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Cut Dian Agustina, Ehtisham Ahmad,
Dhanie Nugroho and Herbert Siagian

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Cut Dian Agustina The World Bank

Dr Ehtisham Ahmad Asia Research Centre, LSE and Centre for Development Research, University of Bonn

Email: s.e.ahmad@lse.ac.uk eahm@uni-bonn.de

Dhanie Nugroho The World Bank

Herbert Siagian Government of Indonesia

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For further information, please contact:

Asia Research Centre (ARC)
London School of Economics & Political Science
Houghton Street
London
WC2A 2AE
United Kingdom

E-mail: arc@lse.ac.uk
www.lse.ac.uk/collections/AsiaResearchCentre

ASIA RESEARCH CENTRE WORKING PAPER 55

Political economy of natural resource revenue-sharing in Indonesia

1. Antecedents

The decentralization process in Indonesia in the late 1990s was partly a reaction to the political control exercised by Jakarta in the Suharto-era. In part, it was felt that the centrifugal forces that had built up in the vast and diverse archipelago of Indonesia were due to an inadequate share of the natural resource wealth of the country. And some of the regions with the greatest concentrations of natural resources were among those with the weakest infrastructure and poorest public service delivery. Thus, the revenue-share was designed to achieve a greater political buy in for “keeping the country together” in the post-Suharto era. It was also expected that the sharing would ensure a more “balanced” development and lead to a convergence in the levels and standards of public service delivery across the country.

It became clear very quickly that the “equal” sharing proportions were not acceptable to the poorest districts in the natural resource regions. Thus, an asymmetric approach was adopted, especially with respect to the sharing of oil and gas revenues in Aceh and Papua. This is a standard political economy response, but its success depends critically on the effectiveness with which the needs and requirements of the populations in the affected areas are met. The asymmetric responses led to a substantive increase in the revenue-shares over the past decade that has been devoted to the producing and poor regions (see Table 1).

In this paper, we examine the asymmetric approaches to sharing natural resource revenues in Indonesia. We examine in Section 2, some of the potential theoretical arguments underlying the natural resource-sharing. In particular, it makes little sense to treat the tax and non-tax arrangements separately, especially in a country like Indonesia that has some advanced production sharing arrangements that are designed to maximize the overall “government take”, without adversely affecting the incentives for investment and efficient production. In principle, not just the tax and non-tax shares, but also transfer design are important in examining the flow of resources to different regions of the country—the former could be used to offset or negate the asymmetric sharing arrangements.

In Section 3, we examine the case of non-renewable resources—such as petroleum and minerals. Optimal extraction strategies, and smoothing the revenue-flows, particularly for sub-national entities are critical, especially as they lack the ability to absorb price fluctuations.

In Section 4, we briefly posit the case of renewable resources—in particular, forestry. Environmental concerns are important, and the linkage between excessing logging and deforestation and the flows of resources to local governments and communities are important. Aligning incentives is critical, as is the effectiveness with which services are provided to communities in remote areas.

In Section 5, we bring together the arguments for a better flow of information on the resources generated and effectiveness of service delivery. Standardized information flows are seen to be critical in enabling the central government to adopt adequate supportive strategies, and for local communities to put pressure on their local governments in order to effectively improve living standards.

**Table 1. Fiscal Resources for Districts/
Municipalities (%)**

5

Sources	2001 (274 District ave)	2008 (434 District ave)
Own-revenues	6.65	6.28
Revenue Sharing	13.21	25.01
General Allocation (DAU)	69.63	57.77
Special Allocation (DAK)	0.61	6.82
Other GOI/Provincial	2.93	4.12
Balance	6.97	
Total	100.00	100.00

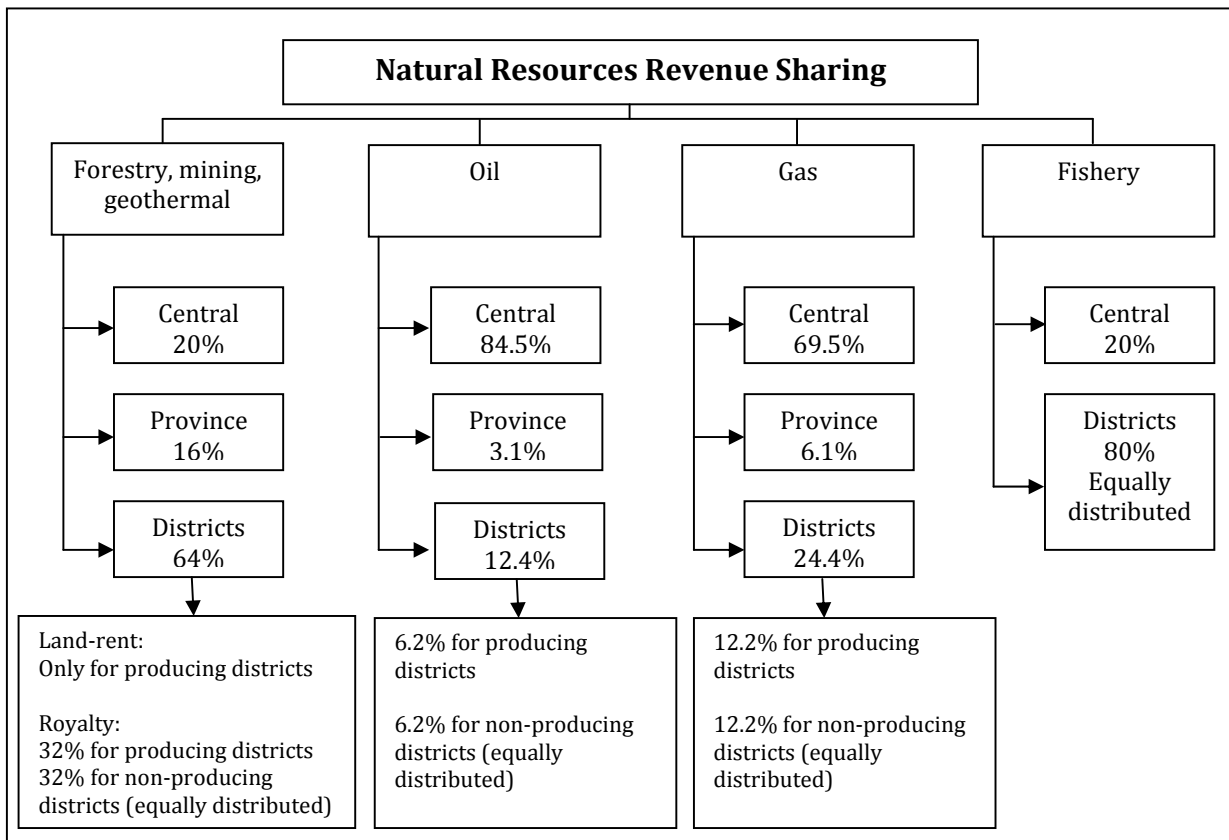
Source: UNDP 2009

2. Revenue-sharing: Indonesian perspectives in a wider context

a. Indonesian context

The fiscal decentralization framework in Indonesia requires central government to share the income from natural resources to the provinces and local governments. Under Law 33/2004 on fiscal balance between central and regional government, the shared revenue from natural resources covers not only oil and gas, but also includes forestry, other general mining, geothermal, and fishery. The sharing arrangements differ across types of natural resources and levels of government (central, province, producing and non-producing districts). In general, regional governments retain 80 percent of revenue from natural resource, except for oil and gas. The regional revenue shares are further distributed within provinces, with producing districts receiving a greater share than the province and the non-producing districts. The flows and shared proportion of natural resources is illustrated in Chart 1 below.

Chart 1. Natural resources revenue sharing arrangement



Source: UU33/2004

Among provinces, East Kalimantan has the highest per capita natural resources revenue share. The average revenue sharing per capita from natural resources for districts in East Kalimantan is Rp 4.7 million. Kabupaten Tana Tidung in East Kalimantan is the district with the highest per capita natural resources share in Indonesia with Rp 25.7 million. Following East Kalimantan, other wealthy natural resources provinces, such as Papua, Riau, and Kep. Riau, also have relatively high natural resources revenue shares per capita. In contrast, provinces such as Yogyakarta, with limited natural resources, have the lowest per capita natural resources shares.¹

Each province has its own comparative advantage in terms of the natural resource endowment, which leads to differences in the benefits and revenues that they receive from each natural resource type. Provinces such as East Kalimantan benefit from oil and gas resources compared, to Papua, which is more dependent on general mining. Thus, the disequalizing aspects of specific natural resources are offset to some extent by the range and variety of natural resources in Indonesia.

The asymmetric arrangements for Aceh and Papua in particular, were initiated in 2002 after the Aceh and Papua Otsus Law enacted in 2001. For Aceh, starting 2008 with new Aceh Law, the additional shares is accounted for under the province's account instead of district account.

b. Asymmetric options—why share natural resources?

As described above, the main reasons for natural resource sharing in most countries lie in the political economy realm. Inhabitants expect to obtain a share of the wealth that is generated in their territories. Indeed, centrifugal forces are generated when natural resource rich regions lag others that are seen to benefit at their expense, especially in terms of infrastructure, service delivery and living standards in general. This was the case in Southern Sudan and Biafra (oil) and East Bengal (jute), leading to conflict.

In the Indonesian case, the initial shares proposed for oil and gas (Figure 1) were not sufficient to satisfy the claims from Aceh and Papua. The asymmetric solutions eventually led to a political settlement. The experience of Indonesia shows the difficulty in coming to an agreement on a “fair” share. Producing regions often believe that they can do better with a 100 percent share—which leads to demands for secession. However, this is not always the case, as there are costs involved in setting up the institutions and infrastructure, including management, transportation and delivery, besides the potential disruption caused by conflict.

¹ However, Yogyakarta is relatively more developed and has better service delivery outcomes than many natural resource rich regions (see the discussion that follows).

In very general terms, an equilibrium asymmetrical share would emerge when the costs of going it alone exceed the additional benefits gained by the potentially larger share. The literature makes a distinction between preference-based transfers, and income-based transfers, and models treat these separately. In the former case, the “preference based” transfers could be seen as “side payments” to distant regions to meet heterogeneous preferences (Le Breton and Weber, 2003). These asymmetric arrangements have been seen in the special-statute regions in Italy, and provinces in Canada. The main issues with this case are whether administrative constraints can be met; the credibility of the arrangements (i.e., whether these are enshrined in higher legislation that is not easy to back-track on); and whether these imply a transfer from poorer to potentially richer regions (Spolaore, 2010).

With respect to income-based transfers, the credibility issue is easier to defend, but may imply transfers from the resource-rich to resource poor regions. This has led to secessionist trends in regions such as Nigeria’s Biafra. In Alaska, the natural resource rents are given directly to the resident population in terms of a cash “dividend.”

But in the Indonesian case, there may be a possibility of combining the two approaches, with an assurance that the asymmetric transfers actually get to the population in need, as neither Aceh nor Papua have relatively high incomes or standards of public services that exceed the Indonesian average in most cases. As we shall see, the availability of multiple instruments, on both the revenue and spending sides, permits an opportunity to meet effectively the multiple objectives of ensuring national cohesion together with ensuring improved public service delivery.

c. Multiple instruments to meet policy objectives

It is in general not sensible to speak of taxes or non-tax revenues from natural resources separately, as different taxes or revenue shares may accrue to different levels of government under various circumstances. Brosio (2006) identifies:

1. **Separation of taxes:** for example including:
 - a. Royalties or some excises to subnational governments and
 - b. Income tax to central government, or vice versa.

$$R_i = t_i B_i$$

where:

Revenue, R_i , is equal to locally determined share, t_i , of the locally determined tax base, B_i ,
 i is region/state/local government.

2. **Concurrence of taxes:**

Each level of government levies taxes on oil rent (tax base sharing);

$$R_i = (t_i + l_i) B_i,$$

where:

R_i are the total collections in jurisdiction i of the shared tax;

l_i is the locally determined tax rate applied to the nationally determined tax base, B_i .

Local revenue is $r_i = l_i B_i$.

3. **Revenue sharing:**

Revenue is collected by one (usually, the central) government and shared with other levels.

In this system, the tax bases, the tax rates and the revenue shares are determined by the central government and the revenue is allocated according to the principle of origin:

$$R_i = \alpha t B_i, \text{ or, } r_i = \alpha R_i.$$

4. **In-kind sharing:**

The contractors may provide infrastructure to the producing areas.

With petroleum products, rents are produced, and the government “take” needs to be established efficiently and fairly, without jeopardizing investment. This implies significant interlinkages between instruments—including production sharing and taxes, which may accrue to different levels, even if there is central collection as in Indonesia—see Charts 2 and 3).

In countries like Indonesia, which practice production sharing contracts for oil, there is a correspondence between the tax and non-tax instruments. This can be seen in Charts 4 and 5 below.

It is possible, even desirable, to utilize multiple tax instruments. The difficulty with revenue-sharing is that the government “take,” hence the amounts to be shared with the local governments, may vary considerably with international prices. Thus either shifts the burden of stabilization on the local governments, or subjects their spending needs—presumably on essential infrastructure and basic services—to greater variation than might be desirable.

One option to mitigate the volatility is for the central government to establish a Sovereign Wealth Fund, and to determine drawdowns for all levels of government on a transparent and predictable manner, say for a project three-year horizon. This way, the central government retains the stabilizing function and there is transparency for the local governments as the excess resources, if any, are retained in the SWF for future distribution on the agreed basis.

Chart 2.

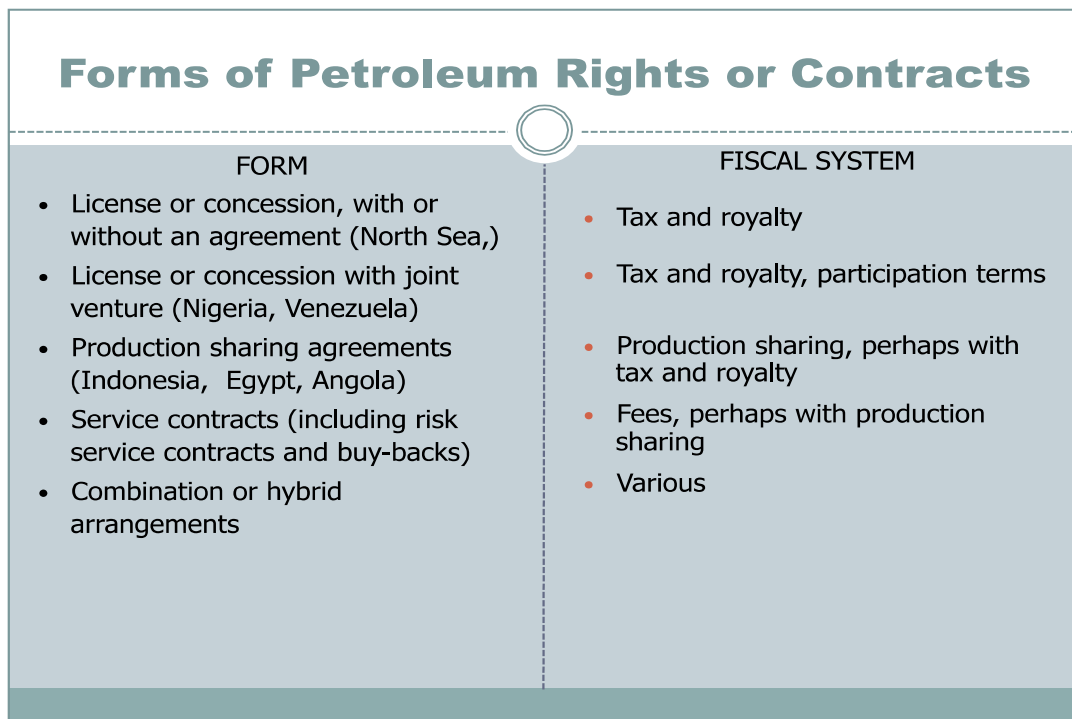


Chart 3.

Petroleum Contracts

<i>Type of contract</i>	<i>Cost and risk</i>	<i>Exclusive right to operate</i>	<i>Right to production</i>
License / concession	Private company	Private company	Private company
Joint venture	Private company	Shared	Shared
Production sharing	Private company	State	Shared
Service contract	Private company	State	State

Chart 4. Simple description of production sharing and tax systems

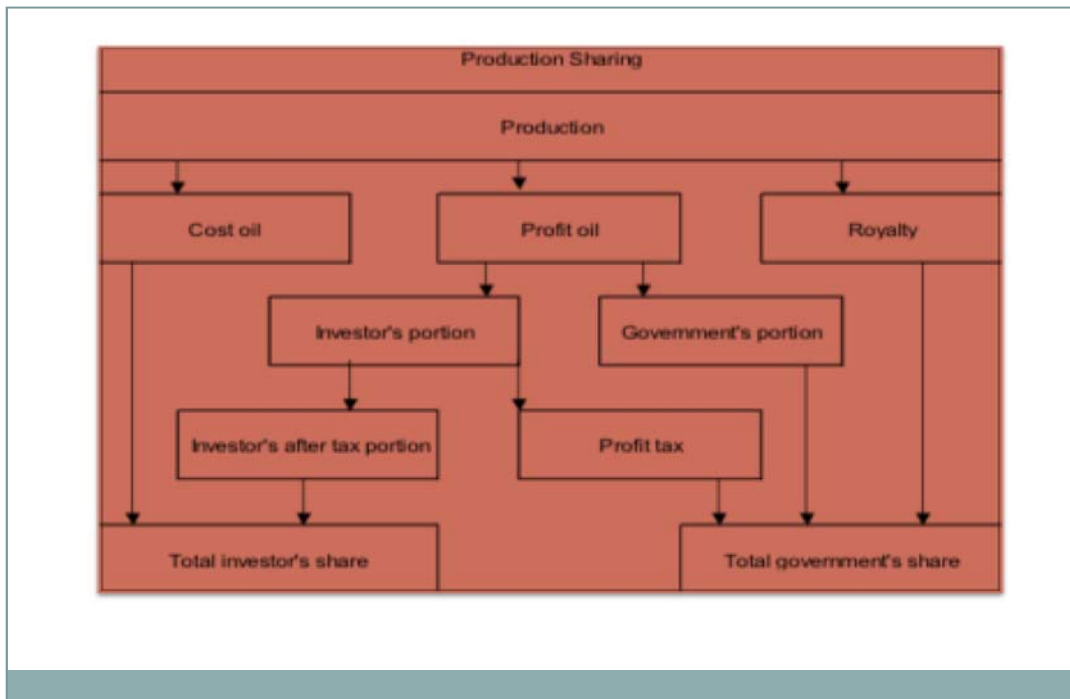


Chart 5.

Choice Between Tax/Royalty Regime and Production Sharing

<i>Risk/ Remuneration Trade-off</i>	<i>Tax/Royalty Regime</i>	<i>Production Sharing Agreements</i>
Low risk to government and immediate revenue	Royalty	Explicit royalty; or limit on cost oil
Medium risk and possible delays of revenue	Corporation Income tax	Income tax, may be paid out of government's share of production
High risk and substantial delays of revenue	Resource rent tax	The determination of profit oil can mimic a resource rent tax

An additional option, and not an alternative to the SWF, is to assign taxes on stable bases to the local governments. This could include a production excise and could be earmarked for environmental protection for the districts where the production takes place or through which pipelines are laid. The assignment of such an instrument, even if administered and collected by the center on behalf of the local governments, constitutes own-source revenues over which the local governments exercise some control (Ambrosiano and Bordignon, 2006). This is a critical element in the eventual “accountability” that is needed in the operations of the local governments, especially in regions benefitting from asymmetric revenue-shares. This arrangement would also work with production sharing, as it would be an allowable expense (or part of cost-oil).

In addition, we need to examine the system of transfers, which may offset or counterbalance the trends established under the revenue-sharing system. This includes both intergovernmental and interpersonal transfers (see Chart 6).

Chart 6.

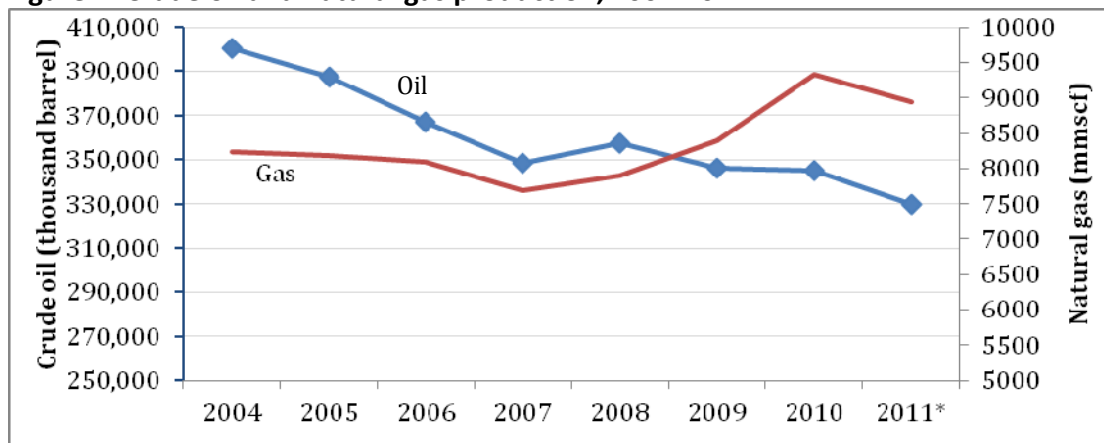
Revenue sharing for petroleum: options					
Method	Own-taxes	Concurrent taxes	Sharing of revenues	In-kind shares	Inter governmental transfers
Determination of tax base	Sub-national	National	National	Mostly national	National
Determination of tax rate	Sub-national	Subnational (within limits)	National	Mostly national	National
Administration	Sub-national / national	Mainly national	National	By producing firm	National
Determining Beneficiaries	Origin	Origin	Origin	Origin	Needs, capacities, equity etc

3. Indonesian case: non-renewable resources

a. Special case: oil and gas

Indonesia is a net exporter of crude oil and natural gas. Despite the declining oil production from 400 million barrel in 2004 to 330 million barrel in 2011 (Figure 1), Indonesia remains as net exporter in crude oil. Crude oil exports, however, have been declining from 45 percent of production to 31 percent of production within this period. At the same time, Indonesia also imports crude oil due to the technical inability of some refineries to process domestic oil crudes. The crude oil imports fluctuate, taking into account the level of oil price at a given point in time. Unlike crude oil, gas production has been increasing in the recent past and Indonesia is a net exporter of natural gas.²

Figure 1. Crude oil and natural gas production, 2004-2011



Source: Energy statistics, Ministry of Energy and Mineral Resources.

The majority of Indonesia's oil and gas output is extracted under the production sharing contract with private contractors. The most common type of contract used in Indonesia oil and gas upstream is Production Sharing Contract (PSC), in which government and private sector agree to take the split of the production measure based on PSC percentage agreement. Apart of this, there are also Enhanced Oil Recovery (EOR), Technical Assistance (TAC), and Joint Operation contract applied in this sector. In 2006, PSCs accounted for 87 percent of production, Pertamina with 9 percent of production, and the remaining distributed across the other contract types.

² Indonesia, however, exports and imports LPG to and from other countries.

The revenue from oil and gas contract is divided between government and contractor through several steps. The first share of the revenue comes through cost oil, or the first tranche petroleum (FTP) in the terminology of Indonesian contracts (Appendix Chart 1), which is 20 percent of gross revenue divided between the government and contractor. The second share incurred after the gross revenue is deducted with the FTP and cost recovery known as equity to be split (ETB), or profit oil, which is also divided between the government and contractor. Government typically receives 73.2 percent for the FTP and ETB plus the tax and fee from contractor. The contractor receives the remaining share less the contractor taxes and the other obligations to the government.

Revenue from oil and gas flows into the budget as tax and non-tax revenue. In 2010, government revenue from oil and gas tax and non-tax revenue accounted for one-fifth of total revenue. Around 5 percent of total revenue comes from oil and gas tax, and 14 percent comes from oil and gas non-tax revenue. Non-tax oil and gas revenue represent the largest share in total natural resources revenues, accounting for 90 percent of the total. Non-tax oil revenue itself is about three times higher than the non-tax gas revenue in 2010 (see Table 2). The gap between non-tax oil and gas revenue is widening, with the increase in oil price such as in 2008, when non-tax oil revenue was almost four times as large as gas revenue.

Table 2. Oil and gas revenue to national revenue (Rp billion)

	2008	% total revenue	2009	% total revenue	2010	% total revenue
Revenue and Grants	1,042,608	100.0	944,960	100.0	1,106,032	100.0
A. Domestic Revenue	1,039,643	99.7	943,293	99.8	1,103,009	99.7
I. Tax revenues	687,800	66.0	682,627	72.2	795,159	71.9
a. Income tax	318,028	30.5	317,583	33.6	357,046	32.3
- Non oil and gas	255,927	24.5	267,540	28.3	298,173	27.0
- Oil and gas	62,101	6.0	50,044	5.3	58,873	5.3
b. Other tax revenue	369,772	35.5	365,044	38.6	438,113	39.6
II. Non Tax Receipts	351,843	33.7	260,666	27.6	307,850	27.8
a. Natural resources	228,961	22.0	138,559	14.7	168,826	15.3
i. Oil and gas	219,084	21.0	125,752	13.3	152,733	13.8
ii. Non-oil and gas	9,877	0.9	12,807	1.4	16,092	1.5
b. Profits of public enterprises	35,044	3.4	26,050	2.8	30,097	2.7
i. Pertamina	12,400	1.2	10,472	1.1	9,509	0.9
ii. State Gas Company	300	0.0	703	0.1	4,000	0.4
iii. Other public enterprises	22,344	2.1	14,874	1.6	16,588	1.5
c. Other non-tax revenues	87,838	8.4	96,058	10.2	108,927	9.8

Source: APBN and APBD, MoF.

Oil and gas revenues are subject to the revenue sharing arrangements. Oil and gas revenue sharing is part of the transfer received by sub-national government under the 'balancing fund'. Transfers make up more than 60 percent of sub-national government budget and about 30 percent of central government expenditures. Oil and gas revenue sharing accounts for 11 percent of the total balancing fund transfer and 3 percent of national expenditure in 2010.

Intergovernmental revenue sharing is based on net oil and gas revenue, which is largely equivalent to central government revenue minus central and local taxes and Pertamina retention. The net oil revenues are distributed 84.5 percent to the central government and 15.5 percent to the relevant sub-national government. Net gas revenues are divided 69.5 percent to the central government and 30.5 to the sub-national government. Of the revenues received by sub-national government, 20 percent is allocated for provinces, 40 percent to the producing district, and the remaining 40 percent is equally distributed to other districts within the relevant province. Asymmetric arrangements apply to Aceh, Papua, and West Papua as special autonomy regions, under which they receive 70 percent of oil and gas revenue produced in their jurisdictions instead of the general arrangement.³

The allocation of revenue sharing is based on the actual, realized, oil and gas revenue. This means that revenue sharing received by regions fluctuates with the variation in oil and gas price. The central government makes the transfers in a quarterly manner, based on estimated profits for the current quarter and with an adjustment for the differences between projected and actual profits in the previous quarter transfers. There were some delays reported in the transfer of revenue sharing to the regions. These delays follow the late reporting of profit estimates by the Ministry of Energy and Mineral Resources (Agustina et al 2008). As noted above, the operations of a SWF could "smooth" the payments to local governments without any loss of "trust" on their part.

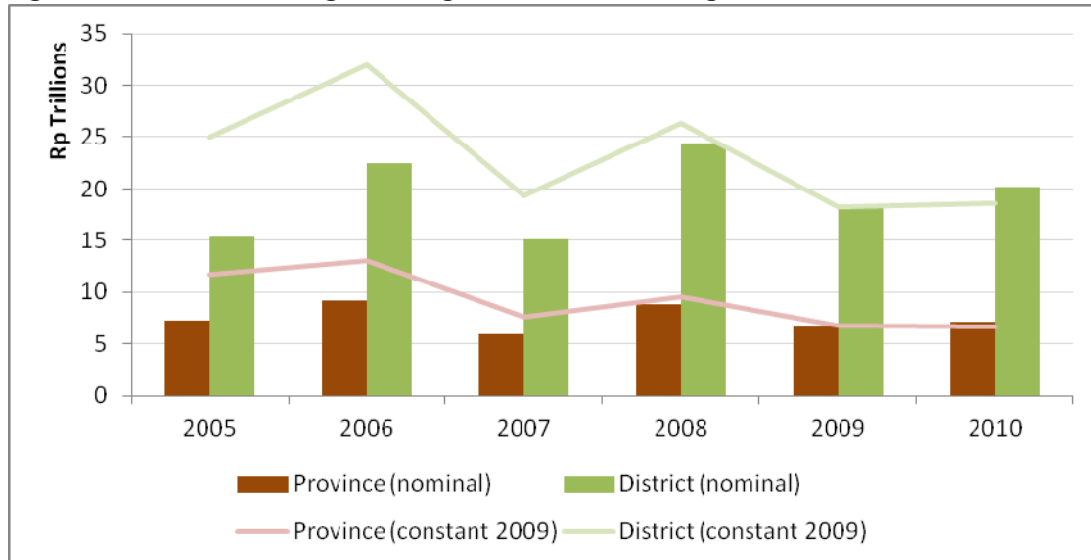
Revenue sharing from oil and gas has fluctuated over the years following the oil and gas price. Revenue sharing from oil and gas reached Rp 7.2 trillion for provinces and Rp 20.1 trillion for districts, in nominal terms, in 2010 (see Figure 2).

In addition to the revenue sharing, oil and gas revenue are also transferred indirectly to sub-national governments through the general allocation transfer (DAU), which forms the largest transfer to subnational entities. DAU represents 26.5 percent of net domestic revenue, or domestic revenue minus revenue sharing and subsidies. It is allocated based on forward estimates, not on realized outcomes. Historically, there is an incentive for the central government to underestimate the revenue by assuming a low oil price. This is likely because central government will retain any revenue above its projected revenue pool, but must transfer any over-

³ According to the law, Aceh will receive 70% only for the first nine years, while both Papua and Papua Barat will receive 70% share for the first 25 years. After these periods, the share will be reduced to up to 50% each.

estimate of DAU resources if the oil and gas revenue turns out to be lower than projected, due either to lower oil prices or production. This kind practice was implemented until 2006 (Agustina et al 2008).

Figure 2. Revenue sharing oil and gas for sub-national government

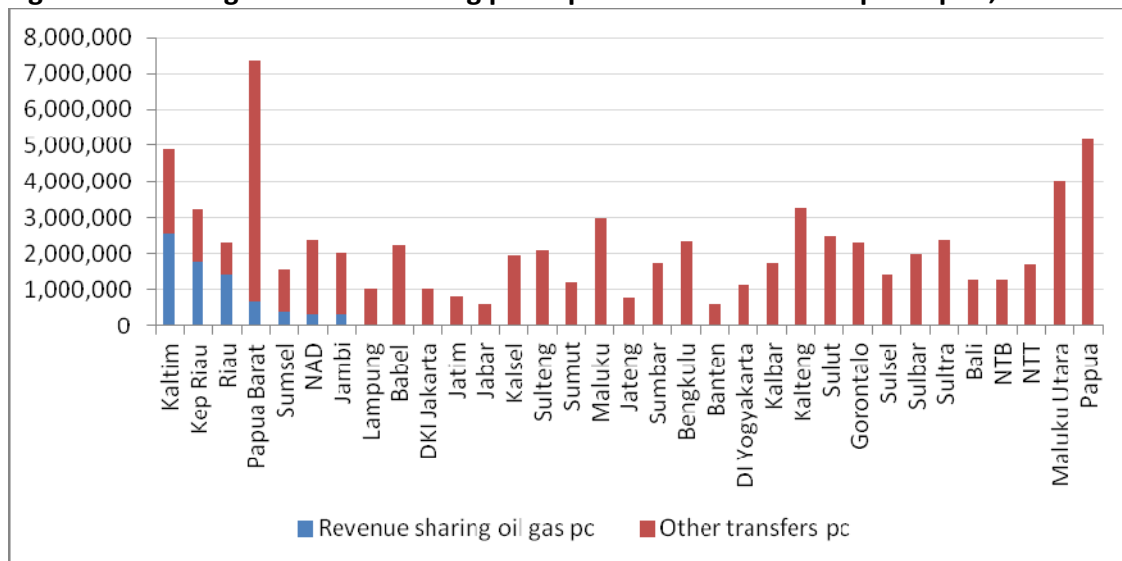


Source: LKPP various years.

Increase in oil prices will not only benefit the producing regions but also other non-producing regions, through the indirect oil transfer in DAU. In 2006, DAU increased by 44 percent after the government adjusted the oil price assumption from US\$30 to US\$60 per barrel. The sub-national government had difficulty in absorbing the additional revenues following the significant increase in DAU. This is seen in the increase of sub-national government reserves, which reached Rp 97 trillion in that particular year compared to around Rp 52 trillion in the previous year. The accumulation of windfalls is particularly generated from the oil and gas producing regions and continues to be high (Rp 137 trillion) until present time.

The oil and gas revenue sharing creates a significant disparity across provinces and districts in Indonesia. About half of regional governments, including non-producing regions within producing provinces, receive oil and gas revenue sharing. Rich oil and gas producing provinces, such as East Kalimantan, Kep. Riau, Riau, and West Papua, are the top recipients of oil and gas revenue sharing. East Kalimantan receives the highest per capita oil and gas revenue sharing with Rp 2.5 million. Although high oil prices will result in greater inequality and benefit disproportionately producing regions, this is offset because the poor regions receive substantial revenues from other types of transfers (mostly DAU) that reduce regional inequality (see Figure 3).

Figure 3. Oil and gas revenue sharing per capita vs other transfers per capita, 2010



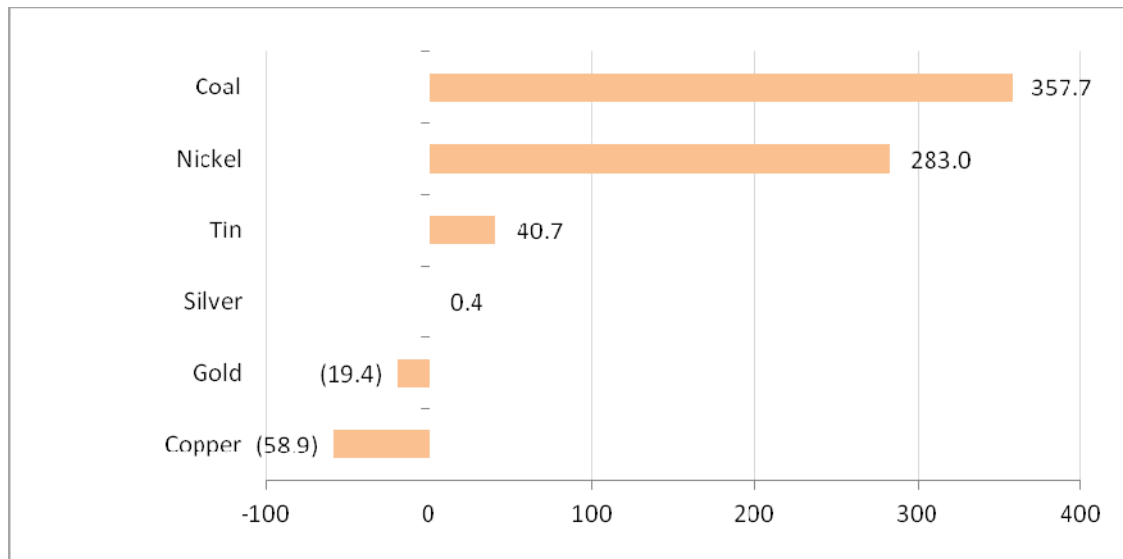
Source: LKPP 2010

b. Non-renewable resources: minerals mining

Mineral resources are also important in Indonesia. The contribution of mineral resources to the Indonesia economy has been increasing, from 4 percent in 2001 to almost 7 percent of GDP in 2010. The contributions are even higher at the provincial level, particularly for mining producing provinces such as Kep. Bangka Belitung, East Kalimantan, and Papua. These resources contributed in 2010 to 15, 27, and 63 percent of GRDP, respectively. As many mineral mining sites often are located in remote areas, mining makes a significant impact on local development and provides one of the main employment opportunities for locals.

Mineral production has been declining, except for coal and nickel. Mineral production in Indonesia includes, but not limited to, copper, gold, silver, tin metal, nickel, and coal. Of these minerals, gold and copper display negative growth between 2001 and 2010. However, coal and nickel have had significant growth in this period. Coal production increased from 67 million tons in 2001 to 325 million tons in 2010. Meanwhile, copper production declined from 3 million tons to around 1 million tons in this period (see Figure 4).

Figure 4. Mineral production growth 2001-2010 (%)



Source: Estimation based on BPS data.

Indonesia should remain an attractive place for mining with a general increase in the mineral prices. A new mining law was enacted in 2009 (Law 4/2009), replacing the 1967 mining law (Law 11/1967). The change in Indonesia government structure following decentralization and the principle of equal treatment of foreign and domestic investors introduced under the 2007 investment law are the main factors influencing the replacement of the 1967 mining law.⁴

The new law changes the previous mining contract called Contract of Works for foreign investors and '*Kuasa Pertambangan*' or mining rights for local investors to a single area-based licensing system based on specific mining areas. There are three categories of mining licenses: (i) *Izin Usaha Pertambangan* ('IUP' or Mining Business License), (ii) *Izin Usaha Pertambangan Khusus* ('IUPK' or Special Mining Business License), and (iii) *Izin Pertambangan Rakyat* ('IPR' or People's Mining License). With the new mining law, all existing KPs were required to be converted to IUP licenses and all existing contracts will continue until their expiry date.⁵ Some key differences between the old and the new mining laws are highlighted in Table 3.

The government revenue from mining comes mostly from royalty and land rent. Royalty tariff is expressed in percentage terms and varies according to the mining scale, production level, and commodity. The royalty is calculated by production multiplied by the sale price and the tariff. Mining reports by PWC indicates that holders of IUPK are required to pay an additional royalty of 10 percent of net profit. Of this additional royalty, the central government is entitled to receive 40 percent, while remaining is shared between the relevant provinces and districts. Meanwhile

⁴ See article by Luke Divine on Indonesia's New Mining Law in www.asialaw.com

⁵ When the old contract expires, they can apply for the mining license which available for both domestic and foreign investor.

for land rent, the revenues are based on the area in hectares times the unit tariff, which may be different for each mining activity stage (survey, exploration, and exploitation).

Table 3. Some key differences between the old and new mining law

Old Law	New Law
Foreign investment is done under contract of work system, signed by contractor with central government.	Foreign and domestic investment is granted under license based system, issued by central, provincial, and district government depending whether the mining project crosses provincial or district's boundaries.
Mining could be carried out in any part of Indonesia (with very limited exception).	Mining will only be permitted in areas, which are designated as mining areas (<i>wilayah pertambangan</i>) by central government after consultation with parliament and regional governments.
Mining exploration area is maximum of 25,000 Ha.	Coal IUP's max 50,000 Ha and for exploration and production 25,000 Ha and 15,000 Ha. Mineral IUP's max 100,000 Ha, and for exploration and production 25,000 Ha. Onshore processing obligation. Mining support services are to use local services rather than foreign services (unless no local services are available). There is and outright ban on the use affiliated mining support services, unless approved by minister.

Source: Luke Divine in www.asialaw.com

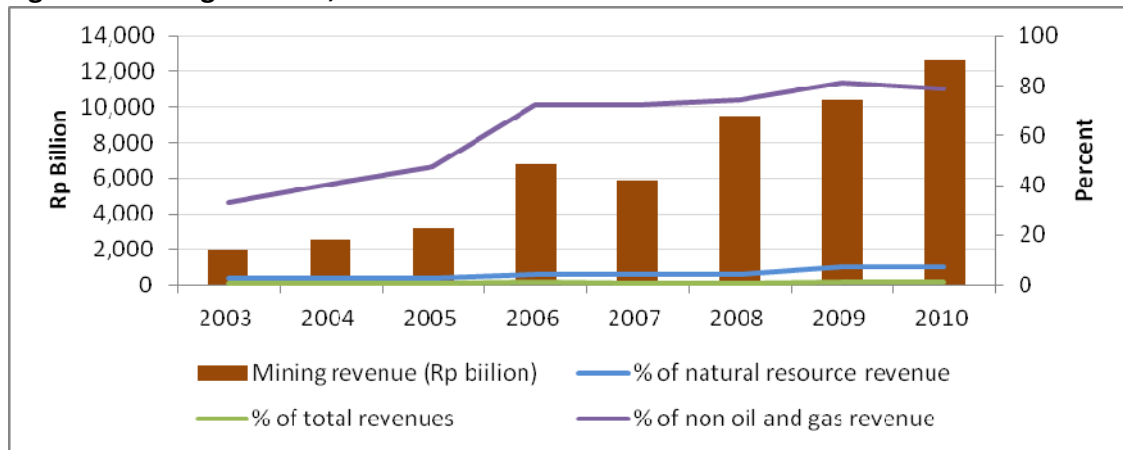
Mining revenue has been increasing over the years and reached Rp 12.5 trillion in 2010, and is the largest (79 percent) resource generated from the mining, forestry, and fishery head. However, the contribution of mining to the total natural resources revenues is relatively small, around 7.5 percent in 2010. Within the overall state revenue, mining only contributes around 1 percent of the total (see Figure 5).

In addition to the non-tax revenue from mining, governments also receive tax revenue from related mining activities. The tax is paid to both central and regional governments. Some of the taxes that are collected by central government are land and property tax and corporate income tax.

Sub-national governments can also collect taxes related to mining activities. These include taxes on motor vehicles and heavy equipment, taxes on the collection and utilization of underground water, taxes on non-metal minerals and rocks, etc. The rates of these various sub-national tax ranges from 1.5 to 35 percent. Contracts may

limit additional types and rates of the sub-national tax introduces after the signing data of the contract.⁶

Figure 5. Mining revenue, 2003-2010



Source: Estimated from APBN.

Revenue from mining, particularly from land rent and royalty, is shared between central and sub-national governments. Of the land rent, 20 percent is allocated for central government, while the remaining 80 percent is shared by provinces (16 percent) and the producing districts (64 percent). The arrangement for the shared revenue from royalty is similar, with 32 percent for producing districts and 32 percent equally divided among the non-producing districts within the province. Aligned with the increase in mining revenue, revenue sharing from mining itself has been increasing over the years, reaching Rp 1.5 trillion for province and Rp 6.1 trillion for districts in 2010.

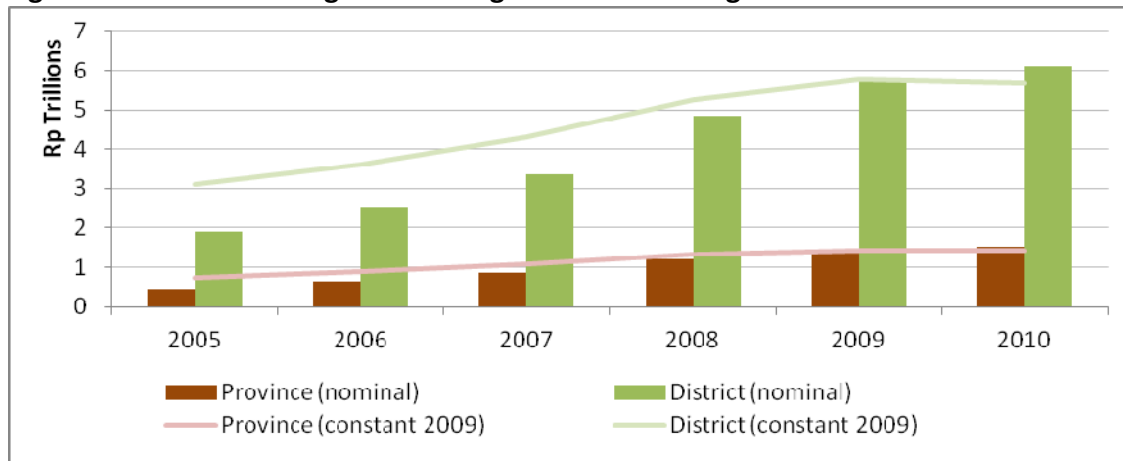
Other revenues from mining received by the sub-national governments (Figure 6) come from IUPK and also land and property taxes. Based on the new mining law, sub-national governments receive payments from the holder of IUPK for production operations, as much as 6 percent from the net profit since production began, while the central government receives 4 percent of this payment. Meanwhile, for the property tax, sub-national governments are entitled to receive a proportion of shared revenue. In this case, sub-national governments receive 90 percent, which is distributed 16.2 percent to provinces, 64.8 percent to districts, and the rest is a fee collection.

Revenue sharing per capita from mining is relatively small compared to oil and gas. As with oil and gas, there is significant disparity among provinces in terms of the revenue sharing per capita for mining. The highest per capita mining revenue sharing is found in East Kalimantan, followed by Papua and South Kalimantan. The revenue sharing per capita for mining in East Kalimantan is around Rp 950

⁶ PWC (2011), "Mining in Indonesia Investment and Taxation Guide."

thousands. Meanwhile the lowest is in Central Java and DI Yogyakarta with around Rp 8. Bali and Jakarta do not receive any mining revenue shares (Figure 7).

Figure 6. Revenue sharing from mining for sub-national government



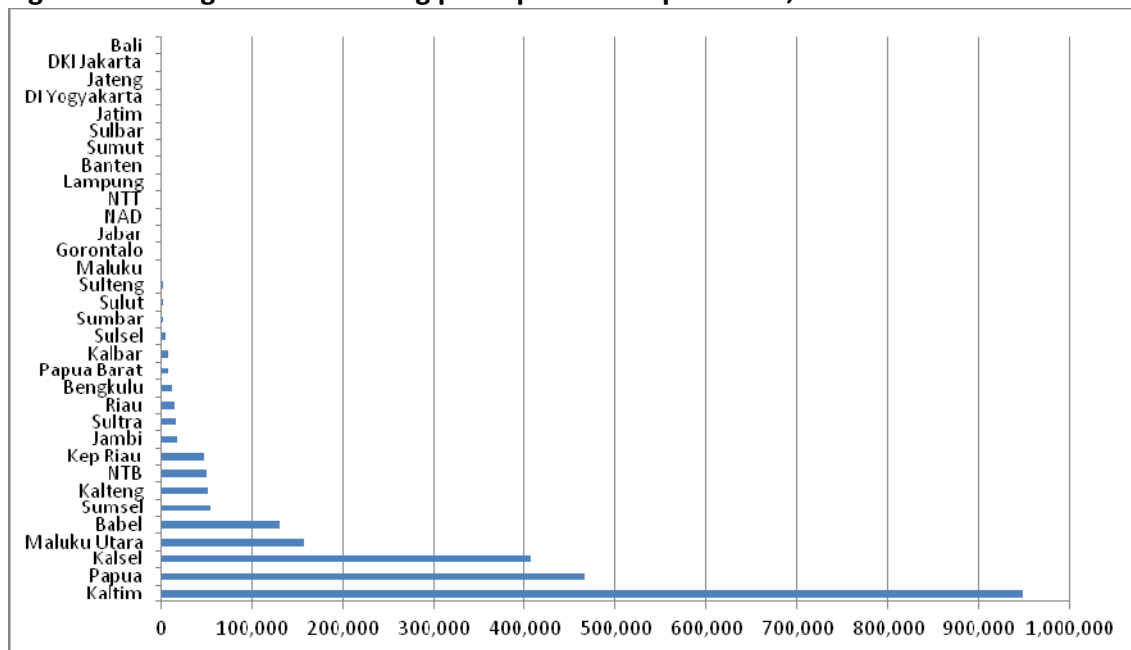
Source: LKPP various years.

There may be incentives for local governments to enter into “informal” contracts for mining activities, although this is less likely with the large-scale activities. The revenue-shares accruing to districts and sub-districts should be sufficient to ensure that illegal activities are monitored and reported. Provinces may have to play a role in monitoring and sanctioning illegal activities—and this may be even more important for the “Forestry”-related functions.

For the ecological damage created by mining activities, consideration should be given to the option of a production excise that is earmarked to “clean-up” and compensatory activities at the local level (see the discussion above in relation to a production excise for environmental purposes in relation to petroleum production). A production-linked excise would not be subject to price variation and could be directly proportional to the level of extraction or production. It would accrue to the local government, unlike the reclamation reserves that are held by the companies.⁷

⁷ In Indonesia, the mitigation for environment impact resulting from mining activities is through a reclamation reserves. A mining company is required to maintain a reclamation reserve in its account for environmental management and reclamation work during the contract period and at the end of the lifetime of the mine. During the exploration state, the reclamation reserve should in the form of time deposit in the local bank.

Figure 7. Mining revenue sharing per capita across provinces, 2010



Source: estimated from LKPP and BPS 2010.

4. Renewable resources: forestry

Forestry-related revenues are based on three heads: (1) reforestation fund (*dana reboisasi*), (2) resources royalty provision (*provisi sumber daya hutan*), and (3) land rent of forest tenure in the form of license fees. Similar to other natural resources revenues, revenues generated from forestry are shared between central and sub-national government on the basis of Law 33/2004.

The reforestation fund (*Dana Reboisasi*) aims to ensure that the logging company will rehabilitate the forest. This fund is originally recorded under the special allocation fund in sub-national government budgets, but started to be recorded under revenue-sharing for natural resources since 2006. Revenue from reforestation fund is based on the area classification and type of timber. Tariffs for Meranti type of timber in Maluku could be differ from that for the same timber in Sulawesi because of different area classifications. The base tariff for reforestation funds ranges from US\$ 2/m³ to US\$ 16/m³.

The resource royalty provision is mandatory on license holder/logging companies. The amount due is based on the production volume of timber times the tariff and benchmark price. Tariffs applied to forest products are stipulated by the Presidential decree, and range from 6 percent for non-timber to 10 percent per m³ for timber. The benchmark prices for each type of timber is regulated by Ministry of

Trade decree and ranges from Rp 300,000 per m³ to Rp 1,500,000 m³.⁸ Table 4 shows that current benchmark price stipulated by Ministry of Trade decree in 2007 in relation to the current domestic price. This means that government could potentially face significant losses in relation to potential royalties.

Table 4. Resource royalty provision calculation

Type of timber	Price		Resources royalty provision	
	Benchmark (Rp/m ³)	Domestic price (Rp/m ³)	Benchmark (Rp/m ³)	Domestic price (IDR/m ³)
Meranti	600,000	1,200,000	60,000	120,000
Mixed rimba	360,000	1,000,000	36,000	100,000
Merbau	1,500,000	2,600,000	150,000	260,000

Source: Pusliksosekhut, 2011

Despite the differences on base tariff between resource royalty provision and reforestation fund, the payment systems are similar. Both duties require logging companies to perform and submit a cruising report at the beginning of the first year. Once the company submits a cruising report approved by the head of district in the first year, the logging company, then, should deliver 25 percent of the payment due each quarter during the second year. Once all the duties are settled, logging activity could be carried on in the third year, followed by self-assessment report submission in the beginning of the fourth year.⁹

Discrepancies between self-assessment and cruising reports often occur and are considered as a base in recalculating the actual royalty provision and reforestation fund that should be paid by logging companies. Government will order the logging-company to pay additional resources royalty and reforestation fund provisions to compensate for the excess of self assessment report in relation to the cruising report submitted at the beginning of the first year. The government, nevertheless, will not return or compensate if there is deficiency between self assessment and cruising reports

The license fee permits the logging-company to exploit forests in Indonesia. It has a different basis from the other revenue items. The license fee is not based on tariff per m³ or ton, but on the size of logging area (Ha). The tariff depends on the area classification and the status of license (new or extension).¹⁰ Tariffs for new licenses range from Rp 20,000 to Rp 50,000 per hectare, depending on forest location and

⁸ See for tariffs Presidential decree No. 74/1999, and for benchmark price Ministry of Trade decree No. 8/M-DAG/PER/2/2007.

⁹ Cruising report is a planning report proposed by logging company explaining the area that will be exploited during the logging activity. The report also predicted the volume of timber that will be produced, type, and the production area.

¹⁰ Ministry of Forestry decree No. 700/Kpts-II/1999.

are effective for 20 years. A logging company wishing to extend a license has to pay another tariff, ranging from Rp 15,000 to Rp 22,500 per hectare for another 20 years.

Licenses are auctioned amongst logging companies. The maximum exploited area that can be auctioned in each province is a maximum of 100,000 hectares, except for Papua, which has a maximum of 200,000 hectares. However, a single logging company is not allowed to have licenses covering more than 400,000 hectares across Indonesia. Progressive penalties will be imposed on logging companies exceeding the granted area. If the excess is less than 25,000 hectare, the company should pay additional fee at 125 percent of the standard tariff, whereas an excess of more than 25,000 hectare but less than 50,000 hectare will be penalized by additional tariff at 150 percent of standard tariff.¹¹

Once revenues are collected, the central government is obliged to distribute each proportionately to provinces and districts. Of revenue collected from the license fee, 16 percent should be redistributed to the province and another 64 percent to district, leaving the remaining 20 percent for central government. Similarly, 80 percent of revenue generated from resource royalty should also be redistributed to sub-national governments, leaving only 20 percent for the central government. Provinces will receive 16 percent of the royalty while both producing districts and non-producing districts will receive equal amounts of revenue at 32 percent each. Meanwhile, the reforestation fund applies a different distribution scheme, in which central government receives 60 percent of allocation and sub-national government receives the remaining 40 percent.

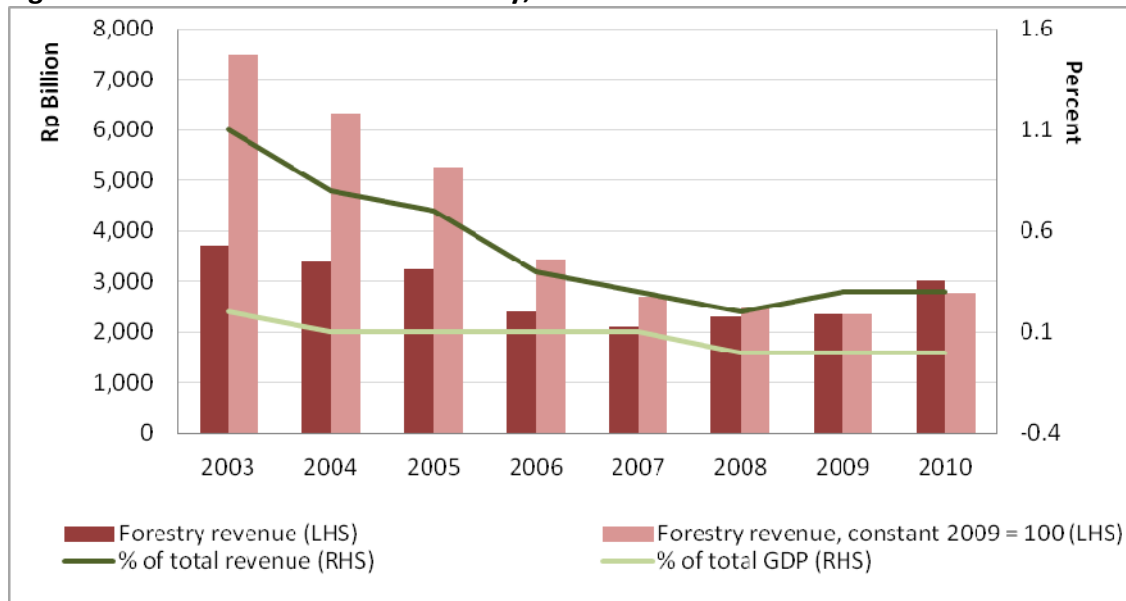
Revenue sharing of forest-related revenues should be carried out quarterly each year. In the first and second quarter, central government distributes 20 percent of the quarterly natural resource revenue share based on the government budget plan. In contrast, the distribution of revenue sharing in the third and fourth quarter will be based on discrepancies of revenue generated based on the actual disbursements until the preceding quarter. Thus, the third quarter value would be the difference between realization revenue of natural resource from forestry to the distribution up to the second quarter.

Non-tax revenue from forestry shows a declining pattern since 2003, both in nominal and constant values. In 2010, government revenue from forestry accounted to Rp 3 trillion, from Rp 3.7 trillion in 2003 (Figure 8). The largest reduction was observed in 2006 where the revenue growth declined by 35 percent, the nominal revenue was down from Rp 3.2 trillion in 2005 to Rp 2.4 in 2006. The share to total non-tax revenue also declined from 1.1 percent in 2003 to only 0.3 percent in 2010.

¹¹ Ministry of Forestry decree No. 05.1/Kpts-II/2000 and Ministry of Forestry decree No. 10.1/Kpts-II/2000.

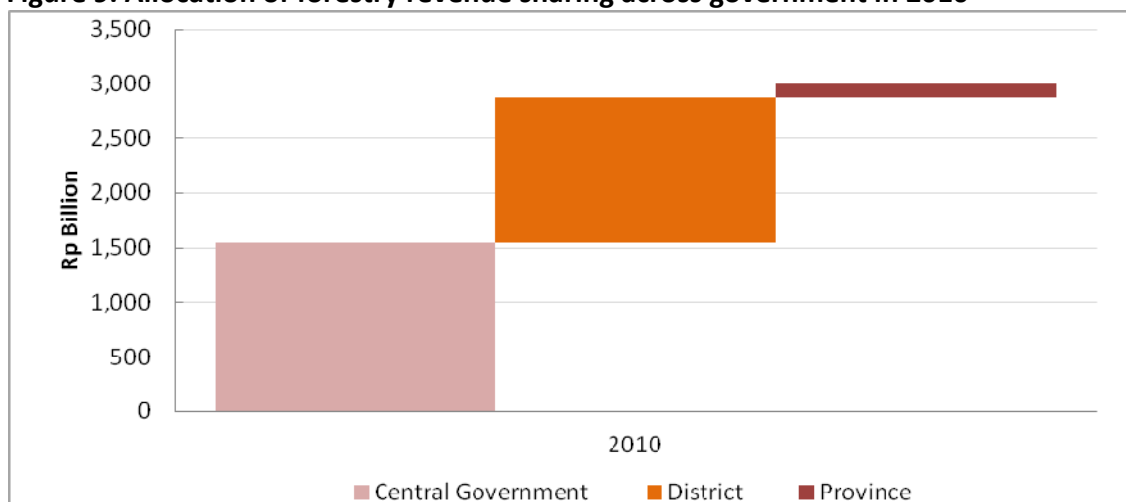
The central government received the highest share (51 percent) of forestry revenues in 2010, district governments received 44 percent, and provincial governments received the smallest share at 4 percent (see Figure 9).

Figure 8. Non tax revenue from Forestry, 2003 – 2010



Source: LKPP, various years

Figure 9. Allocation of forestry revenue sharing across government in 2010



Source: LKPP, 2010

Excess logging, revenue shares and climate change

Sharing of forestry revenues (or carbon related transfers) could impact on incentives to harvest forests in different ways. This could be either virtuous or result in vicious cycles.

First, there is a virtuous cycle—that would provide resources responsibly to districts, then down to sub-district jurisdictions (that are the most relevant in terms of implementing contracts and service delivery) and communities in a manner that meets their needs for public services and provides for the infrastructure that would generate sustainable employment. Provided service and employment needs are met, there would be an incentive to ensure that logging firms do not cheat or over harvest. There would also be fewer incentives to engage in illegal logging or foraging, that is sometimes needed by communities or households that have become desperate.

Second, and perhaps more likely, there is a vicious cycle. Funds percolate to districts that have difficulty in meeting the salaries of the bureaucracy, with little left over for either service delivery or infrastructure needs at the sub-district or community level. The reduced revenues from forestry put increasing pressure on the district governments that might be tempted to do “informal” deals with the logging companies. Increasingly desperate communities would have little option but to add to the scramble to cut down forests. Provinces, which could play a monitoring role, especially vis a vis contracts, get such a small share of the funds that there is little incentive but to look the other way, and hope to get a share of the “informally generated” resources.

The declining forestry revenues force the “stabilization” function on to local governments. As with petroleum revenues, a smoothing function should be undertaken by the central government. Local shares should not be allowed to drop below the minimum needed to finance basic services—especially at the district and sub-district level.

While there has been increasing utilization of modern satellite technology to monitor illegal logging, enforcement has to be entrusted to local governments. The provinces could play a bigger role in the monitoring and enforcement functions on behalf of the center. An effective oversight will clearly require provincial or district level monitoring as well as sanctions. However, the relatively small share of resources flowing to provinces may limit their interest or ability to perform this function.¹²

A related issue is the difficulty in reaching indigenous minorities and marginal groups and communities living in the forest zones. If they are unable to benefit from improved employment opportunities and provision of public services, incentives are generated for cutting down forests and charcoal-based activities. To some extent, this is a research question, but the informal activities are hard to monitor or stop unless the incentive structures are effectively aligned.

¹² If the function is assigned to provinces, and they operate as agents of the center, it would make sense to make this a conditional element. Or to impose minimum standards, as is being done for other general functions.

5. Keeping the country together and enhancing local accountability and public services

a. Aceh and asymmetric transfers

The asymmetric arrangements for natural resource sharing need to be examined together with all the other transfers in order to assess the resources available to each local government. This is shown in Figure 10, with provinces ranked by declining per capita income. It appears that the sharing of natural resources is dwarfed, and largely offset by the other transfers. Indeed, the fact that the DAU uses actual revenues, including revenue shares, as the basis to make allocations more or less offsets the disequalizing effect of the asymmetric share.

If the few natural resource-rich regions and Jakarta are excluded (having the highest per capita incomes as well as high transfers in many cases), most of the other regions receive more or less similar levels of revenue shares and transfers within a narrow range. Thus, the asymmetric natural resource revenue sharing of Aceh, for instance, is not sufficient to give it more resources per capita relative to other regions that have lower per capita incomes, and no petroleum revenues.

One could then ask what has been the effect of the asymmetric transfers on the social outcomes in Aceh and Papua. Both regions having below average indicators before the asymmetric shares were designed and implemented (around 2004)—see Table 5. The 2010 figures do not represent a spectacular improvement, indeed in some respects, the outcomes are worse than in 2004. In the Aceh case, the tsunami may be an explanatory factor.

An interesting evaluation of Aceh by Kitzbichler (2011) suggests that the transfers mainly accrued to the province, which had few functions. However, most of the functions were at the district level. With the creation of new districts (K/K), there had been a significant increase in the bureaucracy. This effectively accounts for the shared revenues, were largely used up in salary payments. Most of the K/K were close to bankruptcy.

Figure 10.

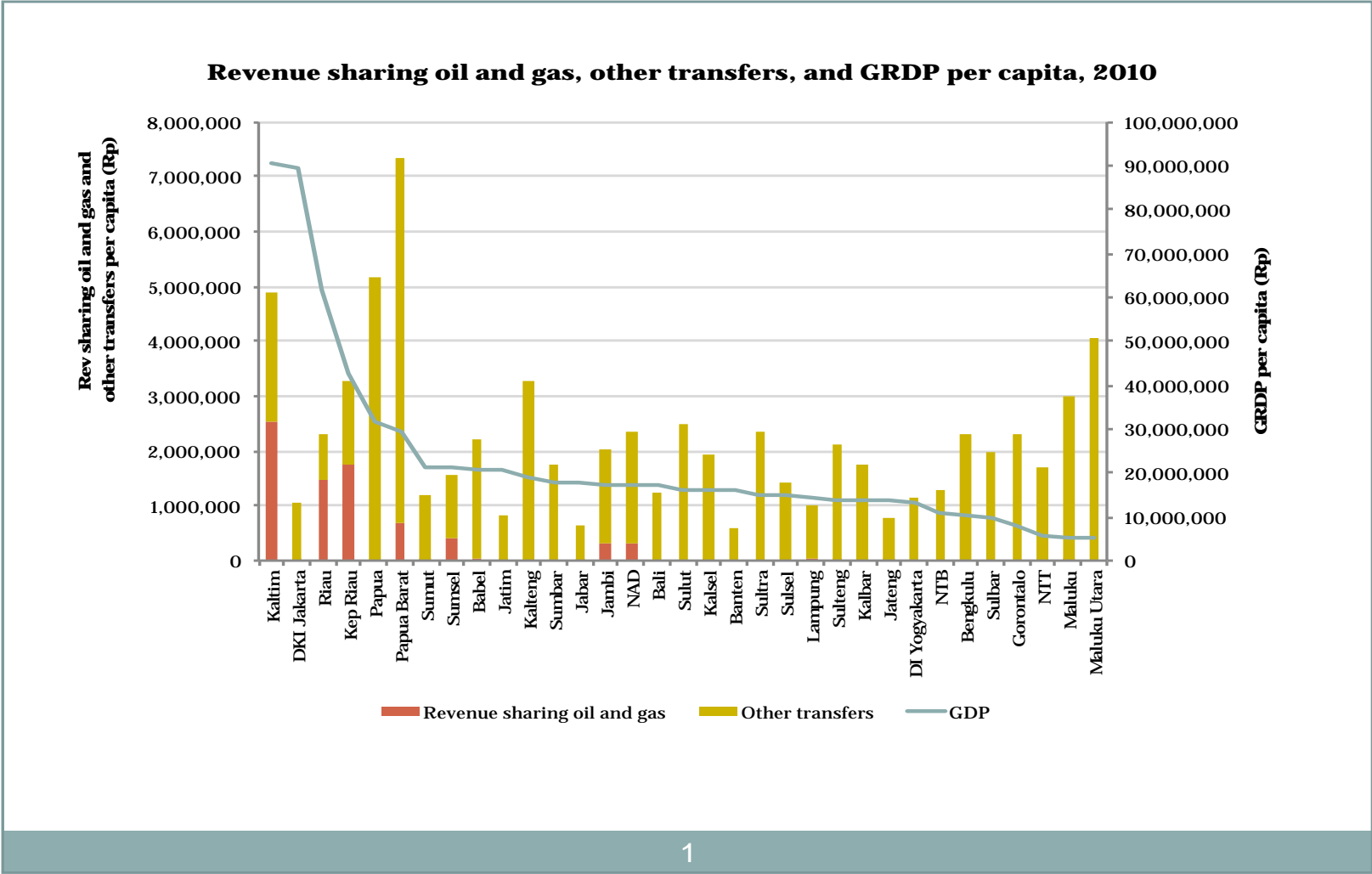


Table 5. Social outcome indicators

Outcome indicators (2010)					
Indicator /Province	Less than primary (HOH)	Illiterate (HOH_Head of Household)	No Toilet	Low quality drinking water	No electricity
Aceh	22.2	5.0	40.8	46.1	6.7
Aceh (2004)	20.4	5.4	37.4	57.1	11.4
Sulawesi Selatan	31.7	16.1	36.0	38.8	7.5
Papua	40.4	33.5	57.3	69.0	57.3
Papua (2004)	36.7	25.1	50.8	74.6	55.0
Yogyakarta	17.2	9.7	28.6	24.6	0.4
Jakarta	4.5	1.2	27.2	9.4	0.5
Average	23.8	7.8	37.9	43.4	12.8

Source: WB staff estimates based on SUSENAS 2010; using core July data

Moreover, the budgeting cycles between local governments and the higher levels are not properly synchronized. The budget preparation and submission by K/K lead to late payments for DAU/ (perhaps not for OTSUS). The resulting cash-flow problems present constraints to development spending. The inadequate infrastructure for development was not just related to the Tsunami. Insufficient connectivity presents problems for sustained employment generation, and suggests that there is a significant need for directed spending on the infrastructure gaps, perhaps through a reorientation of the DAK.

As part of the mechanism to protect the Leuser ecosystem in Aceh—carbon permits were envisaged to provide resources and prevent illegal mining. But this has not been effective and it appears that the inability of resources to reach communities negates this objective.

In keeping with models of “preventing secession”, the asymmetric arrangements were designed to provide interregional transfers to “appease” producing regions and diffuse centrifugal tendencies. In this respect the policy worked well. However, the lack of commensurate improvement in living standards and quality of public services remains a matter of concern. Unless there is substantive improvement in this regard, the supporting consensus could be weakened.

b. Revenue-sharing models

Revenue-sharing is typically used in principle for natural resources—especially when there are centrifugal tendencies in large and heterogeneous countries. There are two polar cases: (i) allocation of revenue shares to subnational jurisdictions (provinces or districts), as in Indonesia, in the expectation that the local elected representatives are able to better meet the heterogeneous preferences and investment needs of the producing regions; or (ii) direct allocations to the citizens of the producing regions, e.g., through a “petroleum dividend.” This is the case in Alaska and Alberta.

The needs of non-producing regions are met through an explicit share, especially in case (i), or though the central government shares of the overall “take” (either an explicit share or through the central tax system).

However, a third alternative is also possible, blending elements of cases (i) and (ii)—and we could call this (iii) the hybrid solution.

Case (i): Distribution of the revenue-shares to local governments

This is one of the typical arrangements seen around the world, as in Indonesia. The underlying assumption is that the regional governments are in the best position to provide for the heterogeneous preferences of their citizens. This builds on the fact that the resources are physically located in the specified region—whether the legal ownership rests with the region or the nation as a whole—and that a share in the resources is justified, especially as extraction poses costs and environmental damage on the region. Resentment arises when living standards stagnate in the producing region—typically in remote areas—but improve dramatically in other parts of the country, especially in the large urban areas. A higher share for such poorer regions serves the twin purpose of appeasing centrifugal forces, as well as meeting the government’s redistributive concerns.

In cases where the natural resource rich region enjoys higher than average living standards, an asymmetric arrangement may reduce centrifugal forces, but could aggravate regional and interpersonal inequalities. However, as mentioned above, the overall design of the tax/transfer system matters. In particular, the equalization system may offset the possible disequalizing effects of asymmetric sharing.

In the Indonesian case, with with the current formulation of the DAU (see presentation by Anwar Shah et al, this volume), the overall effect of the transfer system is to provide roughly equal transfers per capita. However, the incentive structures that are set in place are not conducive to providing social service delivery efficiently, or making best use of available resources.

With an asymmetric arrangement in place, it would be extremely problematic if the resulting service delivery fails to show a significant improvement, or even deterioration in some dimensions (if the additional resources were devoted largely towards supporting administrative staff salaries). In addition, environmental damage, e.g., through deforestation and mining damage, could increase the vulnerability of living standards.

The problems would be compounded if the budget process leads to considerable fluctuations in revenues—forcing the stabilization function to lower levels of government, or delays in allocations affecting investment projects. The lack of transparency in the budgeted transfers on the one hand, and on actual spending on the other, contribute significantly to the inefficiencies in spending and lack of local accountability in Indonesia.

However, the biggest danger remains that of heightened expectations concerning public services and improving living standards being unfulfilled. This could generate a political backlash.

Case (ii): Direct distribution of petroleum/natural resource dividends to citizens

In some countries there has been a direct distribution of the natural resource dividend directly to the residents of the producing region, as is the case in Alaska and Alberta. This would, at least in principle, avoid the risk of the resources being “captured” by bureaucracies or vested interests, and could generate a greater “buy-in” from the inhabitants.

However, in a developing country context, direct distributions to residents may not be sufficient to meet the “infrastructure gaps”, say in the Niger River Delta, or offset the environmental damage.

The arrangement could easily result in capital flight to offshore accounts or even the capitals, with little improvement in infrastructure or public services in the home regions.

In terms of inter-regional equity, the arrangement could also end up exacerbating inequalities. In this context, adjustments are again often made through the intergovernmental transfer system, and Alberta is excluded from the horizontal equalization system. This is equivalent to deducting actual shared revenues from what would otherwise have been the region’s horizontal equalization.

Case (iii) A Hybrid solution

A hybrid solution would combine an asymmetric revenue share, together with a transfer to poor households and central government provision for meeting large-scale infrastructure gaps. This should meet the political economy objectives of the asymmetric revenue-sharing, together with a consolidation of individual support for the nation, and improving living standards.

The advantage of the minimum support, e.g., patterned on the Mexican Oportunidades scheme, with light targeting based on school attendance or payments to mothers in health clinics, is that this would be available not just in the natural resource regions, but also in other areas—this should help with national cohesion.

Clearly, central government efficiency in responding to natural disasters also goes a long way in establishing national cohesion, as was the case after the tsunami in Aceh. However, this need to be sustained in terms of effective reconstruction and meeting infrastructure needs, as well as direct support for affected households.

Meeting infrastructure gaps is critical in establishing sustainable employment opportunities, especially in remote areas, or those affected by natural disasters, such as Aceh. A reformulation of the DAK into a system of performance-based transfers should help in improving the outcomes from such interventions.

c. Additional supporting environment

A number of elements of improved governance are needed, regardless of the mechanism for revenue sharing that might be adopted. In this concluding section, we briefly outline some areas that are critical, and where additional research and policy development may be needed.

Addressing ecological damage

In an environment where the general purpose transfers and revenue-shares are largely used up by wages for civil servants, local budgets are inadequate to address the issues related to environmental clean up or to prevent deforestation. In this context, an environmental excise on production or transmission of petroleum, gas or minerals, could be assigned to local governments with specific objectives in mind. A production excise would also not be subject to great variation in prices and could provide a stream of financing for environmental purposes.

Carbon permits have been envisaged to protect ecosystems, such as in Aceh. But if they do not materialize, especially for local governments this would pose a problem of unmet expectations. To the extent the funds are passed through the provincial governments, these should also be accompanied by clear regulation, which mandates provincial and local governments to use the fund as aimed.

Funds promised for environmental purposes need to be provided in a timely manner, and if there are shortfalls, these should be met by the central government out of its own resources.¹³ This would prevent the burden of adjustment or stabilization falling on the ecologically sensitive regions. Provinces could usefully be

engaged in supervision the allocation of funds to the local governments, and in managing the implementation of quotas.

As mentioned above, the province could usefully be engaged in the supervision of the use of the earmarked funds, as well as production quotas for logging and mining. This would provide checks and balances across sub-national tiers of government. However, the coordination and supervision function would need to be clearly assigned to the provinces, together with a sufficient share of the available resources—perhaps as a percentage of the production or environmental excise.

Smoothing budgets

A key difficulty in managing resources at the subnational level arises out of uncertainty about the resource envelopes to budget for. This is partly due to the variance in natural resource prices, and partly to inefficiencies in the budget and transfer allocation systems. We discuss each in turn.

The volatility of natural resource prices could pose difficulties for subnational governments, as it could result in sharply reduced revenues during downturns, imposing severe budget cuts in basic spending, or excess funds during up turns, which could be wasted or invested inefficiently.¹⁴ It is generally agreed that subnational entities should not have to conduct the stabilization function. However, there may be insufficient trust in the central government if there is not complete transparency in the operations related to natural resource revenues.

One way to ensure transparency is through the establishment of a sovereign wealth fund (SWF). All resources would flow into the fund, and withdrawals would have to be appropriated through Parliament. Thus, any excess earnings would be saved for future use in the agreed manner—it would not be easy for any level of government to gain an unfair advantage. Indeed, it should be possible for the subnational government to agree a share based on a medium-term projection to give stability to the resource flows. If there were any additional gains above the projection, these would be saved in the SWF for future distribution in the agreed proportion.

Indeed, it should be possible to agree a medium-term projection without a SWF arrangement, but then the government would have also to make allowances in the future for any additional revenues generated above the agreed projections. The important issue is for the central government to disburse against the agreed envelope in a timely manner. Stop-go disbursements, or payments late in the budget year, are very damaging especially to subnational infrastructure, but also for basic service delivery.

¹⁴ The large figures in local government's deposit in the banking system reached Rp 137 trillion in Nov 2011, mostly resulting from the inability of the resource-rich regions to spend the money (starting in 2006 where there was a huge increase in DAU due to adjusted oil price assumptions).

Although central transfers accrue mostly to the district level—in the case of Aceh, with asymmetric assignments—there are also transfers to the province level, for redistribution to the districts. As argued in Shah et al (2012), a simple, transparent and predictable formulation is needed for the distribution of provincial funds for district level operations. This, in turn, requires some clarity in the division of functions between the provinces, districts and lower levels of government.

Enhancing accountability

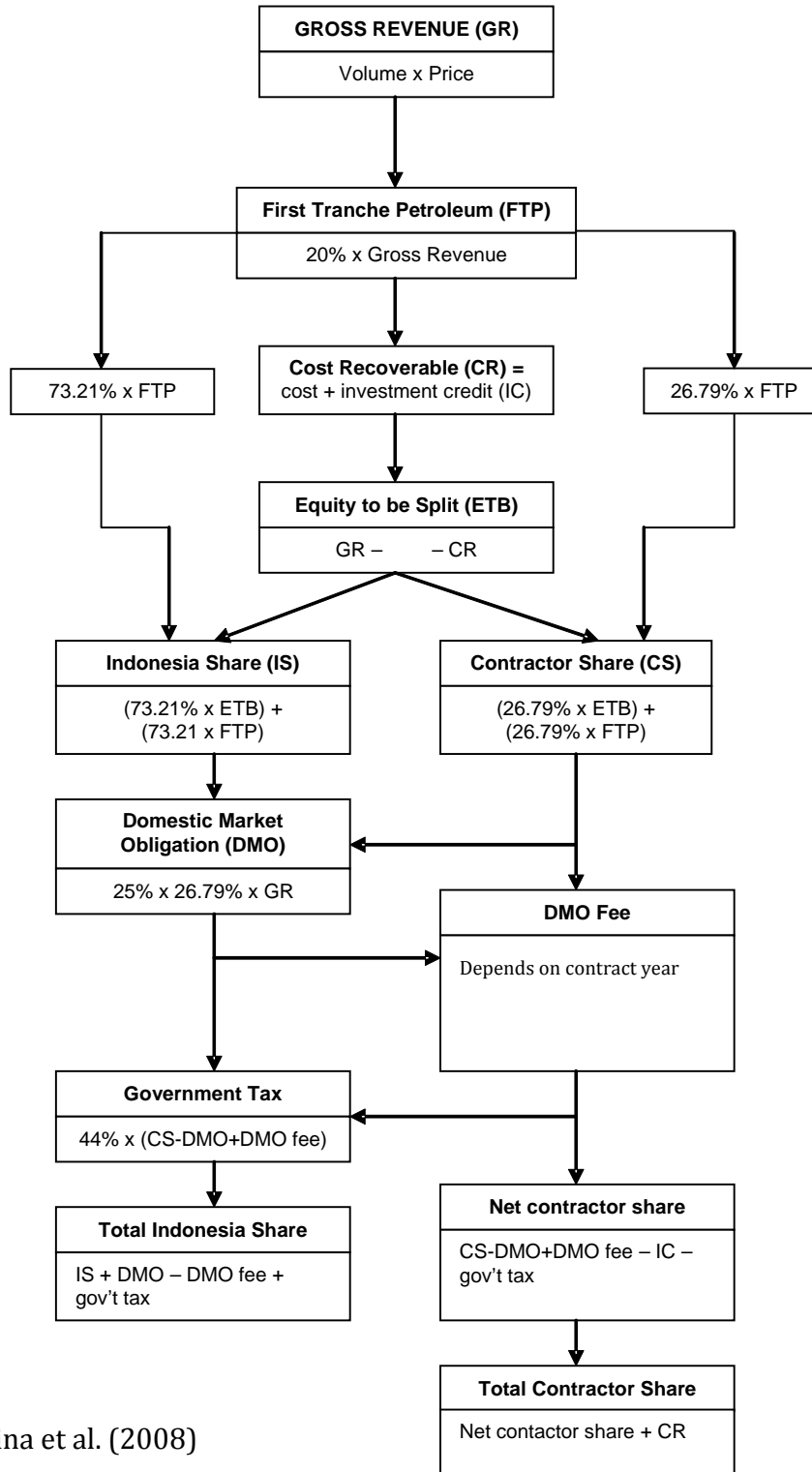
In order to get accountability in the spending process, it is important to establish who spent what moneys, where the cash flows went, and what were the results of the spending. This information should be available to the residents of each jurisdiction, together with information on the spending in neighboring jurisdictions across Indonesia, in order for the residents of each jurisdiction to be able to judge their administration. Such information flows would be the basis for electoral sanctions or yardstick competition.

This standardized information flow is also necessary for the central government to judge the operations of general government, so as to be able to devise corrective measures if needed. The establishment of simple minimum spending standards is probably quite useful, along with the information flows on actual spending and outcomes, in triggering electoral sanctions on governments that do not perform adequately.

However, in a decentralized environment, the establishment of very detailed minimum standards is likely to be futile, as the information needs may exceed the capacity of the budgeting systems to generate the needed data. Besides, it is unlikely that local governments could be effectively sanctioned for not meeting very detailed standards, as cutting off funds for education or health care is probably not credible.

In the final analysis, the accountability of officials receiving revenue-shares and other transfers would be enhanced if they had own-source revenues at the margin (see Smoke and Sugana, 2012), and the transfer design did not negate incentives for using the tax instruments (Shah, Qibthiyyah and Ditta, 2012). Indeed, if adverse incentives prevail, it is unlikely that effective service delivery will ensue—endangering the political economy gains that were created by the revenue-sharing.

Annex 1. Government revenue shares for oil under Production Sharing Contract



Source: Agutina et al. (2008)

References

- Ahmad, Ehtisham and Eric Mottu, 2003, "Petroleum assignments: country experiences and issues—revenue from the petroleum and gas sector: issues and country experiences," in J.M. Davis, R. Ossowski and A. Fedelino (eds.), *Fiscal Policy Formulation and Implementation in Petroleum-Producing Countries*, International Monetary Fund: Washington DC.
- Ahmad, Ehtisham and Giorgio Brosio, 2006, *Handbook of Fiscal Federalism*, Edward Elgar: Northampton, Mass.
- Bird, Richard and Robert Ebel, 2006, "Fiscal Federalism and national unity," in Ahmad and Brosio, 2006.
- Brosio, Giorgio, 2006, "The assignment of revenues from natural resources," in Ahmad and Brosio, 2006.
- BAPPENAS. 2000. "*Penerimaan Daerah dari Bagi Hasil Sumber Daya Alam*". Jakarta.
- Congleton, Roger, 2006, "Asymmetric federalism and the political economy of decentralization," in Ahmad and Brosio, 2006.
- Divine, Luke. 2009. "Indonesia's New Mining Law" as written in www.asialaw.com.
- Le Breton, M. and Shlomo Weber, 2003, "The art of making everybody happy: how to prevent a secession," *IMF Staff Papers*, 50(3), 403-35.
- PWC, 2011, "Mining in Indonesia: Investment and Taxation Guide". Indonesia.
- Shah, Anwar, Riyatu Qibthiyah and Astrid Dita, 2012, "General purpose central-provincial local transfers (DAU) in Indonesia: from gap-filling to ensuring fair access to essential public services for all," International Conference on Alternative Visions for Decentralization in Indonesia, March, Jakarta.
- Smoke, Paul and Rubino Sugana, 2012, "Subnational own-source revenues and shared taxes in Indonesia: taking stock and looking forward," International Conference on Alternative Visions for Decentralization in Indonesia, March, Jakarta.
- Spahn. Paul Bernd, 2006, "Contract federalism," in Ahmad and Brosio, 2006.

Spolaore, Enrico, 2010, "Federalism, regional integration and country stability," in Núria Bosch, Marta Espasa and Albert Solé Ollé, *The Political Economy of Inter-regional Fiscal Flows: Measurement, Determinants and Effects on Country Stability*, Edward Elgar: Northampton, Mass.