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## **Section III. Economic and Social Impacts**

**This chapter discusses the broad impact of the earthquake on the livelihoods of people around the Yogyakarta area.** It analyses the impact of the earthquake on the regional economy, local government finances and employment, as well as its consequences for poverty and the lives of the people directly affected by the earthquake.

## IMPACT ON ECONOMY PERFORMANCE

**From the national standpoint, the loss in economic activity in the affected districts is likely to have a minor effect.** Before the earthquake, the 11 affected districts contributed about 2.2% to national GDP, and out of those, five experienced only very minor damage and losses. The two districts most severely affected, Klaten and Bantul, contributed about 0.4%. The main impact on the national economy is likely to come from the cost of the reconstruction effort and its implications on national Government finances.

**The estimated loss in value added in the affected areas amounts to 5.6% of their aggregate GRDP.** Given a forecasted growth rate of 5.5%, net economic growth in the affected areas is expected to decline to around 1.3% in 2006 and 4.2% in 2007 (the change relative to the pre-disaster GRDP projection is -4.2% for 2006 and -1.3% for 2007). Based on this report's estimates of economic loss, the projected GRDP for FY 2006 in the area (Rp 51 trillion) can be expected to fall by Rp 2.1 trillion. This is not significant at the national level (the estimated decline is 0.1% of GDP). Assuming a normal recovery it is estimated that 75% of the total loss in value added will have an effect in 2006 (approximately 4% of GRDP) while the remaining 25% will be absorbed in 2007 (roughly 1% of GRDP).<sup>43</sup> (Table 30)

**The productive sectors whose performances were most severely affected include manufacturing, energy, water and sanitation, and services.** They are expected to decline by 20%, 5%, and 2% respectively (table 31). Other sectors fared better, with an anticipated decline of less than one percent over the next two years.<sup>44</sup>

**Bantul district's economy is expected to be the most heavily affected by the earthquake followed up by Klaten and Kulonprogo** (GRDP is expected to decline by 23%, 9% and 7% respectively in 2006 compared to pre-earthquake projections).<sup>45</sup> The aggregate decline in GRDP in the whole of Yogyakarta in 2006 is estimated to be approximately 6.7%, whereas the impact in Central Jawa is only 0.24% (Table 32).

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<sup>43</sup> The loss in value added was estimated based on the estimated economic loss (as reported by each individual sector) weighted by the sector-specific valued added factor computed from an input-output matrix (latest available 2000). Economic losses in the services sector were imputed by applying this sector's share on the affected areas' GRDP to the estimated losses in the housing sector.

<sup>44</sup> No loss assessment of the mining sector was reported given that this sector represents less than one percent of the GRDP in the affected area.

<sup>45</sup> Net economic growth relative to 2005 in Bantul, Klaten and Kulonprogo, assuming the pre-disaster expected growth rate fixed at 5.5% are (-17.7%, -3.5%, -1.5% respectively). See annex tables for details on the methodology employed for computing the loss distribution across districts.

**Table 30: 2006 and 2007 Projections of Nominal GRDP of Affected Areas Pre and Post Disaster by Sector (Rp Billion)**

	2006		2007	
	GRDP * Projection	GRDP Projection minus loss	GRDP * Projection	GRDP Projection minus loss
Agriculture	12,556	12,369	13,246	13,184
Construction	3,242	3,242	3,420	3,420
Electricity, Gas & Water Supply	608	575	642	631
Financial Services	3,636	3,636	3,836	3,836
Manufacturing & Services	8,520	6,826	8,989	8,424
Services	8,197	8,038	8,648	8,595
Trade, Restaurants & Hotels	10,199	10,125	10,760	10,735
Transportation & Communication	3,729	3,729	3,934	3,934
Total	51,200	49,055	54,016	53,301

Source: Computations based on Damage and Loss estimations by the Joint Assessment Team.\* Projections of GRDP for 2006 and 2007 are based on national growth estimates of 5.5 percent.

**Table 31: Potential Economic Impact on Affected Areas per Sector of Production (Rp Billion)**

Affected Sectors	Share of Sector on Overall GRDP %	Economic Loss	Estimated Loss in Added Value	Input- Output Coefficient	Percent Decline FY 2006	Percent Decline FY 2007
Agriculture	15.8	640	2489	0.39	-1.5	-0.5
Electricity, Gas & Water Supply	1.5	154	44	0.28	-5.4	-1.7
Manufacturing	26.3	3,899	2,258	0.58	-19.9	-6.3
Services	9.3	298	212	0.71	-1.9	-0.61
Trade, Restaurants & Hotels	17.7	138	98	0.71	-0.7	-0.23
Transportation & Communication	6.2	0.2	0.1	0.55	0.00	0.00
Total		5,128.3	2,861.80	--	-4.2	-1.3

Source: Computations based on Damage and Loss estimations by the Joint Assessment Team.

**Table 32: Economic Loss per District FY 2006 & 2007 (Rp Billion)**

	Economic Loss (2006 & 2007)	2006			2007		
		Projected GRDP	GRDP Projecti on minus loss	% Change	Projected GRDP	GRDP Projecti on minus loss	% Change
Bantul	1,439	4,652	3,572	-23.2	4,912	4,552	-7.3
Gunung Kidul	97	3,766	3,693	-1.9	3,977	3,953	-0.6
Kulonprogo	179	2,047	1,913	-6.5	2,162	2,117	-2.1
Sleman	340	7,404	7,149	-3.4	7,819	7,733	-1.1
Yogyakarta	122	6,552	6,461	-1.4	6,919	6,889	-0.4
Yogyakarta Province	1,908	24,363	22,730	-6.7	25,727	25,183	-2.1
Klaten	684	5,715	5,202	-9.0	6,035	5,864	-2.8
Central Java Province	599	215,710	215,197	-0.24	227,789	227,405	-0.17

Source: Computations based on Damage and Loss estimations by the Joint Assessment Team

**The decline in economic performance will be partially offset by increased activity in the construction sector during the reconstruction stage.** However it is too early to estimate the rates of reconstruction, which depend on the availability of financing and the installed capacity of the construction sector. In any event, the growth of the construction sector will not be enough to offset the overall decline in production in the short run.



## IMPACT ON EMPLOYMENT

**Preliminary estimates suggest that the reduction in economic activity will result in the loss of around 130,000 jobs.** This represents about 4% of the total pre-earthquake employment in the affected areas. As a consequence, the unemployment rate is expected to rise from 7% to around 11% (Table 33).<sup>46</sup> The services sector is hardest hit, and accounts for most of the total job loss (55%). The services sector includes workers in the trade sector that are typically self-employed or represent small and medium-sized enterprises. Close to 70,000 people may have lost their primary source of income. Agriculture, while accounting for over 45% of employment, will lose around 1.1% (17,000 jobs) as a result of the earthquake. Damage to fields and to crops appears to be limited. Some 730,000 workers were employed in industry (comprised of construction, manufacturing, utilities and mining) of the affected area. In the district of Bantul alone, close to 30% of workers employed in licensed establishments were occupied in the handicraft and related sector. As the vast majority of these establishments were small-scale, often also serving as homes, employment losses in this

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<sup>46</sup> Employment losses are estimated by examining the share of employment in each of the categories of agriculture, industry and services in the affected districts using data from the Dinas Tenaga Kerja Transmigrasi Propinsi D.I. Yogyakarta and BPS. The baseline data was then multiplied to shares of districts affected and sector employment destruction rates compiled based on reports from government agencies, staff on the field and media. Shares of district affected range from a low of 0.1% Magelang to a high of 70% for Bantul. An employment destruction rate of 5%, 20%, 25% was used for agriculture, manufacturing and services respectively.

sub-sector are estimated to account for a large share of manufacturing job losses due to the earthquake.

**Table 33: Pre-earthquake Employment and Estimated Job Losses by Sector**

	Total Labor Force / Estimated Total # of Job Losses	Total Employment / Estimated Percent Jobs Lost			
		Total employment	Agriculture	Industry	Services
<b>Yogyakarta Province</b>	<b>1,648,624</b>	<b>1,504,342</b>	<b>706,172</b>	<b>326,442</b>	<b>471,727</b>
% estimated job losses	60,698	4.0%	1.8%	5.4%	6.4%
Yogyakarta	233,662	201,998	3,410	52,228	146,360
	4,721	2.3%	0.5%	2.0%	2.5%
Sleman	387,624	346,186	171,368	72,813	102,005
	34,043	9.8%	3.5%	14.0%	17.5%
Bantul	414,794	376,740	143,668	117,878	115,194
	5,956	1.6%	0.5%	2.0%	2.5%
Kulonprogo	288,623	272,591	212,478	29,779	30,334
	12,082	4.4%	2.5%	10.0%	12.5%
Gunung Kidul	323,921	306,826	175,248	53,744	77,834
	3,897	1.3%	0.5%	2.0%	2.5%
<b>Central Java Province</b>	<b>2,043,515</b>	<b>1,919,877</b>	<b>849,167</b>	<b>404,087</b>	<b>666,623</b>
% estimated job losses	67,764	3.5%	0.6%	5.8%	5.9%
Purworejo	345,720	335,226	171,744	57,616	105,866
	47	0.0%	0.0%	0.0%	0.0%
Magelang	631,918	593,522	318,114	80,818	194,590
	81	0.0%	0.0%	0.0%	0.0%
Boyolali	495,790	464,810	223,570	100,004	141,236
	332	0.1%	0.0%	0.1%	0.1%
Klaten	570,087	526,319	135,739	165,649	224,931
	67,305	12.8%	3.5%	14.0%	17.5%
<b>Total</b>	<b>3,692,139</b>	<b>3,424,219</b>	<b>1,555,339</b>	<b>730,529</b>	<b>1,138,350</b>
% estimated job losses	128,462	3.8%	1.1%	5.6%	6.1%

Source: Sakornas Data and Calculations by ILO, Jakarta

**Loss of employment has hit females and males equally. Some 47% of jobs lost, were previously held by women.**<sup>47</sup> Nevertheless, the negative impact of the disaster on women also includes a significant increase in their non-paid activities at home.

**The future employment situation will depend on the evolution of the reconstruction effort.** In the short run, the adult female participation rate is expected to rise as many women will have to take on any type of work in order to survive. Cash-for work programs are one useful way to generate provisional employment rapidly, injecting cash into the community and stimulating the local economy. Rebuilding basic infrastructure and cultural heritage sites through labor intensive cash-for-work programs can be an option. Particular attention should be put on rebuilding the markets and market-supporting infrastructure, as a significant share of the population derives its livelihood from trade and services. Local contractors with a good knowledge of available local labor should be given a lead part in the

<sup>47</sup> The table is calculated by applying gender specific employment figures to employment, and assuming that job losses in sectors are not correlated with gender.

reconstruction. Speedy rehabilitation of the infrastructure serving the agricultural sector will be warranted as the sector employs the largest share of persons in the affected area. As housing construction picks up, employment in the construction sector will rise and the need for short term compensation measures diminish accordingly.

**Table 34: Estimated Employment Losses by Gender**

Provinces and Districts	Estimated Male Job Losses	Estimated Female Job Losses	Female as Percentage of Total
Yogyakarta Province	33,346	27,352	45.1
Yogyakarta	2,554	2,166	45.9
Sleman	19,244	14,799	43.5
Bantul	3,114	2,842	47.7
Kulonprogo	6,181	5,900	48.8
Gunung Kidul	2,252	1,645	42.2
Central Java Province	34,512	33,252	49.1
Purworejo	25	22	46.3
Magelang	43	38	47.0
Boyolali	181	152	45.6
Klaten	34,264	33,041	49.1
<b>Total</b>	<b>67,858</b>	<b>60,604</b>	<b>47.2</b>

*Source: Computations based on Damage and Loss estimations by the Joint Assessment Team*

## IMPACT ON THE FISCAL SYSTEM

The affected areas are fiscally poor and depend heavily on the central government's general allocation transfer (DAU); hence the decline in own source revenues is not expected to have a significant impact.<sup>48</sup> In the worst hit districts of Bantul and Klaten, own revenue sources represent only 6% and 4% percent of their total revenues, respectively. Shared non-tax revenues (from natural resources) are for the most part negligible in all districts (less than 0.1% of total revenues), whereas tax-shared revenue represents about 4% of total revenues in most of the affected districts (with the exception of Yogyakarta and Sleman). If revenues decline proportionately with regional GRDP the affected districts would experience a revenue shortfall of approximately Rp 16 trillion in 2006 and Rp 4 trillion in 2007.

<sup>48</sup> For illustration, the DAU transfer accounts for as much as 93 percent of total revenue in G. Kidul (table 4).

**Table 35: Revenue Composition for Affected Districts in Yogyakarta and Central Java Provinces, 2006 (Rp million)**

	Own Revenue Sources	%	Non-tax Shared revenue (Nat. Resources)	%	Tax Shared Revenue	%	General Allocation Fund (DAU)	%
Yogyakarta Province								
Kulonprogo	19,800	5.3	430	0.1	12,300	3.3	344,035	91.4
Gunung Kidul	19,700	4.2	420	0.1	14,500	3.1	432,868	92.6
Sleman	60,100	10.3	420	0.1	37,000	6.3	485,397	83.3
Bantul	30,800	5.9	420	0.1	19,100	3.7	470,847	90.3
Yogyakarta	79,900	18.4	420	0.1	37,800	8.7	316,832	72.8
Central Java Province								
Klaten	27,050	3.9	580	0.1	23,760	3.5	635,488	92.5
Magelang	43,700	7.7	580	0.1	21,200	3.7	502,945	88.5
Boyolali	37,000	6.8	580	0.1	18,000	3.3	492,181	89.9
Sukoharjo	21,700	4.6	580	0.1	23,500	5.0	421,438	90.2
Wonogiri	25,300	4.5	580	0.1	18,900	3.3	523,439	92.1
Purworejo	26,300	7.7	650	0.1	20,200	3.7	432,013	88.5

*Source: Data MOF, computations by Joint Assessment Team*

## IMPACT ON LIVELIHOODS<sup>49</sup>

**Qualitative reports indicate that trauma levels are high in severely affected areas.** Children show strong stress reactions – problems with sleeping, feeling scared and crying easily, and experiencing fevers. Adults complain of head and stomach aches, flu and common colds. Stress is increased by the activity of the Merapi volcano. While certain communities are well organized with rubble clearance, etc., in other places, many people are afraid to start repairs on their houses or go to work, especially in agricultural fields. While all involved in the affected areas agree on the need to use community based reconstruction planning, it may take some time before households are ready to engage in planning activities.

**Even though the rate of housing destruction is high, people tend to stay near their home.** The snap survey found that 74% of the households, whose houses were completely destroyed, lived inside a tent in front of their house. In these circumstances, it is key to ensure a quick recovery of basic water and sanitation in the affected areas. Some villages report that the quality of the water has declined even though the water supply is intact.

<sup>49</sup> The information in this chapter is based on qualitative field reports, preliminary findings of rapid assessments conducted in 50 villages, in combination with pre-earthquake statistical information. A snap survey was conducted on June 6 by the University of Gajah Madah and collected information regarding 1600 households in 50 affected villages. The survey sampled from pre-earthquake housing, and collected data on the whereabouts and livelihood situation from the residents, or, if they were not present, from neighbors or community leaders. An important statistical sources used in this section is the poverty map, produced by the Central Bureau of Statistics, that provides estimates of poverty at the sub-district level. These, in combination with sub-district level report on damages are used to calculate the impact on poverty.

## VULNERABILITY AND DISASTER MITIGATION

**Early intervention should focus on livelihood support and technical assistance for housing reconstruction in order to mitigate increased poverty and vulnerability to disasters.** Preliminary community surveys by NGOs indicate that community members unable to afford quality building materials or without the professional skills to build seismically resistant housing suffered particularly heavy losses. Many of these poor households have lost vital sources of income when their businesses (often housed in their homes) were destroyed. Not only has their short-term vulnerability increased, but it is also unlikely that they will be able to afford to build back more safely without considerable assistance (beyond and above the Government's compensation package). Many have lost the ability to cope with future shocks – such as a drought, flood or economic downturn.

Women and girls have consistently raised the need for underwear, sanitary napkins and cooking equipment. Basic facilities to ensure privacy are of particular concern for women, especially those menstruating. Several NGOs have expressed concern over the risk of abuse of unsupervised children. For example, a young boy expressed "being proud to be able to collect 100,000 Rp just along the road", a vulnerable situation for him to be in.

**There is evidence that the earthquake has hit the poor somewhat harder.** In the snap survey, 42% of households headed by someone with only primary education reported destroyed housing. For higher levels of education this percentage is around 31%. However, there is no correlation between having received a BLT (unconditional cash transfer) and the destruction of the house. Many poor live in wooden or bamboo houses rather than concrete, which were more resistant to the earthquake motion. Whereas 40% of houses with concrete walls were reported as completely destroyed, only 16% of wooden and bamboo houses were reported destroyed.

**The earthquake is estimated to have impoverished an additional 67,000 households and increased the poverty head count ratio by 1.6% in the affected areas.** Baseline data on poverty and data on the destruction of housing and lives at the sub-district level was used to assess the impact on poverty.<sup>50</sup>

**Table 36: Distribution of Selected Indicators across Households by Severity of Damage**

	No Damage	Slightly Damaged	Heavily Damaged	Destroyed	
Received BLT					
Received Cash Transfer (439 Households)	5.2	32.4	26.2	36.2	100
Not Receive Cash Transfer (1125 households)	8.1	28.3	28.4	34.7	100
Education Head of Household					
Elementary School or less (814 hh)	6	28.3	23.0	42.6	100
SMP (284 hh)	9.9	26.4	30.3	32.8	100
SMA or more (542 hh)	9.6	28.4	31.6	30.7	100
<b>Total</b>	<b>7.8</b>	<b>28.6</b>	<b>26.7</b>	<b>36.5</b>	<b>100</b>

*Source: Tabulations from survey conducted by UGM on June 6*

**Table 37: Estimated impact on poverty by district**

Province	District	Simulated increase in number of poor households	Simulated percent point increase in percentage of poor
Yogyakarta	Kulonprogo	3,050	1.00
Yogyakarta	Yogyakarta	3,890	1.40
Yogyakarta	Gunung Kidul	6,706	1.20
Yogyakarta	Sleman	14,462	1.60
Yogyakarta	Bantul	24,020	3.30
Central Java	Klaten	14,664	1.90
<b>Total</b>		<b>66,792</b>	<b>1.60</b>

*Source: Computations by Joint Assessment Team*

<sup>50</sup> It was assumed that the number of families that fell into poverty equaled the number of deaths, plus the number of houses that were reported as damaged in the data.