# Philex Mine Spill: Not due to Typhoon Saola (Gener), it is a Test on "Responsible Mining"

**By Arturo Boquiren, UP Baguio**

**7 May 2013**

## Executive Summary

The paper asserts and provides proof for three key arguments. First, the Philex mine spill is not due to typhoon Gener (international name: Typhoon Saola). Evidence on hand points to less than responsible if not "irresponsible mining" as the root cause of the spill, assuming responsible mining exists. Second, given Philex insistence that it was the rains of typhoon Gener that is the cause of the spill then Philex is unwittingly telling us that the probability of another mine spill from Philex tailings pond #3 is about 25 to 30 percent during the rainy seasons. Finally or third, the damage being caused by the Philex mine spill is likely more than the Php 1 billion fine that Philex has agreed to pay and the Filipino people must continue to seek full redress from the company.

In view of the foregoing, the work argues that there are three key tasks at hand. These are as follows. First, decommission Philex tailing ponds #3 and put on hold Philex operations as long as the safety of the people and the environment are not assured (and Philex perpetual liability backed up by adequate and reliable bonds are not in place). Second, implement a dislocation assistance plan for Philex workers and employees. And, finally or third, implement a comprehensive study to identify the alternative uses for Philex land that have potentials to yield financial and non-financial returns higher than what mining can offer.

On matter of legislation, this work recommends that an implicit or explicit priority on mining be abandoned as a national policy and that legislation requires proponents and co-proponents of mining to identify the alternative uses for lands proposed to be mined and the potential financial and non-financial returns that can be obtained from each option or alternative if the funds proposed to be invested to mining are invested on endeavours other than mining.

# Philex Mine Spill: Not due to Typhoon Saola (Gener), it is a Test on "Responsible Mining"

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## I. Introduction

The Philex Mine Spill of 2012 will be remembered in Philippine history as one of the important tests of the so-called "responsible mining." Responsible mining has been claimed to exist but so far, a conclusive proof that it is truly responsible is missing. Is responsible mining able to offer benefits superior to the alternative livelihood systems to host communities? Are the environmental damage of "responsible mining" real or a myth? Will the "responsible miners" be responsible enough to shoulder the environmental risks or damages as they profit from environmental and social impacts of their activities or will Philippine society bear the environmental damages and risks as the investors profit from the actual or potential misery of mining host communities and the rest of the Filipino people? We want to address the issue of the Philex mine spill as we seek to address these fundamental issues.

We note the record of the Philex Mines in Padcal on the matter of managing tailing ponds and the mine spill. First, available data indicate that Philex mines' tailings pond #1 was constructed in 1967 and was deemed fit to operate for only 10 years but Philex Mining Corporation "closed" tailing ponds #1 only in 1981 or 4 years after the expected life of tailings pond #1. In January 1992, rainfall for the month was only 8.1 mm but tailings pond #2 collapsed and released 80 million metric tons[1] of mine tailings. Based on the news report of Ms Rouchelle Dinglasan for GMA 7 dated 11 February 2013, the estimate of the Mines and Geosciences Bureau for the spill is not eighty but only "five million metric tons across 5,000 hectares of land along Agno River downstream." Further, it was claimed that the collapse of the tailing ponds was due to the effects of an earthquake that took place two years ago from that time or in July 1990. As to why Philex did not conduct an inspection of her vulnerabilities immediately after the earthquake to anticipate the spill and as to why Philex did not adequately factor in the earthquake in her construction design is unexplained (it is common knowledge that there are many fault lines crisscross the Baguio-Benguet area.

Particularly for the tailing pond #3 which caused the mine spill in early August 2012, we know that tailing ponds #3 was constructed sometime 1992 and had a life of only 18 to 20 years and, therefore, was expected to last only up to 2010 or 2012, thereby making the mine spill of August 2012 or its risk basically anticipated rather than unanticipated.

## I. Arguments 1 & 2: Philex Mine Spill is not due to Typhoon Saola but to most likely to a mining practice that is less than "responsible"; the spill also reflects that the probability of another Philex mine spill is between 25 to 30% during the months of July to October

In her public disclosure statement 24 September 2012, Philex Mines attributes the spill to Typhoon Saola (local name: Gener) alone. This is shown in the last

[1] The actual volume of the mine spill may have to be further validated and confirmed.

line of the first page of the letter shown below (on why this point is belaboured is highly relevant to the argument being raised by this work).

RNM-074-12

September 24, 2012

**PHILIPPINE STOCK EXCHANGE, INC.**
3/F Tower One & Exchange Plaza
Ayala Triangle, Ayala Avenue
Makati City

**Attention: MS. JANET A. ENCARNACION**
Head, Disclosure Department

Gentlemen:

This is in reply to your letter of September 21, 2012 requesting for clarification and/or confirmation of the news article posted in *ABS CBN News* on September 21, 2012 entitled "Philex Mining may lose $60M due to leaks" which you quoted in part, as follows:

"MANILA – The operator of the Philippines' largest gold said the site is set to remain shut until the end of the year due to waste leaks, and the closure would likely wipe up to $60 million off its profits."

....

"Manuel Pangilinan, chairman and chief executive of Philex Mining Corp., told news website Rappler in an interview aired Thursday at a Manila mining conference that the mine would probably be 'shut down until the end of the year'".

....

"The financial impact would be 'severe and substantial'", he said

"We had forecast profits for this year of four billion pesos ($95.76 million). It's (now) likely to drop to between 1.5 and 1.7 billion pesos ($35.91-40.70 million)."

"Pangilinan said the pond which leaked the waste would be condemned and a new one built to prevent a repetition of the spill, which was caused by severe rains unleashed by Typhoon Saola."

In the Company's disclosure to the Exchange on August 9, 2012, its was mentioned that the Padcal mine will remain suspended until the safety and integrity of the tailings pond is assured. Thus, since the repair and remediation of the tailings pond is still in progress and as of this time Padcal has no estimate as yet as to when the work can be completed, it is be possible that Padcal operations could still be on suspension until the end of the year. The mine is, however, doing its best to finish the necessary repair and remediation work on the tailings pond sooner than later.

It was also mentioned in the Company's August 9, 2012 disclosure to the Exchange that the Company's earnings will be materially impacted. We confirm that the Company's revised reported net income budget for 2012, assuming the worst case scenario that the suspension of Padcal operations will continue up to the end of the year, has been reduced to P1.7 billion from the original budget of P4.8 billion. The revised budget is before any significant costs and expenses related to the repair of the tailings pond and cleaning up of the tailings leakage, and any fines and penalties that may be lawfully imposed upon the Company, less any recovery from the Company's pollution liability insurance cover.

We confirm that the Company has decided that new tailings ponds for Padcal have to be built as long-term replacement for the current Tailings Pond 3 (TP3). Construction of the first new tailings ponds will be put underway as soon as possible, even as the tunnel of Penstock A of TP3 is to be concreted and condemned to prevent further tailings leakage from the tunnel. The spillway being completed for TP3 will augment the remaining Penstock B as additional structure to drain water from the pond. The mine is also in the process of diverting some of the runoff from the mountains to reduce the flow of water going into TP3.

As of this time, the discharge of cleaner water from Penstock tunnel A of TP3 has been kept at a significantly reduced and constant rate since the dropping about two weeks ago of concrete spheres of various sizes to plug the sinkhole and act as a filtering medium to prevent tailings from leaking out of the pond. More boulders and gabions will be dropped into the sinkhole until the discharge has been completely stopped, at which time inspection of the tunnel will be made to locate the source of the leakage, determine the appropriate measures to permanently plug the sinkhole and seal the tunnel completely by concrete.

We will keep the Exchange posted on developments as may be appropriate in this regard.

We hope the foregoing satisfactorily responds to the Exchange's request.

Very truly yours,

**RENATO N. MIGRINO**
SVP- Finance

Based on the statement of Department of Environment and Natural Resources Secretary Alexander Paje during the first hearing of the Senate for the mine spill on 19 March 2013 under the Chairmanship of Senator Serge Osmena III, the Philex Mine Spill took place at around 2 a.m. of the $1^{st}$ of August 2013. Philex in Philex public disclosure statements dated 4 and 9 August 2012 also confirm that the mine spill first occurred on the first hours of 1 August 2012 and not later. This fact implies that the rains of the previous months had been enough to trigger the Philex mine spill of August 2012.

Of course, as reported by DENR Secretary Paje during the first Senate Hearing, the mine spill also reoccurred on August 11, August 12, and August 13. Nevertheless, the facts are sufficient to establish that it required only the rains of July 2012 for the mine spill to occur. Earlier or in their 4 August, Philex was also blaming Typhoon Vicente (local name: Ferdie) but the succeeding statements of Philex blame only Typhoon Saola (local name: Gener) for the mine spill. If the rains of July 2012 were sufficient to trigger the Philex Mine Spill of August 2012, what was the rains picture during the month? Table 1 below indicates the rains picture for the month as well as for June and August 2012.

**Table 1. Rainfall (in mm), June to August 2012**

| Day | June | July | August |
|---|---|---|---|
| 1 | 21.4 | 13.2 | 454.0 |
| 2 | 95.0 | 0.0 | 190.6 |
| 3 | 57.8 | 8.8 | 101.0 |

| | | | |
|---|---|---|---|
| 4 | 30.0 | 25.8 | 108.0 |
| 5 | 1.5 | 2.0 | 64.4 |
| 6 | 2.0 | 9.0 | 58.4 |
| 7 | 14.7 | 0.0 | 38.8 |
| 8 | 18.4 | 38.4 | 56.2 |
| 9 | 3.8 | 12.6 | 51.6 |
| 10 | 14.0 | 24.4 | 49.4 |
| 11 | 17.2 | 0.0 | 24.6 |
| 12 | 53.9 | 21.0 | 61.0 |
| 13 | 2.9 | 31.6 | 43.8 |
| 14 | 30.2 | 6.6 | 250.8 |
| 15 | 4.2 | 0.0 | 192.0 |
| 16 | 12.2 | 2.6 | 3.2 |
| 17 | 69.0 | 0.0 | 0.8 |
| 18 | 8.8 | 4.4 | 40.4 |
| 19 | 19.0 | 6.0 | 139.3 |
| 20 | 46.2 | 84.6 | 2.6 |
| 21 | 0.8 | 39.4 | 1.0 |
| 22 | 0.0 | 61.2 | 1.8 |
| 23 | 0.0 | 47.0 | 0.8 |
| 24 | 3.6 | 4.2 | 2.8 |
| 25 | 25.2 | 14.2 | 52.0 |
| 26 | 3.6 | 0.8 | 64.8 |
| 27 | 11.6 | 15.6 | 97.0 |
| 28 | 67.0 | 29.6 | 6.1 |
| 29 | 16.6 | 28.8 | 12.0 |
| 30 | 8.4 | 242.0 | 27.7 |
| 31 | - | 246.4 | 4.0 |
| Total | 659.0 | 1,020.2 | 2,200.9 |

**Source: PAG-ASA, April 2013**

Of course, as reported by DENR Secretary Paje during the first Senate Hearing, the mine spill also reoccurred on August 11, August 12, and August 13. Nevertheless, it is easy to see that the mine spill took place in a situation of normal rain. The rain of June 2012 can be ignored because it is too close to the mean rain from 1949 to 2011 for the months of July to September and for July to October. The mean rainfall during the months of July to September during the 62-year period is 745.00 mm while it is 657.6 mm for July to October.

Now are the rains of August abnormal to qualify as an “Act of God” or as a “force majeure” as reportedly being argued by Philex Mines? Hardly. No. The rains of July (and also of June) are normal for the months of June to September as well as June to October for the last 62 years, or from 1949 to 2011. Using the language of statistics, the close to 1,000 mm of rainfall that took place in July 2012 is only within one standard deviation to the right of the mean rain for the rainy months and, therefore, normal. The rain volume of July 2012 constitutes normal rain. In fact, based on rainfall data from 1949 to 2011, as Table 2 below would show, the probability of rains higher than 1,000 mm is about 30% monthly for the months of July to September and about 25% for the months of July to October.

**Table 2. Statistical parameters based on rainfall data 1949 to 2011**

| Parameter | July to Sept | July to Oct |
|---|---|---|
| Mean for the 62-year period | 745.0 | 657.6 |
| Minimum monthly rainfall | 31.2 | 152.55 |
| Maximum monthly rainfall | 4,773.9 | 4,773.9 |
| Standard deviation | 514.0 | 525.3 |
| Z-value of 1,000 mm | 0.49611 | 0.65182 |
| Probability of rainfall higher than 1,000 mm | 31% | 25.7% |

**Source: A. Boquiren's computations on PAG-ASA rainfall data, 1949 to 2011**

Responsible mining, assuming there is such an animal, should have been responsible enough to have checked the historical record of Philippine rainfall and should have anticipated that the probability of a rainfall higher than 1,000 mm between July to September and July to October is very high enough at 25 and 30%. If this is the case, a truly responsible mining should have designed and built her tailing ponds to be resilient to rains that are more than 1,000 mm. Instead, what we are seeing is that Philex Mines is de facto claiming that she has not designed her tailing ponds to be resilient to rains that are more than 1,000 mm. What has been the rainfall in the area from 1949 to 2011 for the months of July to October? Table 2 on the next page is indicative.

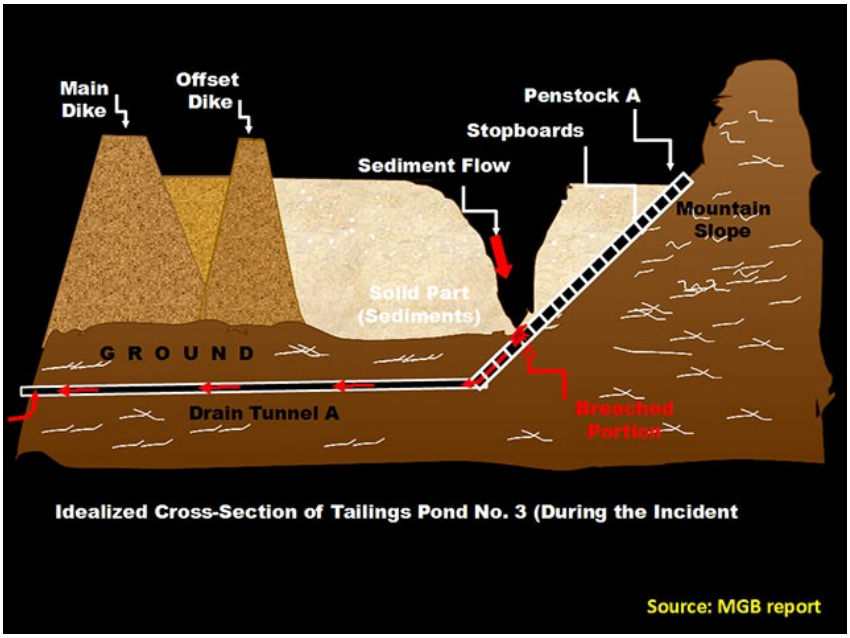
**Table 2. Rainfall in mm, July to October, 1949-2012**

| Year | Jul | Aug | Sep | Oct |
|---|---|---|---|---|
| 1949 | 700.0 | 370.5 | 616.3 | 509.5 |
| 1950 | 1,075.7 | 1,504.8 | 408.7 | 448.6 |
| 1951 | 927.4 | 958.5 | 591.3 | 151.5 |
| 1952 | 268.0 | 669.0 | 305.6 | 209.1 |
| 1953 | 461.9 | 1,190.2 | 274.7 | 100.7 |
| 1954 | 245.4 | 622.2 | 405.2 | 411.0 |
| 1955 | 449.7 | 326.2 | 555.8 | 197.7 |
| 1956 | 309.3 | 627.3 | 1,199.2 | 321.7 |
| 1957 | 281.3 | 599.6 | 810.8 | 159.6 |
| 1958 | 841.1 | 305.3 | 558.0 | 190.1 |
| 1959 | 241.1 | 492.8 | 264.6 | 120.0 |
| 1960 | 275.5 | 1,918.3 | 270.2 | 205.0 |
| 1961 | 1,025.6 | 611.8 | 565.5 | 196.6 |
| 1962 | 1,249.3 | 694.4 | 832.7 | 154.3 |
| 1963 | 489.8 | 383.8 | 1,457.9 | 76.2 |
| 1964 | 299.9 | 1,871.9 | 572.3 | 443.7 |
| 1965 | 712.6 | 371.3 | 364.8 | 106.6 |
| 1966 | 374.3 | 601.8 | 956.7 | 60.1 |
| 1967 | 423.8 | 1,141.1 | 440.3 | 1,560.3 |
| 1968 | 1,043.7 | 1,672.3 | 1,480.8 | 31.2 |
| 1969 | 1,211.8 | 616.3 | 894.9 | 279.1 |
| 1970 | 405.9 | 676.8 | 616.0 | 174.5 |
| 1971 | 1,321.1 | 756.6 | 385.5 | 306.4 |
| 1972 | 4,773.9 | 1,040.9 | 331.3 | 50.9 |
| 1973 | 418.7 | 537.4 | 225.2 | 816.2 |
| 1974 | 389.5 | 1,487.5 | 332.4 | 2,273.5 |
| 1975 | 152.5 | 787.9 | 477.4 | 295.5 |
| 1976 | 377.3 | 677.0 | 373.0 | 176.3 |
| 1977 | 694.5 | 784.2 | 1,274.3 | 148.8 |
| 1978 | 613.9 | 1,412.9 | 583.9 | 344.8 |
| 1979 | 586.7 | 1,078.4 | 250.2 | 206.2 |
| 1980 | 1,323.3 | 237.6 | 562.2 | 210.8 |
| 1981 | 465.2 | 1,165.4 | 634.7 | 196.3 |
| 1982 | 1,146.8 | 921.4 | 443.6 | 238.2 |
| 1983 | 279.3 | 933.0 | 391.7 | 176.4 |
| 1984 | 286.1 | 1,512.5 | 397.7 | 322.4 |
| 1985 | 189.5 | 1,424.6 | 512.1 | 265.2 |
| 1986 | 1,495.7 | 1,208.1 | 1,030.2 | 146.6 |
| 1987 | 304.6 | 814.7 | 413.9 | 503.5 |
| 1988 | 928.6 | 240.7 | 312.1 | 451.0 |
| 1989 | 1,506.6 | 506.0 | 1,539.0 | 355.1 |
| 1990 | 585.0 | 1,599.9 | 861.5 | 109.5 |
| 1991 | 586.4 | 677.2 | 593.8 | 1,735.3 |
| 1992 | 473.4 | 1,403.8 | 1,611.5 | 119.5 |
| 1993 | 410.9 | 431.9 | 492.0 | 584.6 |
| 1994 | 1,191.2 | 723.7 | 178.4 | 114.4 |
| 1995 | 470.3 | 704.7 | 288.9 | 139.1 |
| 1996 | 1,494.5 | 816.5 | 356.6 | 240.7 |
| 1997 | 287.1 | 1,200.0 | 209.0 | 106.0 |
| 1998 | 290.8 | 291.9 | 1,031.8 | 1,569.3 |
| 1999 | 724.3 | 1,279.3 | 694.5 | 732.5 |
| 2000 | 1,385.7 | 697.3 | 640.6 | 917.6 |
| 2001 | 1,642.0 | 274.0 | 842.2 | 97.0 |
| 2002 | 1,883.4 | 525.6 | 301.5 | 224.8 |
| 2003 | 721.3 | 1,089.4 | 303.2 | 179.7 |
| 2004 | 445.4 | 1,432.9 | 225.6 | 42.4 |
| 2005 | 294.4 | 690.2 | 644.6 | 256.6 |
| 2006 | 1,769.8 | 732.8 | 207.6 | 316.0 |
| 2007 | 719.0 | 1,201.6 | 408.4 | 410.1 |
| 2008 | 681.2 | 999.5 | 761.0 | 178.1 |
| 2009 | 758.4 | 1,087.7 | 516.9 | 1,981.8 |
| 2010 | 543.7 | 536.6 | 296.8 | 920.1 |
| 2011 | 435.9 | 1,096.3 | 819.2 | 332.4 |
| 2012 | 1,020.2 | 2,200.9 | 288.3 | 24.9 |

It is easy to see that in Table 2, we have close to 40 months out of around 240 months between July to October in which the rainfall is at least 1,000 mm for the month. In addition, we have about 10 months during to close 240 months in which the rainfall is at least 1,500 mm and there is a month in which the rainfall is about 4,700 mm. Responsible mining, if it really exists, should have factored these facts in and should have designed their mining processes consistent with the environmental risks in mining and in the weather.

At the same time, we have to seriously take the information provided by Philex Mines that the rainfall of July 2012 was a factor that triggered the mine spill of August 2012. Given Table 2 of page 4 of this work, it is reasonable to conclude that probability of another mine spill is between 25 to 30% during the months of July to October, consistent with the claims of Philex that the rains triggered the mine spill. Really, however, the mine spill is not because of the rains but probably because Philex Tailing Ponds 3 is beyond its life. As mentioned earlier, in 1992, it was anticipated that the life of Tailings Ponds 3 is between 18-20 years, putting its life expiration at 2010 or 2012. Most likely, this is the fundamental reason for the mine spill and, unfortunately, Philex appears to have a track record of using their tailing ponds way past their life.

Based on the news report of Rouchelle Dinglasan (which she probably got from the Mining and GeoSciences Bureau of the DENR) in February 2013, the Tailing Pond situation after the spill may have been the picture below.




It is reasonable to anticipate therefore that "plugging measures" will not be enough to address the risk of another mine spill from Philex Tailings Pond 3. Structural aging appears to be playing a role in the stability of the Philex Tailings Ponds 3. To argue that it was the rains that caused the break-up of the structure and the mine spill is to unwittingly say that the probability of another mine spill during the rainy season is between 25 to 30%. This can be dangerous to our people, more so if the mine spill trigger a break-up of the San Roque Multipurpose Dam.

II. **Argument 3: Cost of Mine Spill is More than Php 1 Billion**

The Php 1 billion fine which Philex paid from the Philex mine spill grossly underestimates the social or environmental damage caused by the spill. **First**, the effect of the mine spill in exacerbating the problem of flooding in Pangasinan and Northern Luzon. **Second**, the effects of the mine spill on people's livelihood. **Third**, the environmental damages consisting of the ecological and biodiversity effects of the mine spill. **Fourth**, the effects of the mine spill on the livelihood of a section of our countrymen. Finally or **fifth**, the direct and indirect effects of the mine spill on the life of the San Roque Dam.

Full-blown studies are needed to estimate the cost of the mine spill from the first four sources. As for the fifth, below is a preliminary estimate.

**Table 3. Preliminary Cost Estimate of the Philex Spill on San Roque Dam**

| Data Item | Data |
|---|---|
| Philex Mine Spill | 20 million metric tons |

| | |
|---|---|
| Density of Mine Spill | 1.531 tons per cubic meter |
| Equivalent of Philex Mine Spill in cubic meters | 13 million cubic meters |
| "Dead Storage" Capacity of San Roque as per design and dam life | 275 million cubic meter |
| 13/275 | 0.047% |
| Cost of San Roque Dam in | US$ 1.1 billion |
| Cost of the Mine Spill Assuming Dam Costs are Unchanged | US$ 0.0517 Billion |
| Php Equivalent of the Damage Assuming Dam Costs are Unchanged and Php/US$ is Php 40 (very conservative) | Php 2.078 Billion |

Thus, based on a very conservative and yet valid estimate on the impact of the mine spill on the San Roque dam, it is easy to see that the cost of the mine spill is over and above than the Php 1 billion fine imposed on Philex. The Php 1 billion fine does not fundamentally harm Philex and both Philex and the Philippine government have the potential to get more from insurance payments. Philex was set to receive a cover of US$25 billion for the fine the company paid the government (Catajan, 2013). In addition, Philex insurance cover for environmental damage was reportedly up to US$50 million and that Philex can also avail of the US$30 million insurance for business interruptions (Catajan 2013).

## III. The Tasks at Hand

Given the foregoing the immediate task at hand is to decommission Philex tailing pond 3 and address dislocation that will arise. We must note, however, that even with the mine spill, a dislocation is bound to happen because the Tailing Pond 3 has exceeded its life. Based on facts available, it appears that the mine spill happened as Philex consistently allowed tailing ponds to be used longer than its expected life. The tasks at hand are as follows. First, decommission Philex tailing ponds 3. Second, design a dislocation plan for Philex workers which Philex should have designed years ago. Third, if Philex insists on operating the tailing pond, Philex mines should be held perpetually liable for damages after Philex has ceased operations (for instance, the tailing ponds that it will leave are vulnerable to breakdowns and spills). Fourth, recognize that the so-called responsible mining requires a tailing pond that can be vulnerable to spills as well as a large dam (like the San Roque Dam) to act as a secondary tailing pond. Finally or fifth, we must recognize that incidents like the Philex mine spill reaffirm that prior to considering a mining proposal, we must consider the alternatives to mining in an area targeted for mining. Thus, for legislation, we must distance ourselves from the notion that mining is a reliable engine of growth and areas targeted for mining should be required first to identify the alternatives to mining and anticipate the possible returns from alternative sources of livelihood.

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