. Presence and qualification of personnel	S1 SMA teachers	Share of SMA teachers with at least an S1 degree (bachelor)
	S1 SMP teachers	Share of SMP teachers with at least an S1 degree (bachelor)
3. Physical characteristics of facilities	SMP with laboratory	Share of SMPs with laboratory
	School with electricity	Share of schools with electricity
	School with water in bathroom	Share of schools with water in the students' bathroom

Source: adapted from Sparrow and Vothknecht, 2012.

**Sulawesi has widespread access to junior secondary education but access to senior secondary education is more limited, especially in Central and West Sulawesi provinces.** At 89 percent, access to junior secondary school is above the national average in all provinces in Sulawesi. Access to senior secondary school is uneven – only 76 percent of people have access in Central Sulawesi and 79 percent have access in West Sulawesi. In contrast, all other provinces in Sulawesi at least 85 percent of the population have access to senior secondary education.

<sup>38</sup> The supply readiness indicator used for this section is for 2012, unless indicated otherwise

The proportion of qualified teachers, as measured by the proportion holding at least a bachelor's degree, depends whether they teach in junior secondary or senior secondary schools. Most teachers at senior high school are qualified, whereas a large proportion of junior high school teachers are not qualified in North Sulawesi and Gorontalo. In all provinces in Sulawesi at least 92 percent of senior high school teachers hold a bachelor's degree, comparable to the national average of 92 percent. Only 72 percent of junior secondary school teachers in North Sulawesi and 68 of teachers in Gorontalo hold bachelors degrees. Both of these provinces are below the national average of 76 percent.

The condition of educational facilities differs across provinces with many facilities in Sulawesi provinces behind the average national standard. The share of junior high schools with a laboratory is below the national average (62 percent) in all provinces except North and South Sulawesi. Only 53 percent of schools in Southeast Sulawesi have electricity and only 55 percent of West Sulawesi schools have electricity, both provinces significantly below the national average (80 percent). The proportion of schools in Central and West Sulawesi that have access to water is also below the national average (81 percent).

**Table 8.3. Health supply-readiness indicators**

Dimension	Indicator	Description
1. Availability and accessibility of facilities	Access to primary care	Share of population that can easily reach a primary care facility
	Access to secondary care	Share of population that can easily reach a hospital
	Access to delivery facility	Share of Population that can easily reach a hospital, maternity hospital, Puskesmas, Polindes or midwife's practice
2. Presence and qualification of personnel	Physician in Puskesmas	Share of Puskesmas with at least one physician present
	Midwife presence	Share of Population living in villages with a midwife present
3. Physical characteristics of facilities	Water installation	Share of Puskesmas with water installation within facility or 10 min walk
	Electrification	Share of health facilities with electricity (excluding Posyandu)

Source: adapted from Sparrow and Vothknecht, 2012.

The supply-readiness indicators for health services show that access to primary care facilities is relatively high in all provinces, while access to secondary care facilities is more uneven. Access to primary care facilities is higher than the national average (93 percent) in all provinces except for West Sulawesi, where it is 92 percent. Access to secondary care facilities differ significantly across provinces ranging from a low of 62 percent in Southeast Sulawesi to a high of 83 percent in North Sulawesi. Three provinces are below the national average of 67 percent: Central Sulawesi (66 percent), Southeast Sulawesi (62 percent), and West Sulawesi (65 percent).

Access to delivery facilities is relatively high in all Sulawesi provinces, except in West Sulawesi. A relatively low share of the population, however, lives in villages that have a midwife. Access to delivery facilities is higher than the national average (90 percent) in all

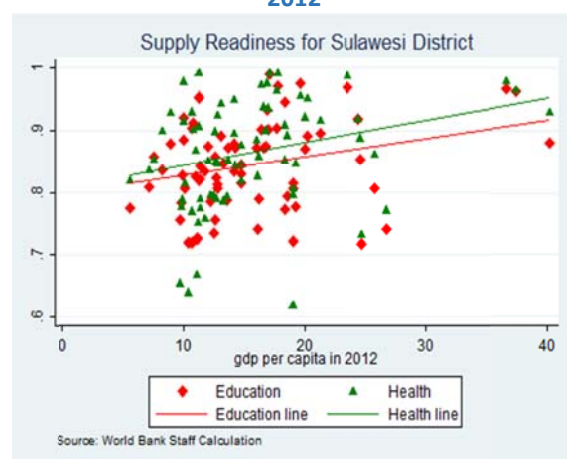
provinces except for West Sulawesi, where it is 87 percent. The share of the population that live in a village that has a midwife is below the national average in North Sulawesi, Southeast Sulawesi, and Gorontalo.

**The presence of physicians at *Puskesmas* is relatively high in Sulawesi, except for Central and Southeast Sulawesi.** Three provinces in Sulawesi have a higher proportion of *puskesmas* with physicians than the national average (86 percent): North Sulawesi (95 percent), South Sulawesi (94 percent), and Gorontalo (96 percent).

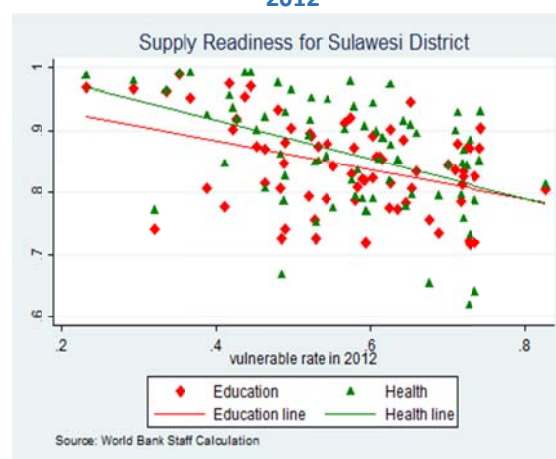
**Water installation is prevalent in the health facilities in Sulawesi whereas electricity access remains limited in some provinces.** The rate of water installation is close to, or above, the national average of 86 percent in all provinces except for West Sulawesi, where it is 77 percent. Across Indonesia, around 81 percent of health facilities have electricity. Several Sulawesi provinces, however, fall below the national average: Central Sulawesi (73 percent), Southeast Sulawesi (59 percent), and West Sulawesi (75 percent).

**Wealthier and more urban districts benefit from having access to a larger quantity and higher quality education and health facilities.** As shown in figure 8.5, although there are large variations, districts with a higher regional GDP tend to have higher supply readiness, both for education and health. Figure 8.7 shows that more urban districts tend to have higher supply-readiness scores, with more access to basic service facilities. Moreover, figure 8.6 shows that the places with a higher proportion of the *poorest 40* (vulnerable people), which often reside in rural and remote areas, also have lower education and health supply-readiness indicators. These relationships are all statistically significant at the 5 or 1 percent level. This analysis indicates that priority must be placed on ensuring that the vulnerable population living in remote areas has access to good quality facilities.

**Figure 8.5. Education and health supply readiness index and per capita GRDP, Sulawesi districts, 2012**

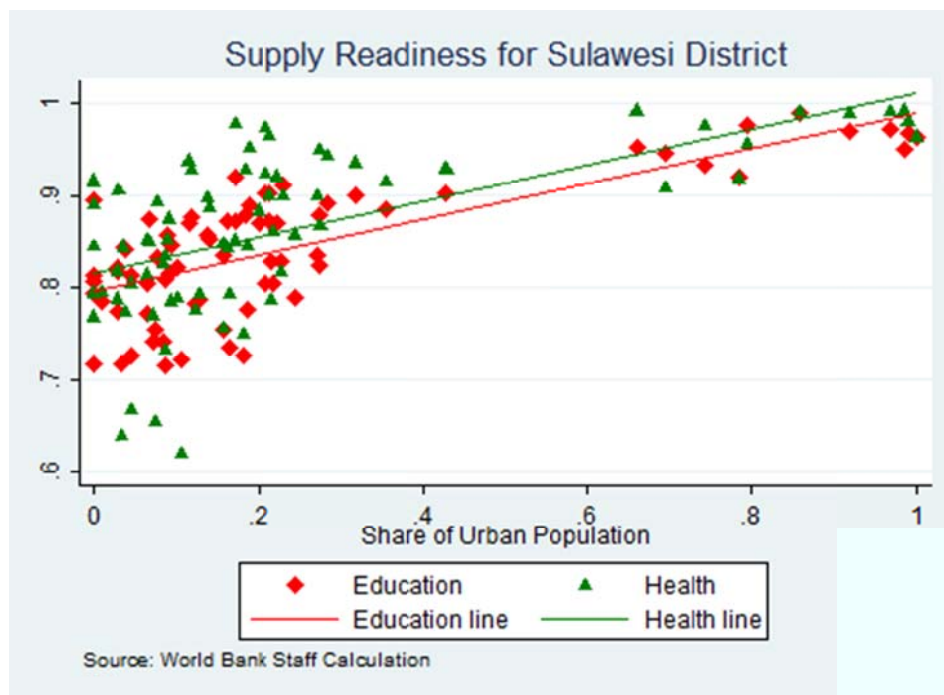


**Figure 8.6. Education and health supply readiness index and share of vulnerable, Sulawesi districts, 2012**



Source: PODES, Susenas, World Bank estimates.

**Figure 8.7. Education and health supply readiness index and share of urban population, Sulawesi districts, 2011**



Source: PODES, Susenas, World Bank estimates.

**This study used a regression model to demonstrate that supply-readiness is an important determinant of education and health service delivery outcomes in Sulawesi.** The regression model estimates the influence of the supply-readiness index on the five output indicators used in this study, both for the general population of Sulawesi and for the vulnerable in particular. The model uses 2012 data for 73 districts in Sulawesi and estimates the impact of a change in the supply-readiness composite indices for education and health, on the respective health and service output indicators, controlling for per capita regional GDP and the share of the urban population in the district.

**The education supply-readiness index has a statistically significant impact on enrollment in senior secondary school but not on junior secondary school.** That is, the model implies that increasing the number of education facilities, raising the share of qualified teachers, and improving the school's physical facilities are likely to increase net enrollments for senior secondary schools. A 0.1 point change in the index is forecasted to increase the NER in senior high by about 3 percentage points. For the vulnerable, a 0.1 point change in the index is expected to result in an even higher increase in the senior secondary school NER - by about 5 percentage points. A change in the supply-readiness index does not result in a statistically significant impact on the NER in junior secondary school. This reflects that access to junior high school is already almost universal (above 93 percent in all provinces) and increasing enrollment involves resolving other factors such as personal constraints or quality concerns.

**The health supply-readiness index has a statistically significant impact on all three health output indicators: share of births assisted by skilled workers, immunization coverage, and utilization rate of medical facilities.** A 0.1 point increase in the index is predicted to increase utilization rate by 0.03 percent; increase the share of births assisted by skilled workers by 0.1 percent, and the immunization coverage by 0.01 percent. A change in the supply-readiness index does not have a significantly different impact on vulnerable population in

comparison to the overall population. The impact that health supply-readiness has on all selected indicators supports the idea that the provision of quality health facilities remains a binding constraint for improving health output indicators for Sulawesi inhabitants.

#### 8.4. Financing for Service Delivery

**Thirteen years after Indonesia's big bang decentralization, spending by central and subnational governments is consistently increasing.** Indonesia's big bang decentralization, which began over a decade ago in 2001, comprised a momentous shift in service responsibilities and funding from the center to subnational governments. In the event, subnational took over primary responsibility for delivering nearly all public services. The assignment of new functions was accompanied by a massive reallocation of funding—districts and province government is experiencing significant increase in spending, more than double in 10 years period. District and provincial governments, who are now responsible for delivering public services in decentralized sectors, are now managing more fiscal resources than before. Sub-nationals now manage about half of total core public spending (i.e. excluding central government subsidies and interest payments) (The World Bank, 2011).

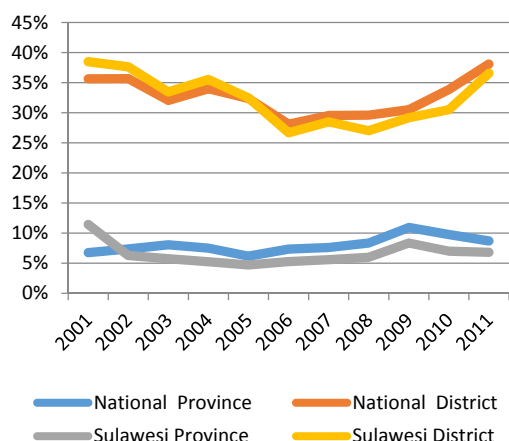
**Sulawesi subnational governments are spending more than the national average, especially after 2005.** Subnational governments in Sulawesi are also experiencing significant increase in fiscal resources, more than doubled in 10 years' time. The fiscal resources are mainly to finance the subnational governments, provincial and district governments, in providing public services to the people of Sulawesi. In per capita term, Sulawesi's spending increased from Rp 890 thousand in 2001 to Rp 2.1 million in 2011. For Sulawesi, the per capita spending increase reaches 132 percent or 13 percent annually. This is much higher than the national per capita consolidated spending which is at Rp 1.7 million in 2011. The increase in spending for Sulawesi happened after 2005 when the country is experiencing windfall from oil price increase and subsidy reduction.

**However, the additional fiscal resource has not been translated to improved service delivery.** The expectation was that decentralization would allow subnational governments to better identify and respond to the service delivery needs of their citizens. In the context of Sulawesi, increased public spending -- which is higher comparing to other regions—also has mixed results on basic service delivery.

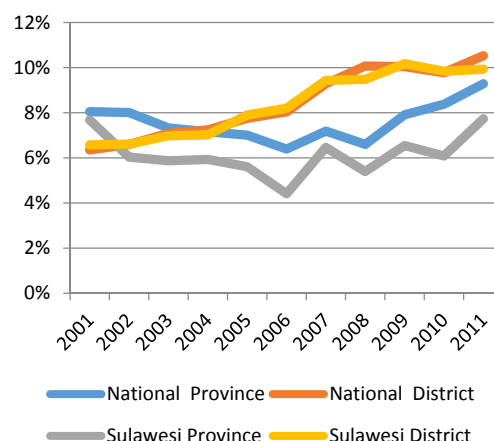
**Provincial government in Sulawesi tends to underspend compare to their national counterpart, while the districts governments are at par.** Provincial and districts governments have different roles in term of delivering service delivery. District governments have the leading role in delivering public services, especially in education and health. The provincial governments' role is characterized by its coordinating function, in particular as the representative of the central government in the regions. On top of that, they are also responsible for distinct service delivery role with district governments. In education, the district government has a much larger role compare to province, hence the shares of spending for education is much higher. For health, the district-spending share is a bit higher than the province. However, in the case of Sulawesi, the provincial government tends to spend lower share of its budget on education and health.



**Figure 8.8 Average share of education spending, 2001-11**



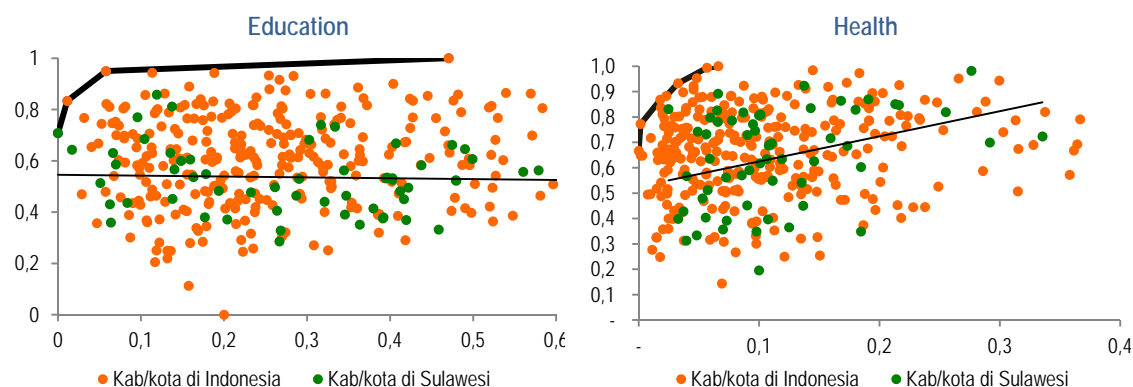
**Figure 8.9. Average share of health spending, 2001-11**



Source: Susenas, World Bank estimates

**Most of Sulawesi's districts are relatively less efficient technically compare to other districts in Indonesia.** The figure below shows the relative position of districts/municipalities in Sulawesi to other districts/ municipalities in Indonesia in term of technical efficiency of public spending on education and health sector. Public spending is an important component for inputs. For both education and health, the relative positions of districts/municipalities in Sulawesi are located around the middle or lower compare to other districts/municipalities. This means that they are relatively less technical efficient in term of the outputs produced based on the inputs provided.

**Figure 8.10. Input and Output Technical Efficiency Analysis for Education and Health**



Source: Susenas, World Bank estimates

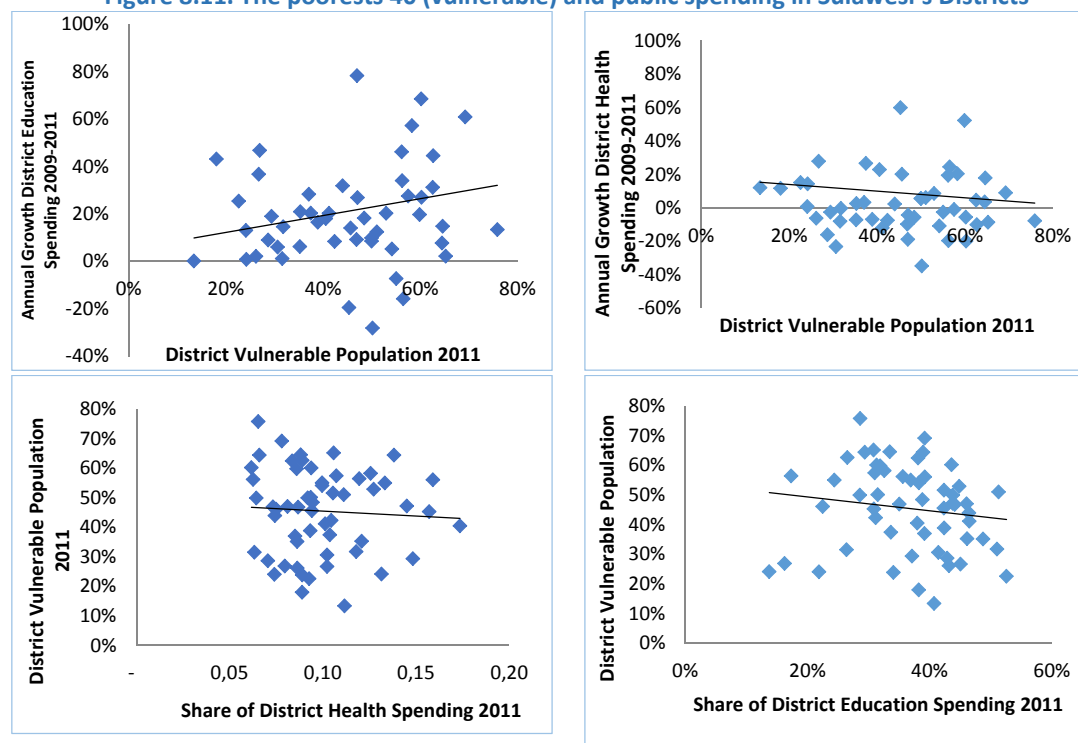
**Higher inputs for health will result in higher outputs, however for education it is indifference.** For Sulawesi, there's a tendency that districts with higher inputs, including health spending, will have higher health output. There is still room for improvement by providing more resources for health. However, for education it's not the case. In Sulawesi, districts/municipalities can provide various level of input but produce similar amount of outputs. The education indicators for Sulawesi are already high and resources provided already abundant. With education spending already around 37 percent of budget, adding more resources do not have any impact on education outputs.

**Public spending in Sulawesi still do not favors the poorest 40.** The poorest 40 is considered to be sensitive to the shock in the economy and have potential to fall further into poverty.



The public spending should take into account this group, in particular in how to deliver public services to this group of people. However, the data shows that there is no clear pattern between public spending and the vulnerable that should be targeted. The level of vulnerable population do not correlates with higher level of spending, higher share, or higher growth of, health, and total spending in the last two years. Only districts with higher vulnerable population tend to have higher growth in education spending.

**Figure 8.11. The poorests 40 (vulnerable) and public spending in Sulawesi's Districts**



Source: SUSENAS, World Bank estimates

## 8.5. Potential Policy Recommendations

Improving the performance of basic services in Sulawesi will require improving the allocation of health and education budgets, improving the efficiency of administering these services, and involving the community in the service delivery chain. Most of the policy recommendations listed are most relevant to district governments as the tasks fall within their functional responsibilities.

### Education Sector

The main priorities for education services are to address the few remaining access gaps while addressing the issues of quality and fees. Specifically:

- **Review staffing policy** qualified teachers are more evenly distributed amongst junior high schools to address any identified gaps in qualified teachers.
- **Provide more financial assistance to the poorest 40.** As highlighted above, the poorest 40 are allocating a high share of their expenditures to education. Cash transfer programs and scholarship for the poor students, existing or new, should be considered to help the vulnerable to finance education expenses to increase their children's enrollment rates.

- **Address deficiencies in school facilities. Studies show that Sulawesi schools lack laboratories and access to electricity remains limited.** While the shortage of electricity in schools may reflect a regional problem with electricity access, the schools need to seek alternative avenues to access electricity such as through the provision of generators.
- **Use social accountability mechanisms** to foster improvements in service outcomes for the education and health sectors. Service quality improvements can be achieved both through increasing resource allocation but also improving frontline service delivery through deploying provider incentives. One way to deploying provider incentives is by mobilizing the demand side so that users voice their demands for better quality services.

### Health Sector

The main priorities for health services should be to increase access to secondary care, and improve the quality of existing facilities. Specifically:

- **Increase the presence of midwives in villages.** Regions lacking widespread presence of midwives in villages needs to be systematically identified. Once these regions have been identified, governments should pilot incentives schemes to increase the presence of midwives in areas where there is a shortage. This may also include experimenting with non-monetary incentives for all health service providers (doctors, midwives, nurses) including better career opportunities, merit-based career management, and improved in-kind benefits (such as housing and education) to encourage more service providers to go to remote areas. Another potential solution is to experiment with rotational services. Moreover, governments should also promote interest in the health profession in secondary schools and develop specific curriculums in health professional schools
- **Expand access to secondary care.** Access to secondary care should be expanded by providing incentives to local governments to establish hospitals in lagging regions. One way to achieve is to include access to secondary care indicators in the medium-term development plans (RPJMD).
- **Cash transfers to the vulnerable.** Given that the vulnerable in Sulawesi still have poor health outcomes and the gap between the general population of Sulawesi and the vulnerable has widened, sub-national governments should allocate more resources to narrowing the gap and improving access. Sub-national governments should seek ways to increase health spending efficiency. Planning and budgeting should include consideration of the role of the private sector to ensure more optimal use of resources.



## **Chapter 9**

# **Improve Infrastructure in Sulawesi**



## 9.1. Urbanization and Economic Development

**Sulawesi has one of the fastest urbanization rates in Indonesia, but is starting from a low base.** Sulawesi is one of the least urbanized regions in Indonesia. Only Maluku, Papua, and Nusa Tenggara regions have a higher proportion of rural population. Sulawesi's urban population is growing at a faster pace than Indonesia as a whole. Urbanization undoubtedly has a positive effect on the region's economy and on poverty reduction. Conversely, it also poses huge infrastructure challenges for a region where infrastructure is at a level similar with Sumatera.

**Access to all types of infrastructure in Sulawesi needs to be improved in order for the region to continue to grow sustainably.** Without adequate infrastructure, positive spillovers from urban economic growth to rural area will not be realized. Infrastructure development is of such vital importance Sulawesi development that this report includes a chapter specifically on the subject of infrastructure and urbanization.

**This chapter examines Sulawesi's urbanization trends, and analyzes the infrastructure spending patterns.** It also proposes policy solutions for improving infrastructure in the region.

### Population and Urbanization across Indonesia by Island

**Sulawesi's population of 17 million people represents less than 8 percent of Indonesia's total population.** Over 130 million or 58 percent of Indonesia's population resides in Java and Bali. Sumatra has a population of 46 million or 20 percent of Indonesia's total. The population of the eastern islands and Kalimantan make up only 7 percent and 6 percent of the total, respectively (Table 9.1).

**Sulawesi is the second least-urbanized island of Indonesia.** Only about one-third of Sulawesi's total population lives in urban areas. Eastern Indonesia is slightly less urbanized than Sulawesi with just 30 percent of the total population residing in urban areas. In comparison, almost 60 percent of the population in Java is urbanized (Table 9.1).

**Table 9.1. Population, urbanization, and migration in Indonesia, by island grouping**

	Level (2010)			Growth (2005-2010)		Lifetime Migration (2005)	
	Population	Urban Population	Percent Urban	Population	Urban Population	Net Migration	Percent of Pop
Sumatra	46,136,521	18,523,823	40.2	1.7	4.0	2,291,833	5.4
Kalimantan	13,787,831	5,799,291	42.1	2.1	4.5	1,408,599	11.3
Java/Bali	129,865,723	75,164,855	57.9	1.0	4.3	-3,345,829	-2.7
Sulawesi	17,371,782	5,843,103	33.6	1.7	8.6	-186,753	-1.2
Eastern	15,349,435	4,597,801	30.0	2.4	5.6	-195,212	-1.4
Total	222,511,292	109,928,873	49.4	1.4	4.5	-27,362	0.0

Aceh not included due to lack of data.

Source: WB staff calculation based on BPS data

**Sulawesi's urban population is growing faster than elsewhere in Indonesia.** Sulawesi's urban population has been increasing at an average of 8.6 percent per year since 2005—

almost twice the national growth rate. Eastern Indonesia's urban population is also growing quickly at 5.6 percent per year.

**Sulawesi has had net out-migration through 2005.** Sulawesi lost 1.2 percent of its population through migration. The net out-migration is highest in Java and Bali at 2.7 percent and eastern Indonesia lost about 1.4 percent of its population from net out-migration over the same period. Conversely, Kalimantan's experienced significant net in-migration—the region gained 11.3 percent of its population through migration. Sumatra also had a significant in-migration—5.4 percent of its population is through migration (Table 9.1).

## Population and Urbanization across Sulawesi by Province

**North Sulawesi has by far the largest population among Sulawesi provinces representing 45 of the island's total population.** Two other large provinces are South Sulawesi with 37 percent of the population and Gorontalo, which has 34 percent of Sulawesi's total. The remaining three provinces: Southeast Sulawesi, Central Sulawesi, and West Sulawesi have similar population levels (Table 9.2).

**North Sulawesi is the most urbanized province on the island.** About 45 percent of its population resides in urban areas. South Sulawesi and Gorontalo have slightly lower urbanization rates at 37 percent and 34 percent, respectively.

**Table 9.2. Population, urbanization, and migration in Sulawesi by province**

	Level (2010)			Growth (2005-2010)		Lifetime Migration (2005)	
	Population	Urban Population	Percent Urban	Population	Urban Population	Net Migration	Percent of Pop
Sulawesi Utara	2,270,596	1,026,584	45.2	1.1	5.0	-468	0.0
Sulawesi Tengah	2,635,009	640,948	24.3	2.2	6.3	282,825	12.0
Sulawesi Selatan	8,034,776	2,945,429	36.7	1.4	18.0	-626,370	-8.4
Sulawesi Tenggara	2,232,586	611,373	27.4	2.5	-6.9	218,464	11.0
Gorontalo	1,040,164	353,681	34.0	1.7	7.2	-61,204	-6.4
Sulawesi Barat	1,158,651	265,088	22.9	2.4	8.5	na	na
Total	17,371,782	5,843,103	33.6	1.7	8.6	-186,753	-1.2

Aceh not included due to lack of data. Migration data for Sulawesi Barat are included in Sulawesi Selatan.

Source: WB staff calculation based on BPS data

**South Sulawesi has the most rapidly growing urban population.** Its urban population grew by an astonishing 18 percent per year between 2005-2010. The annual growth rate of West Sulawesi's urban population is 8.5 percent, similar to the Sulawesi average of 8.6 percent per annum. Gorontalo, Central Sulawesi, and North Sulawesi all had urbanization rates below Sulawesi's overall average but still grew faster than the national average. In contrast to the other provinces, Southeast Sulawesi's urban population fell at an annual rate of about 7 percent over 2005-2010 (Table 9.2).

**South Sulawesi (including West Sulawesi) and Gorontalo both experienced net out-migration through 2005.** They lost 8.4 percent and 6.4 percent of their population to net out-migration, respectively. Conversely, both Central Sulawesi and Southeast Sulawesi had significant net in-migration through 2005; net in-migration rates for those two provinces were 12.0 percent and 11.0 percent, respectively. North Sulawesi's population has been almost unaffected by migration (Table 9.2).

## Urbanization and Economic Development across Indonesia by Island

**Worldwide, urbanization is strongly associated with economic growth and development.** Urbanization does not cause economic growth per se, but agglomeration economies found in urban areas can stimulate economic development.

**In Indonesia, per capita GDP increases as population density (a proxy for agglomeration economies) rises.** The positive relationship between the GDP and population density also holds for Sulawesi. Population density is far higher in the rest of Indonesia, especially Java and Bali, than Sulawesi however. Sulawesi's lower population density is also reflected in its lower per capita income.

**Existing research suggests that while the level of urbanization in Indonesia is positively associated with economic growth the rate of change of urbanization is negatively correlated with the growth in economic output.**<sup>39</sup> That is, the higher the rate of increase in urban population (proxy for rate of change in urbanization), the lower the rate of economic growth. The negative relationship between rate of urbanization and economic growth also exists in Sulawesi. One explanation proposed by existing research is not all benefits from urban agglomeration economies are realized if urbanization takes place at too rapid a pace. That is, the failure of public infrastructure investment to keep up with the increase in urban population may have a negative effect on economic growth.

**The negative impact of rapid urban population growth on economic development is more severe in Sulawesi than in the rest of Indonesia, holding all other things equal.** Across Indonesia, a 1 percent increase in the rate of urban population growth leads to a nearly 0.1 percent decrease in the rate of growth of per capita GRDP. The negative impact of urban population growth on economic growth appears to be approximately 50 percent stronger for Sulawesi than for the rest of the nation on average, all other things remaining the same.

**Economic growth in urban places has a modest positive influence on economic development in nearby rural areas.** A 1 percent increase in the urban economic growth rate leads to an increase of 0.03 percent in rural economic growth rate. The urban spillover impact on rural areas in Sulawesi is weaker than for Indonesia as a whole.

### 9.2. Access to Infrastructure and Impact of infrastructure on Economic Growth

#### Access to Infrastructure across Indonesia by Island

**Access to major types of infrastructure, including electricity, sanitation, water, and roads, is unexceptional in Sulawesi over 2001-10 compared with other islands.** Infrastructure access is best in Java and Bali for all types of infrastructure except sanitation. Conversely, access to infrastructure is worst in eastern Indonesia for electricity and sanitation and in Kalimantan for water and roads. Sulawesi's infrastructure access is at a level similar to

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<sup>39</sup> See Lewis (2010), "Impact of Demographic Change and Urbanization on Economic Growth in Indonesia" LKY School of Public Policy NUS Working Paper.

Sumatera, where the island provide good access in some sectors such as water and roads but poor access in others such as electricity and sanitation.

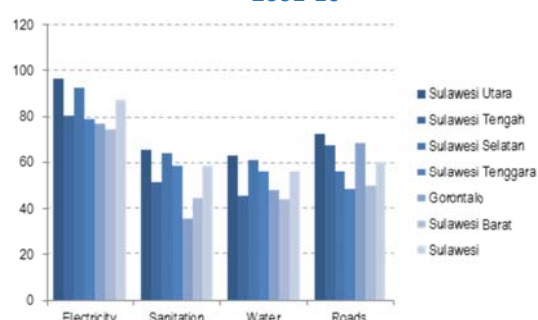
**Sulawesi has improved household access to infrastructure over the past decade.** Sulawesi households have experienced modest but steady improvements in access to electricity, sanitation, water, consistent with Indonesia's overall trends.

### Access to Infrastructure across Sulawesi by Province

**Access to infrastructure in North Sulawesi and South Sulawesi is better than the other provinces in Sulawesi.** With the exception of roads in South Sulawesi, access to all types of infrastructure is better in North and South Sulawesi. In contrast, infrastructure access in Gorontalo and West Sulawesi is poor, in particular access to sanitation (Figure 9.1).

**Problems that constrain infrastructure access in Sulawesi include: electricity prices do not**

**Figure 9.1 Average infrastructure access Sulawesi, 2001-10**



Source: World Bank staff estimates.

**cover production costs; governments' inability to secure land for road expansion; and funding limitations for transportation, sanitation and water services.** Electricity production costs far exceed sales prices in many provinces and the state-owned electricity utility, PLN, argues that the available funding is insufficient to cover the implied subsidies. PLN also asserts that it faces technical and non-technical problems in extending electricity coverage,

especially the use of outdated transmission equipment and difficult geographic terrain on the island. The extension of road networks is restricted by the local public sector's inability to secure needed land. Transport sector specialists complain that the sector is insufficiently funded at all levels of government. Moreover, sanitation and water services expansion is constrained by regional water authorities (PDAMs)'s financial difficulties including their default on past loans and an inability to restructure loans under the central government program.

### Impact of Infrastructure on Economic Growth across Indonesia and in Sulawesi

**Worldwide, good energy and transport infrastructure are considered important to stimulating economic growth.** Sulawesi's energy infrastructure (use and PLN supply) and road network (length and quality of roads) are similar to Indonesia's overall average. Sulawesi's access to energy and road infrastructure is worse than Java and Bali but generally better than eastern Indonesia and Kalimantan. Sulawesi's access is similar to Sumatera, except for the percentage of electricity supplied by PLN where Sulawesi does better (Table 9.3)



**Table 9.3 Road length and electricity use by island**

	Km Roads Per 1,000 Pop	Km Roads Per Sq M	Percent Good	Electricity Per VA	Percent PLN
Sumatra	2.48	0.59	25.12	0.12	46.53
Kalimantan	2.78	0.22	23.98	0.11	42.73
Java/Bali	0.80	0.94	30.51	0.12	82.29
<b>Sulawesi</b>	<b>2.62</b>	<b>0.47</b>	<b>25.02</b>	<b>0.14</b>	<b>66.75</b>
Eastern	3.13	0.28	18.31	0.26	62.72
Indonesia	1.91	0.63	26.53	0.13	65.15

*Source:* World Bank staff calculation based on Ministry of Public Work data (road), BPS (population), and PODES (electricity)

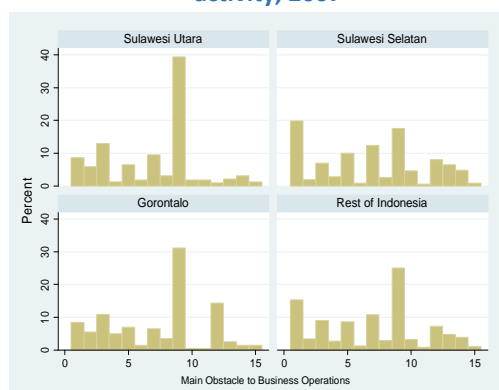
**Improved infrastructure has a positive impact on economic growth in Indonesia.** A 10 percent increase in electricity use as a proportion of valued-added by manufacturing firms leads to a 0.05 percent increase in growth of per capita GDP, while a 10 percent increase in the proportion of total electricity use that is supplied by PLN results in an additional 0.01 percent increase in the growth of per capita GDP. A 10 percent increase in the number of kilometers of roads per 1,000 persons is correlated with a 0.6 percent to growth in economic output and a 10 percent increase in the proportion of total kilometers of roads in good quality also leads to an extra 0.01 percent increase in growth.

**Deficiencies in infrastructure constrain business activities.** Regional Autonomy Watch (KPPOD) carried out surveys of a sample firms all across Indonesia in 2007 and 2011 to ascertain the most important constraints to business development. They found that infrastructure was by far most frequently cited as the main constraint on firm operations (Figures 9.5 and 9.6).

**North Sulawesi, South Sulawesi, and Gorontalo were among the provinces sampled in the KPPOD survey in 2007.** Poor infrastructure was cited as the most important constraint by nearly 40 percent of the firms in North Sulawesi and by 30 percent of Gorontalo businesses. Fewer than 20 percent of firms in South Sulawesi, however, indicated that infrastructure inadequacies were the most significant limitation; in South Sulawesi a larger percentage of businesses identified land availability as the main constraint facing businesses (Figure 9.1). The lack of access to land may be caused by insufficient infrastructure, however.

**Southeast Sulawesi, Central Sulawesi, and West Sulawesi were surveyed by KPPOD in 2011.** Infrastructure inadequacies were again cited by businesses as the most important constraint on its operations. Nearly 60 percent of the firms surveyed in Southeast Sulawesi identified infrastructure as the most binding constraint. Around 40 percent of the businesses in Central and West Sulawesi said infrastructure was the biggest problem facing private sector development. Across Indonesia problems related to infrastructure seem to have become more severe in 2007-11 (Figure 9.2).

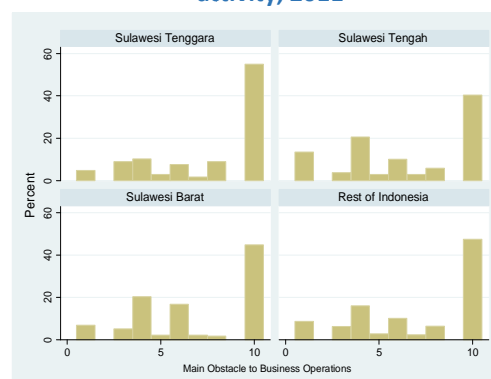
**Figure 9.2 Primary constraints on business activity, 2007**



Source: World Bank staff estimates.

Note: 1=land availability; 2=legal certainty; 3=business licensing; 4=regional head capacity and integrity; 5=local government-business interaction; 6=regulations; 7=transactions costs; 8=transparency; 9=infrastructure; 10=local taxes; 11=labor issues; 12=financing; 13=marketing; 14=security; 15=conflict settlements.

**Figure 9.3 Primary constraints on business activity, 2011**



Source: World Bank staff estimates.

Note: 1=legal certainty; 3=business licensing; 4=private sector development; 5=integrity and capacity of local government head; 6=interaction between public and private sectors; 7=local government regulations; 8=transaction costs; 10=infrastructure.

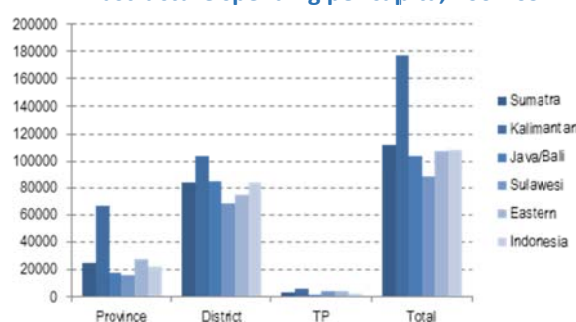
### 9.3. Infrastructure Spending and finance

#### Infrastructure Spending across Sulawesi

##### **Sulawesi spends much less on infrastructure than other islands.**

In 2001-09, Sulawesi (provincial, district and central governments) spent only about Rp 88,500 per person annually on infrastructure (in 2000 prices), significantly less than the average for other island groups. Consistent with national trends, the majority of infrastructure expenditure is spent by district governments in Sulawesi (75 percent), while provincial government contributes to 20 percent and central government contributes to 5 percent of total infrastructure spending.

**Figure 9.4. Average provincial, district, and central infrastructure spending per capita, 2001-09**



Source: World Bank staff estimates.

##### **Gorontalo spends noticeably more on infrastructure than other provinces in Sulawesi.**

Over the past decade, Gorontalo's average annual per capita infrastructure expenditure was Rp 122,000. In contrast, other Sulawesi provinces average annual per capital expenditure ranged from a low of Rp 91,000 in Central Sulawesi to a high of Rp 84,200 in North Sulawesi. Interestingly, the province of Gorontalo spent more than twice as much on infrastructure as any other province—about Rp 47,500 per capita—in 2001-09. District governments spent, an average of around Rp 65,000 to Rp 70,000 per capita on infrastructure per year.

## Revenues Available for Infrastructure Spending across Sulawesi by Province

**Sulawesi also has lower revenues than other islands.** In 2001-09, Sulawesi's average real annual per capita revenue (from both provincial and district sources) was Rp 526,200. In comparison, Kalimantan had the highest average annual per capita revenue of Rp 790,500 over the same 9-year period. Sulawesi's comparatively small revenues may be one reason why it spends so little on infrastructure (Table 9.4).

**Gorontalo's average annual per capita revenue was the highest in in Sulawesi.** Over 2001-09, Gorontalo's per capita revenue was Rp 684,600 per year. In contrast, the second highest revenue was in North Sulawesi at Rp 582,200 per capita per year. The other provinces ranged from Rp 560,400 for West Sulawesi to a low of Rp 497,900 in South Sulawesi. Gorontalo's high revenue is largely due to the high general allocation (DAU) it receives, which is much larger than that of other provinces in Sulawesi.

**Table 9.4 Provincial and district revenues in Indonesia, per capita by island group**

	Province						Total Rev
	PAD	DBH Tax	DBH SDA	DAU	DAK	Oth Rev	
Sumatra	61,373	14,197	40,512	36,617	603	16,971	170,272
Kalimantan	91,562	27,083	100,585	62,997	1,336	4,435	287,999
Java/Bali	67,986	22,910	1,425	15,713	62	1,829	109,925
<b>Sulawesi</b>	<b>46,137</b>	<b>8,906</b>	<b>1,128</b>	<b>67,755</b>	<b>1,892</b>	<b>4,028</b>	<b>129,846</b>
Eastern	29,899	15,888	12,382	90,576	26,543	87,244	262,532
Indonesia	63,919	19,886	15,824	31,211	2,093	10,844	143,775

	District						Total Rev
	PAD	DBH Tax	DBH SDA	DAU	DAK	Oth Rev	
Sumatra	35,232	43,145	40,354	307,163	28,784	38,875	493,554
Kalimantan	39,245	51,937	55,703	292,044	23,949	39,617	502,494
Java/Bali	32,713	35,842	32,124	279,547	25,367	33,963	439,556
<b>Sulawesi</b>	<b>22,129</b>	<b>31,104</b>	<b>36,882</b>	<b>255,415</b>	<b>23,564</b>	<b>27,290</b>	<b>396,384</b>
Eastern	28,638	40,624	37,596	296,191	28,720	37,333	469,101
Indonesia	32,482	39,879	38,535	287,880	26,325	35,648	460,749

	Total						Total Rev
	PAD	DBH Tax	DBH SDA	DAU	DAK	Oth Rev	
Sumatra	96,605	57,342	80,866	343,780	29,387	55,847	663,827
Kalimantan	130,806	79,021	156,287	355,041	25,285	44,052	790,493
Java/Bali	100,699	58,752	33,549	295,260	25,429	35,793	549,481
<b>Sulawesi</b>	<b>68,266</b>	<b>40,010</b>	<b>38,011</b>	<b>323,170</b>	<b>25,456</b>	<b>31,318</b>	<b>526,229</b>
Eastern	58,537	56,512	49,978	386,767	55,263	124,577	731,633
Indonesia	96,401	59,765	54,359	319,091	28,418	46,491	604,525

All figures are averages for 2001-2009 and are in constant (2000) per capita terms.

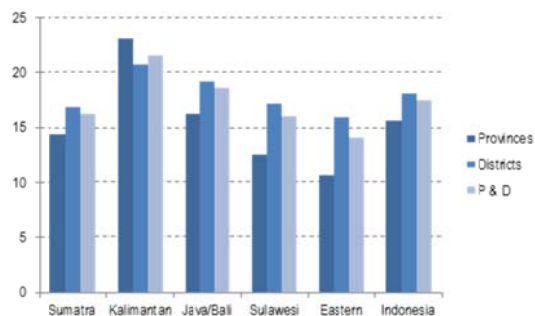
Source: World Bank staff estimate based on MoF SIKD data

**Sulawesi's low level of revenue is consistent across the different levels of government and the different types of revenue.** Compared to other regions in Indonesia, Sulawesi has the second lowest total per capita revenue (province and district), only slightly higher than Java and Bali. Sulawesi's per capita district-level revenue is the lowest in Indonesia. Sulawesi also performs poorly in per lowest own-source, shared natural resource, DAU revenue, shared

tax and other revenues. Only Sulawesi's per capita DAK is similar to other islands except eastern Indonesia, which receives almost double elsewhere (Table 9.4).

**Sulawesi needs to expand the use of its own-source and transfer revenues for infrastructure spending at the margin.** Sulawesi should also more aggressively explore borrowing opportunities, although this may be challenging, at least from private sources of finance, given its poor past experience with on-lending.

**Figure 9.5. Provincial and district average infrastructure budget shares, 2001-09**

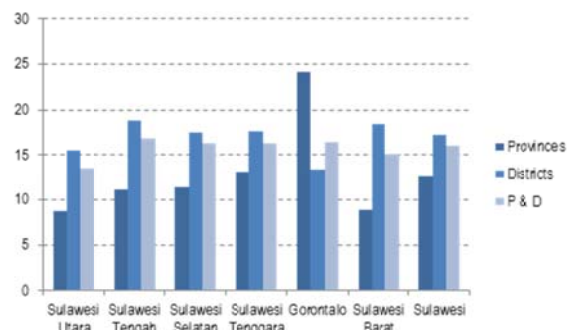


Source: World Bank staff estimates.

eastern Indonesia spends less – infrastructure represents 14 percent of its total (Figure 9.5).

**Most provinces in Sulawesi spend about the same proportion of their revenues on infrastructure.** Central Sulawesi, Gorontalo, South Sulawesi, and Southeast Sulawesi all spend between 16 and 17 percent of total provincial and district revenues on infrastructure. West Sulawesi and North Sulawesi spend slightly less; their infrastructure budget represents approximately 14 to 15 percent, of their total revenues. At the provincial level, the Gorontalo provincial government spends 24 percent of its budget on infrastructure. Districts in Central Sulawesi and West Sulawesi spend a much higher proportion of its revenues on infrastructure shares—around 19 percent — than districts in other provinces (Figure 9.6).

**Figure 9.6. Provincial and district average infrastructure budget shares, 2001-009**

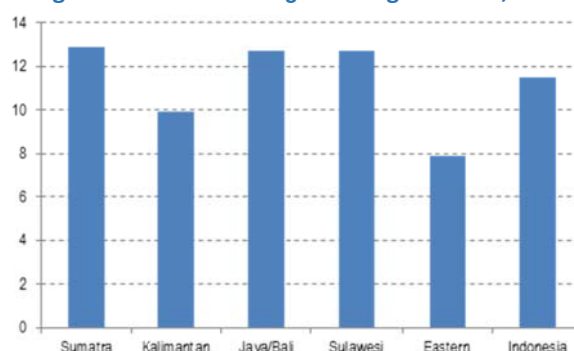


Source: World Bank staff estimates.

## Marginal Impact of Revenues on Infrastructure Spending across Indonesia by Island

Sulawesi spends 12.7 percent of every additional rupiah of district revenue on infrastructure,<sup>40</sup> at a level comparable to Java and Bali and Sumatra. The region's marginal infrastructure budget share is higher than the national level of 11.5 percent and Kalimantan (9.9 percent). In eastern Indonesia, only 7.9 percent of each rupiah of additional revenue is spent on infrastructure (Figure 9.7).

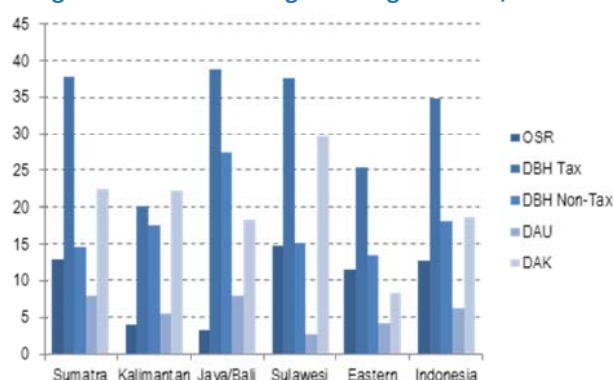
Figure 9.7. District marginal budget shares, 2001-09



Source: World Bank staff estimates.

**Marginal budget shares vary significantly across all types of revenues.** At the national level, shared tax revenue is the most important revenue source for marginal infrastructure budget.

Figure 9.8. District marginal budget shares, 2001-09



Source: World Bank staff estimates.

percent and 6.2 percent, respectively (Figure 9.8).

**In Sulawesi, shared tax revenue is the most important source of revenue for infrastructure spending, consistent with trends across Indonesia.** An extra rupiah of shared taxes leads to an additional 0.38 rupiah spent on infrastructure. The marginal budget share for DAK is 29.6 percent is thus also significant source of revenue for infrastructure. The marginal shares for shared non-tax revenue and own-source revenue, less important, at 15.1 percent and 14.7 percent, respectively. DAU barely has any impact on infrastructure expenditure in Sulawesi. Only 2.6 percent of DAU increase is spent on infrastructure (Figure 9.8).

<sup>40</sup> Marginal budget shares refer to the additional increase in infrastructure spending share due to the additional increase of a rupiah increase in revenue

## Accumulation of Fiscal Reserves across Indonesia by Island

**Sulawesi has the fewest per capita fiscal reserves of any region.** As of the end of 2011, Sulawesi had accumulated Rp 205,300 per capita reserves, significantly lower than Kalimantan with Rp 1.3 million per capita reserves. Eastern Indonesia and Sumatera also have reasonably significant reserves—Rp 436,200 and Rp 382,200, respectively. Java and Bali's per capita fiscal reserves of Rp 224,500 is small.

**North Sulawesi has the highest per capita fiscal reserves of any province in Sulawesi, Rp 319,800.** In contrast, South Sulawesi has the smallest per capita fiscal reserve of Rp 154,900. Central Sulawesi's reserves, at Rp 263,800, are above average for the province. Southeast Sulawesi reserves more than doubled from 2010 to Rp 201,500 in 2011. [There is no information on Gorontalo's and West Sulawesi's fiscal reserves, which may have been included as part of the calculations for North Sulawesi and South Sulawesi, respectively, as were formerly part of that province.

## Borrowing for Infrastructure Development across Indonesia by Island

**Borrowing is not an important source of infrastructure financing in Indonesia.** The average amount borrowed by provinces, districts, and PDAM between 1975-2005 was only Rp 27,000 per person. Sulawesi subnational governments and PDAM's borrowings of Rp 27,000 per capita to invest in infrastructure is similar to other regions (Table 9.5).

**Table 9.5. Per capita borrowing across islands, 1975-2005**

	No. of Loans	Amounts Borrowed	Arrears Rate
Sumatra	239	21,307	61.4
Kalimantan	41	27,456	56.9
Java/Bali	418	31,330	39.5
Sulawesi	116	26,841	79.5
Eastern	24	7,845	71.3
Indonesia	838	27,060	48.1

Source: Ministry of Finance

**Repayment of infrastructure development loans has been poor all across Indonesia, but is exceptionally poor in Sulawesi.** Indonesia's overall arrears rate on loan repayment is nearly 50 percent. That is, nearly 50 percent of all loans in Indonesia are in arrears. Sulawesi's repayment rate is worst in Indonesia – approximately 80 percent of its loan payments are in arrears.

**Sulawesi has borrowed for infrastructure development to about the same extent in per capita terms as other islands** (i.e. not much), except for eastern, which has borrowed considerably less. Sulawesi's extremely poor loan repayment track record may negatively affect the private sector's view of its creditworthiness and future borrowing possibilities.

## 9.4. Potential Policy Options

**Sulawesi needs to significantly increase its infrastructure investments if it wants to reduce inequality and sustain economic growth.** Investment priorities include sanitation and roads, both of which are poor condition, particularly in comparison to other regions in Indonesia. Sulawesi also needs to invest fast growing urban places and build infrastructure that will better connect urban and rural areas within districts and provinces. These investments

would reduce urban congestion, which constrains economic growth, and enhance urban economic spillovers to rural areas, which are weak by national standards.

**In order expand access to electricity in Sulawesi, national energy policy and regulatory framework needs to be improved.** Currently electricity production costs far exceed sales prices in many provinces and PLN argues that available funding is insufficient to cover the implied subsidies. PLN claims funding shortages limits its ability to expand access to electricity. In Sulawesi, additional investment is also needed to replace outdated transmission equipment and overcoming difficult geographical terrain.

**At minimum, Sulawesi needs to increase the share of the region's own-source and transfer revenues on infrastructure.** Sulawesi sub-national governments should also explore debt-financing options. For example, increasing their loans from the central government, via the Government Investment Agency (PIP); more aggressively explore borrowing opportunities from private financial institutions; explore options to issue bonds. The latter two debt options will be challenging, however, since commercial banks' are reluctant to lend to sub-national governments and these governments' have weak debt management capacity. Finally, the central government might consider increasing its own direct investment in sub-national public infrastructure.

**Official infrastructure plans (MP3EI) for Sulawesi focus on connecting urban areas with one another across the island. This plan needs to be integrated with plans that address other identified infrastructure gaps.** While official investment plans such as the MP3EI will yield substantial benefits if realized, they will not help to alleviate urban congestion or improve economic linkages between urban and rural areas, both of which are clearly needed. Enormous financial investments are required to implement these plans and probably can only be feasibly financed mostly through public-private partnerships (PPPs). Given Indonesia's poor experience with PPPs, how securing private investment will proceed remains unclear.





# Chapter 10

## Conclusion



This chapter attempts to revisit the main questions pose at the beginning of this report. It starts by answering the question on what are the driving factors behind Sulawesi's rapid economic growth during the last decade, and which segment of the population that is lagging behind. It is followed by addressing the question on: what needs to be done to make the growth more inclusive.

### What drives rapid growth in Sulawesi and who is lagging behind?

**Sulawesi's rapid economic growth during the last decade was mostly driven by tertiary sectors growth.** Tertiary sectors that include: Trade, Hotel, Restaurant, Transport, Communication and Services sectors, contribute to about 52 percent of Sulawesi's economic growth during 2001 to 2013 period. The tertiary sectors may have benefited from the spillovers from the local commodity boom that happened during 2006-2010 period. During this period, Sulawesi's terms of trade with the rest of Indonesia increased by 2.5 percent. This reflect a relative increase in the price of Sulawesi's products - mainly consisting of natural resource-based commodities – in comparison with the prices of goods in the rest of Indonesia. According to the literatures, the increased capital inflows from increased commodity revenues lead to higher demand in non-tradable sectors, including services and construction sectors.

**The poorest 40% of the population (from herein referred to as the "poorest 40") is lagging behind other groups in Sulawesi.** Between 2003 and 2012, growth in per capita expenditure for the poorest 40 percent of the population in Sulawesi is only 1.4 percent, lower than the overall average of 5.2 percent and significantly lower than the per capita expenditure growth rate of the richest 1% of 15.7 percent. The differences in the growth rate of per capita consumption caused inequality to widen. In 2012, the wealthiest 1 percent of the population had a real per capita consumption level almost 37 times higher than the poorest one percent.

**The majority of the poorest 40 in Sulawesi reside in rural areas, employed in the agriculture sector, and poorly educated.** In 2012, 81.4 percent of the poorest 40 lived in rural area, 58 percent of those who have employment worked in agriculture sector, and on average have only 7 years of schooling.

### What needs to be done to make growth more inclusive?

#### 1. Improve Agriculture Sector Productivity

**Agriculture remains an important sector because a large proportion of the poorest 40 work in the sector.** Agricultural sector income is low because labor productivity in the sector remains low, agriculture still has the lowest value added per worker compared to the other sector in the economy. Increasing the income of the poorest 40 through improving agricultural sector productivity is therefore a priority for Sulawesi.

**Improving agricultural productivity in Sulawesi can be achieved by reducing the productivity gap between Sulawesi and the best performing regions in Indonesia.** Average land productivity or yield for rice in Sulawesi is 21 percent lower than in East Java, one of the most productive regions in Indonesia; The gap in maize productivity is even larger – maize yield in West Sulawesi, the regions most productive maize producer, is around 50 percent lower than West Java, which has the highest yield in Indonesia.

Cocoa productivity in Sulawesi is high in comparison to other regions, but its current yield levels is only 70 percent of that achieved during the late 1990s.

**Sub-optimal farming practices such as using poor quality seeds and insufficient investment in replanting cocoa trees contribute to low land productivity in Sulawesi.** The 2010 PATANAS survey, for example, found that only 29 percent of South Sulawesi rice farmers in survey villages used labeled seedling, compared to 68 percent in rice producing villages surveyed in East Java. Several studies also suggest that the adoption of high yielding maize varieties is lower in Sulawesi in comparison to Java or Sumatra. In cocoa commodity, farmers are also not investing in rejuvenating and replanting aged trees.

**Sulawesi's provincial and district governments should focus their limited resources on increasing maize and cocoa productivity.** Sulawesi is relatively competitive in the international and domestic markets of both commodities. The existing domestic production deficit implies that increasing output is not expected to lead to a sharp decline in the prices of these commodities. In particular, South-East Sulawesi province has an opportunity to increase maize productivity because its productivity level is amongst the lowest in Indonesia. Gorontalo province's maize productivity increased by 113 percent during the last decade, and sets a strong example of potential results from a concerted effort to improve productivity.

## 2. Create More Opportunities in the Rural Non Agriculture Sector

**More opportunities in the rural non-agricultural sector needs to be created to reduce agricultural sector labor surplus.** One of the key reasons for low income in the agricultural sector is the low labor productivity driven by the large size of agriculture labor. Thus agricultural workers need to shift to more productive, higher income, non-agricultural sectors.

**Improving human capital through education and health program, as well as, improving infrastructure to facilitate mobility and connectivity should become Sulawesi governments' key priorities in increasing non agriculture employment.** Existing empirical evidence shows that higher health and education outcomes, as well as, better access to infrastructure, increase the likelihood of a person to be employed in the rural non-agricultural sectors. Apart from fixed circumstances such as gender, and age, employment in rural non agriculture sectors are found to be positively correlated with higher education, lower morbidity, and, better access to good quality roads.

**Developing rural economic centers by strengthening rural non-agricultural enterprises is another key policy priority for developing the rural economy in Sulawesi.** Low-productivity non-agricultural activities are currently performed in more remote locations, while high productivity activities tend to be located in areas closer to urban areas such as district capitals. Sulawesi therefore needs to develop viable and vibrant rural economic centers by strengthening and developing rural non-agriculture enterprises to absorb agricultural labor surplus in the rural area itself.

### 3. Promote Greater Inclusiveness in The Extractive Industry in Sulawesi

**Sulawesi needs to ensure that the extractive industries play a more inclusive role in region's economy.** With Sulawesi already considered Indonesia's main nickel producing region, the extractive industries have the potential to grow further and become more significant to Sulawesi's economy. Moreover, the risks associated with a growing extractive industry are considerable: environmental damage and potential conflict between industry and local communities over resource management, for example, means that it is crucial that the extractive industries are properly managed and monitored.

**Maximizing the benefit of extractive industry to the economy would be better achieved through fiscal means.** This could be achieved by optimizing revenue collection and improving spending effectiveness, rather than through production-side policy, such as the downstream processing requirements. While such policy could increase forward linkages of the extractive industry, it also creates net welfare losses, at least in the medium term.

**In order to improve the contribution of extractive industries to inclusive development in Sulawesi, this report proposes recommendations structured around four pillars.** The first pillar focuses on expanding economic opportunities and mitigating adverse impacts of EI growth today. The second pillar focuses on investing mineral resources rents for the future. The third pillar focuses on optimizing revenue collection, and the fourth pillar focuses on improving the oversight and transparency of extractive industries.

### 4. Improve Access to Basic Services for the Poor

**Limited skills and education is a key challenge facing the *poorest 40* because it constrains their ability to find higher income employment.** A key obstacle for worker mobility is that many in the *poorest 40* do not have the relevant skills to work in the secondary and tertiary sectors. The extractive industries, for example, tend to employ skilled labor from outside of Sulawesi for their more senior positions. Limited human capital also constrains Sulawesi from diversifying its economy. Hence, improving skills and education of the *poorest 40* and shifting them to more productive sectors is the main way to improve their income.

**Improving human capital and workers' mobility in Sulawesi requires improving overall human development outcomes, particularly in the health and education sectors.** A comparison of five key education and health outcomes show that Sulawesi has an average education level but performs poorly in health. Sulawesi's junior high school enrollment rate of only 66 percent and senior high school enrollment rate of only 52 percent was lower than Java, Bali and Sumatera but higher than Kalimantan and the rest of Eastern Indonesia. In the share of births assisted by skilled health workers and health facilities utilization rates, Sulawesi performs poorly compared to other regions.

**In access to basic services, there are still weaknesses related to several indicators of supply readiness in Sulawesi.** In education the main gap in supply readiness is found in the quality of school facilities. There is also limited access to senior high schools and properly qualified SMP teachers. Supply readiness in health highlights the unequal access to secondary health care and midwives are not available in many

villages. The shortcomings in education should be addressed by providing properly qualified teachers through a review of staffing policy to allow a better distribution of qualified teachers between junior high schools and by improving the school facilities such as through the provision of laboratories for SMP and generators for electricity matters. Meanwhile to address the shortcoming in health, regions lacking a widespread presence of midwives in villages should be systematically identified. Training and incentives programs should then be set up to address this gap. The incentive could include experimenting with non-monetary incentives for all providers, especially midwives, including better career opportunities, merit-based career management, and improved in-kind benefits (such as housing and education) to encourage more deployment to remote areas. Appropriate resources to address the gap in both education and health should be allocated by sub-national governments.

## **5. Improve Infrastructure in Sulawesi**

**Access to public Infrastructure in Sulawesi has been steadily improving during the last decade, but overall improvement has been modest.** Household access to electricity, sanitation, water and roads has had modest but steady improvements all across the island. Access to all types of infrastructure in Sulawesi needs to be improved in order for the region to continue to grow sustainably. Without adequate infrastructure, positive spillovers from urban economic growth to rural area will not be realized.

**Sulawesi needs to better prioritize its infrastructure investment if it wants to create and sustain equitable service delivery and economic growth.** Sectoral priorities include sanitation and roads, both of which are below national standards. Geographic priorities include infrastructure investments within the jurisdiction of fast growing urban areas, as well as those linking urban and rural areas. Such investments would help to reduce urban congestion, which constrained economic growth, and enhance urban economic spillovers to rural areas, which are currently weak by national standards. Investing in infrastructure that connects urban and rural areas will make it easier to supply input for agriculture and rural non-farm activities as well as facilitate the marketing of agricultural and rural products. As for expanding the access to electricity in Sulawesi, it will require improvement in the nation wide policy and regulatory framework. Electricity production costs far exceed sales prices in many provinces and PLN argues that available funding is insufficient to cover the implied subsidies, hence limit the PLN's ability to invest more on electricity supply. Particularly for Sulawesi, additional investment will also be needed to replace the outdated transmission equipment and overcoming difficult geographic terrain.

**Financing the needed infrastructure improvements will require the Sulawesi's government to spend much more than it does now as well as making more effort in lending.** Sulawesi should at the very least spend more of its own-source and transfer revenues on infrastructure than the current level. Sulawesi subnationals should also consider increasing their borrowing from the central government, via the Government Investment Agency (PIP) and more aggressively explore borrowing opportunities from private financial institutions, as well as bond issuances. Given the current lack of appetite among commercial banks for lending to subnational governments and weak administrative capacity, the latter two will not be easy. Finally, the central government might consider increasing its own direct investment in subnational public assets, even though this runs counter to the spirit of decentralization.

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