TOTAL ECONOMIC VALUATION

Environmental Impacts of Mining in Bicol, Mindoro and Palawan



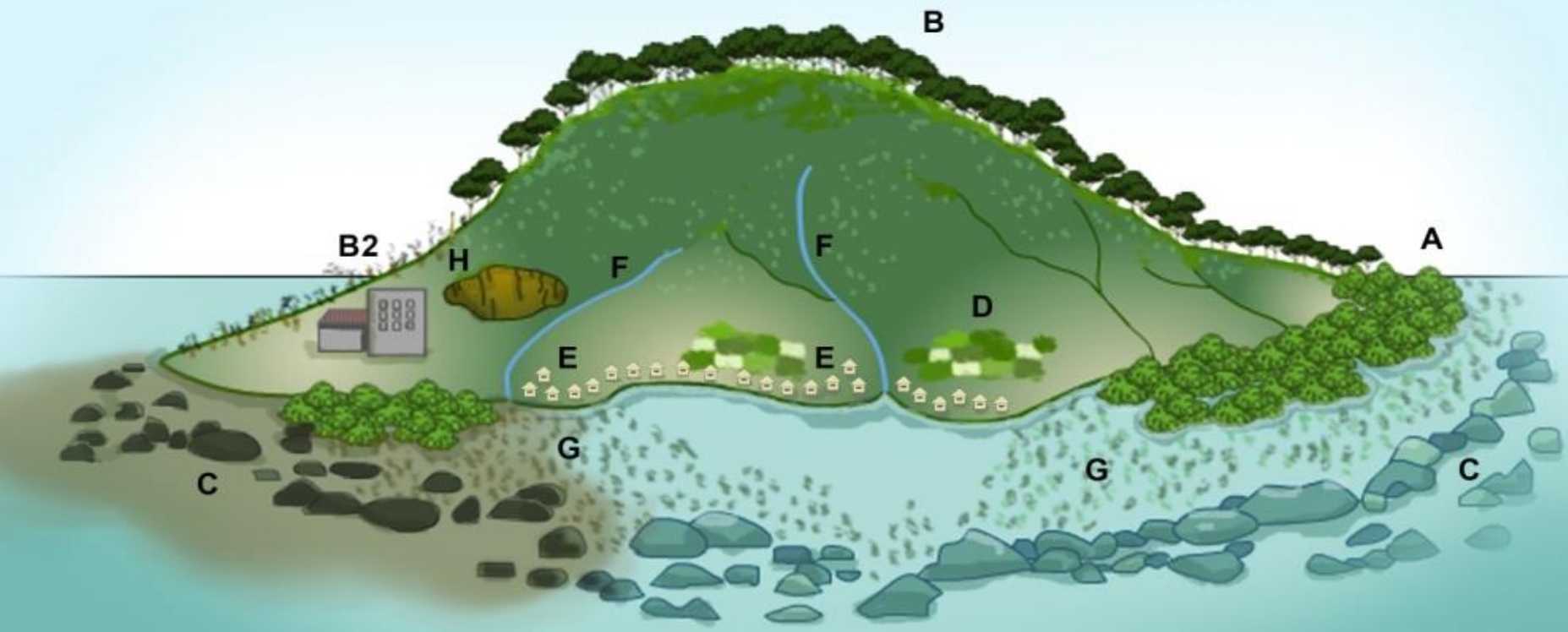
Mining and Stewardship of the Environment

May 26, 2017

Talking Points

- Methodology
- Framework
- Results
- Policy Papers
- Policy Directions

The Island Ecosystem



A. Mangrove
B. Forest
C. Coral
D. Cropland
E. Human Settlement
F. River/Creek
G. Seagrass beds

The mining area with open pit is letter H. B2 represents denuded forest. The darker tint of the coral reef at the left side represents dead corals.

(Alan White, Author of *Philippine Coral Reefs: A Natural History Guide)*

TEV Team Composition

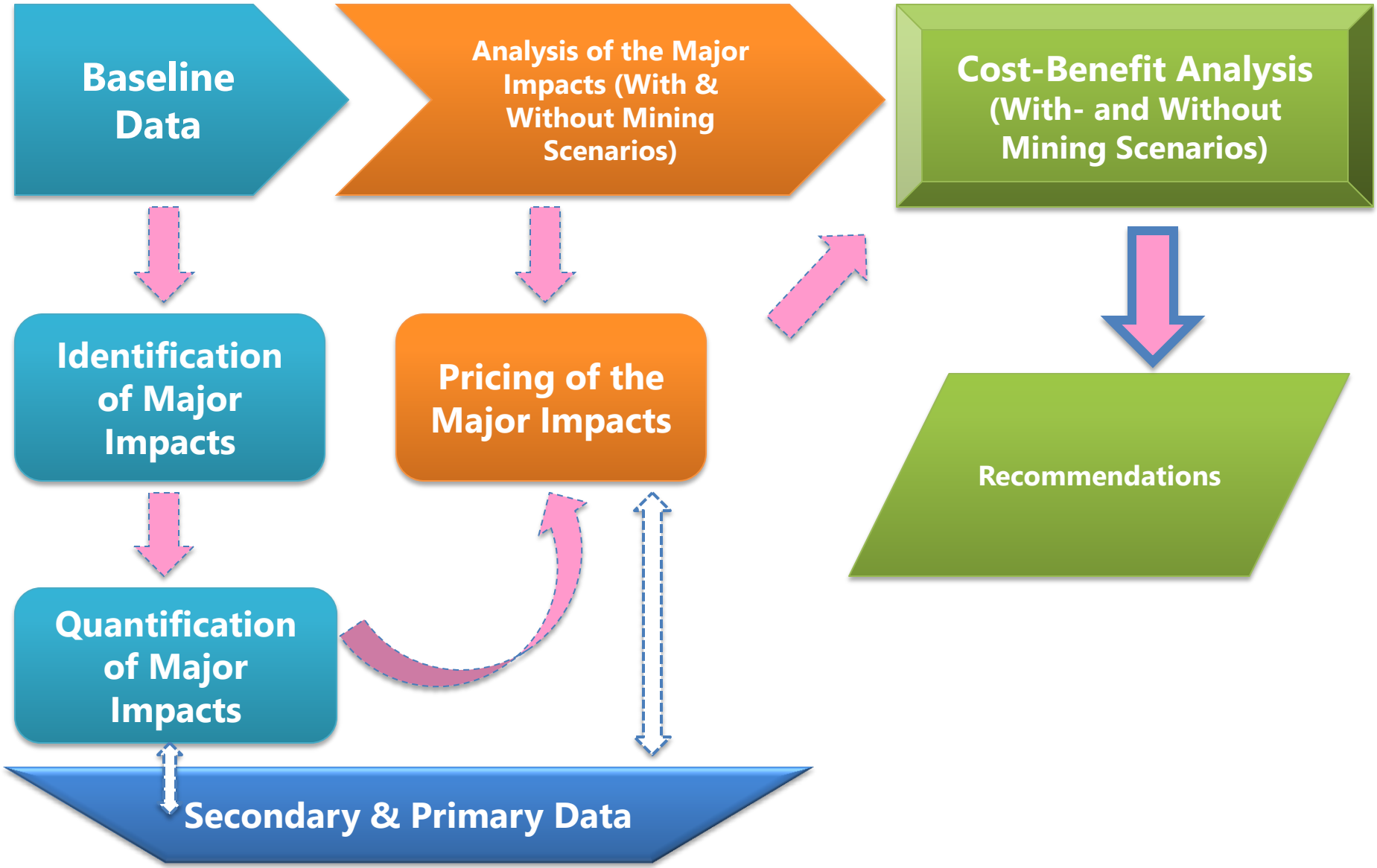
Interdisciplinary Teams (with post-graduate degrees) from Palawan State University, Bicol University and Mindoro State College of Agriculture and Technology:

- Agriculturists
- Foresters
- Marine Biologists
- Accountants
- Economists
- Sociologists
- Anthropologist
- Tourism
- Agricultural Economists
- Health Specialists

Provided with Technical Training on TEV by:

- Natural Resource Economist
- Biodiversity Expert
- Program and Social Development Expert

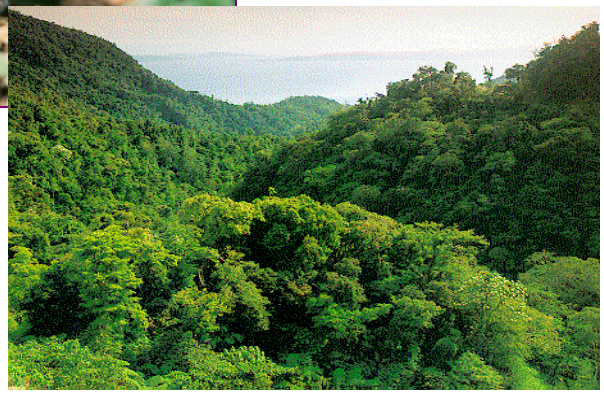
TEV: FRAMEWORK OF ECONOMIC VALUATION OF MINING'S ENVIRONMENTAL IMPACTS



Accounts estimated:

- **Physical Accounts**
  - Land uses and their environmental services:
    - agriculture (crop, pasture, and livestock)
    - forestry
    - water resources (coastal and freshwater)
    - settlements
    - infrastructure
    - biodiversity, ecotourism, and others
    - (in terms of area and other physical units

- **Productivity and volume of production**
  - (in terms of total production per unit area)
- **Monetary Accounts**
  - Monetary values of natural resources based on land values
  - Monetary values of production and productivity of different land uses



Accounts estimated:

AGRICULTURE (Palawan)

- About 180 hectares of farmlands (irrigated and non-irrigated)

Farmland	Total land area (ha)	Reduction in palay production (in cavans)	No. of cropping in a year	No. of kilos per cavan	Cost per kilo	Total in a year (Php)
Irrigated	50.25	20	2	50	17	**1,708,500**
Non-irrigated	133.2	20	1	50	17	**2,264,400**
TOTAL						**3,972,900**

*based on actual site and data gathering, 2015

MINING AREAS

SUC	MINE LOCATION	MINING COMPANY	MPSA AREA (ha)	STATUS
Bicol University	Brgy. Lamba & Maslog, Legazpi City	UBS Marketing Corporation	276	On-going
Palawan State University	Narra, Palawan	Citinickel Mines and Development Corporation	2,176	On-going
Mindoro State College of Agriculture and Forestry	Naujan and Victoria, Oriental Mindoro; Sablayan, Occidental Mindoro	Intex Resource Philippines, Inc. (Intex)	11,522	Planned with approved ECC

SUMMARY OF BENEFIT-COST ANALYSIS

Site	Costs (PhP)	Benefits (PhP)	Net Present Value (PhP)	Benefit-Cost Ratio (BCR)
Legazpi City, Albay	168.8 million	32.8 million	-135.9 million	0.19
Narra, Palawan	460.3 million	151.2 million	-309.1 million	0.33
Victoria, Oriental Mindoro	5.4 billion	4.7 billion	-648 million	0.88


12/9/2014
2005
2014
Mayon 5
(3.1553 has)
Lamba
Mayon 16
(1.7 has)
Mayon 22
(1.1 has)
BICOL
Location of perlite mines of UBS Marketing Corporation, Legazpi City, 2015.
Source: Screen shot from Google Earth.
Image © 2015 DigitalGlobe
Google earth
Tour Guide
2005
Imagery Date: 12/9/2014 13°07'04.28" N 123°46'46.71" E elev 155 ft eye alt 5814 ft

Benefits and Costs

Benefits	Net Present Value for 25 years
Employment	Php 10.4 million
Social Development Program	Php 3.8 million
Taxes	Php 526,092
Multiplier effect of SDMP	Php 32,431.00
Total	**Php 32.8 million**

Costs	Net Present Value for 25 years
Investments	Php 13.6 million
Agricultural Resources	Php 3.29 million
Coastal and Marine Resources	Php 506,773.00
Forest Resources	Php 264,600.00
Health Impact	Php 2.16 million
Tourism	Php 5.28 million
Soil Erosion	Php 5.58 million
Option Value	Php 138.11 million
Total	**Php 168.8 million**


Photo: www.panoramio.com

Municipality of Narra, Palawan

- Palawan has the highest remaining mangrove cover in the Philippines.
- Harbors several marine mammals such as marine turtles, dugong, and whale shark.
- With old growth and second growth tropical rainforest, karstic limestone, forest over ultramafic rocks, and beach forest.

Aerial view of Citinickel mine site in San Isidro, Narra, Palawan
(*Aerial photograph of CDMC extracting site in Bgy. San Isidro, Narra, Palawan.)*

Benefits and Costs

Benefits	Net Present Value for 25 years
Employment	Php 71.02 million
Social Development Program	Php 18.96 million
IP Royalties	Php 14.52 million
Taxes	Php 46.7 million
Total	**Php 151 million**

Costs	Net Present Value for 25 years
Forest Resources	Php 238.7 million
Coastal and Marine Resources	Php 80.2 million
Health Impact	Php 9.3 million
Agricultural Resources	Php 126.1 million
Tourism	Php 5.9 million
Total	**Php 460.3 million**


Oriental Mindoro
Home of the Mangyans, also the proposed area for
Nickel mining in Naujan, Oriental Mindoro

Oriental Mindoro

"The Fruit Basket of Luzon"

Major Fish Species Caught:

- Tanigue, tambakol, malasugi, mamsa, lapu-lapu, galunggong, tuna, herrings, hasa-hasa, kalapato, caranx, dalagang-bukid, alumahan, bisugo, samaral, anchovies, sardines

Other than Fish:

- Squid, shrimp, prawn, octopus, mudcrab, shells, lobster, cuttlefish, mussel, oyster, blue crabs, seaweed, sea cucumber

Major Producer of:

- Rice, root crops, vegetables, fruits (e.g. rambutan, banana, lanzones, mango,durian, papaya, pineapple, guyabano)

Photo: www.ormindoro.ph

Projected Benefits and Costs

Benefits	Net Present Value for 25 years
Employment	Php 299 million
Taxes	Php 1.8 billion
Social Development Program	Php 349 million
Environmental Protection and Enhancement Program	Php 2.2 billion
Environmental Management Fund	Php 23.2 million
Environmental Guarantee Fund	Php 23.2 million
Total	**Php 4.7 billion**

Costs	Net Present Value for 25 years
Freshwater Resources	Php 228 million
Coastal and Marine Resources	Php 3.3 billion
Forest Resources	Php 1.1 billion
Agricultural Resources	Php 523 million
Resettlement	Php 1.57 million
Health Impact	Php 34.68 million
Livelihood	Php 1 million
Tourism	Php 18.97 million
Total	**Php 5.3 billion**

Policy papers produced:

1. Total Economic Valuation (TEV) of Environmental Impacts of Mining
2. Are the programs, projects, and activities (P/P/As) in the social development and management programs (SDMP) of mining companies responsive to the needs of the host and neighboring communities?
3. Challenging the Implementation of Republic Act 7942: A Governance Concern
4. The Tragedy of Undervalued Philippine Biodiversity

Total Economic Valuation (TEV) of Environmental Impacts of Mining

- For policy considerations, it is recommended that TEV should be required in the **planning and implementation of mining projects**.
- It can provide support to stakeholders in **understanding environmental problems and solutions of mining operations** in terms of proper valuation of benefits and costs.
- It can guide how environmental impacts should be addressed and to steer investment decisions.



A tree living for 50 years is said to generate…

P 1,593,750	worth of oxygen
P 2,652,000	worth of air pollution mitigation
P 1,593,750	worth of soil productivity & soil erosion control
P 1,912,500	worth of water
P 1,592,768	worth in shelter for animals

PhP 9,344,768 or US$187,458

Are the PPAs in the SDMP of mining companies responsive to the needs of the host and neighboring communities?

- Mining companies should be required to submit, **a development framework and methodology** indicating how their SDMPs will be developed.
- The MGB must prepare its Operating Guidelines relating to the types of PPAs of **eligible projects**, its criteria for evaluation.
- An evaluation team specifically for the approval or non-approval of the SDMPs be constituted and/or expanded; and
- Annually, the SDMPs are subjected to third party assessment/evaluation to show SDMP's and its PPAs Relevance and Quality of Design Effectiveness, Efficiency, Impact, and Sustainability

Challenging the Implementation of RA 7942: A Governance Concern

- Both the government and the mining companies are expected to **jointly address**: *conservation of the environment, protection of human rights, and the preservation of cultural and historical heritage*
- Government, relevant key players should have sufficient knowledge, skills and **appreciation of policy guidelines, rules and regulations**
- Mining companies should consciously take into consideration the various **social concerns as they plan, develop and implement** their projects

The Tragedy of Undervalued Philippine Biodiversity

- Biodiversity is **a national asset** that should be part of the national consciousness to provide **long term** sustainable economic rewards for the country.
- Government policy and the decision-making process should always take into account the **long term benefits from biodiversity for sustainable development**.
- It has to be understood that resource mobilization for biodiversity conservation is about **investment capital**, not sunk costs. It is about risk management, long term growth and wealth generation for our future generation.

Policy Directions

- TEV can provide support to stakeholders in understanding environmental problems and solutions in terms of proper valuation of benefits and costs.
- TEV takes a long-term view of development, the cumulative impacts of development and the competing social and environmental priorities in an area.
- TEV can be a planning tool.
- *What is the best use for our resources?*

MINING

DIRECT CONTIBUTION TO GDP

PhP 90.7B or 0.7%

THERE ARE

235,000

PEOPLE EMPOLYED DIRECTLY IN MINING AND QUARRYING

0.6% of total employment

TOURISM

DIRECT CONTIBUTION TO GDP

Php 982.4B or 7.8%

THERE ARE

4,758,000

PEOPLE EMPOLYED DIRECTLY IN TOURISM-RELATED INDUSTRIES

12.5% of total employment

AGRICULTURE

DIRECT CONTIBUTION TO GDP

Php 1,423B or 10%

THERE ARE

11,800,000

PEOPLE EMPOLYED DIRECTLY IN AGRICULTURE

31% of total employment

Philippine biodiversity valued at Php 2.309 trillion

The Philippine ecosystem and biodiversity values take into account the ecosystem services.

Photo Source: Philippine Lifestyle