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Notes

1. Asian Development Bank, *Asian Development Outlook 1991* (April 1991).
2. About 54 per cent of Philippine lands slope 18 degrees or more.
3. World Bank, *World Development Report 1992; Development and the Environment* (Oxford University Press, May 1992).
4. Asian Development Bank, op. cit.
5. The 1987 study of Ferrer provides an estimate of the area of mangroves, while R. Bina gives the 1985 estimate. See "The Status of Marine Resources", *Lunduyan Magazine* (Tambuyog Development Center, 1992); and R. Bina, "Updating mangrove forest statistics in the Philippines" (Paper presented at the NATMANCOM Symposium on Mangrove Research, Environment, Policy and Information, Sulo Hotel, Quezon City, 28–30 November 1988.
6. A. Herre, "Checklist of Philippine Fishes", *Fish and Wild Service*, Research Report 20 (Washington, D.C.: United States Department of the Interior, 1953), pp. 1–997. The later estimate is given in the 1981 study of the Marine Science Institute, University of the Philippines.
7. An Asian Development Bank study estimated that a hectare of developed mangrove can directly produce an annual yield of 100 kg of finfish, 25 kg of shrimp, 15 kg of crabmeat, 200 kg of molluscs, and 40 kg of sea cucumber. It can also indirectly supply about 400 kg of finfish and 75 kg of shrimp which mature elsewhere.
8. Flor Lacanilao, "Philippine marine ecosystems: Issues of concern" (Paper presented at the First Regional Media Seminar Workshop on Marine Ecosystems, Iloilo City, Philippines, 21–22 July 1990). *Lunduyan Magazine*, Tambuyog Development Center, 1992.
9. With the use of available maps, Dr A. Revilla estimated the area of different forest land types in 1934. The Philippine–German Forest Resource Inventory

Project, on the other hand, provided the 1988 estimates. See R. Lennertz and K. Uebelhor, eds., *Philippine-German Forest Resources Inventory Project Seminar Proceedings* (1988).

10. Based on forest land estimates in 1934, 1969, and 1988, a discernible pattern of land conversion can be inferred from the loss and expansion of particular land types. In the 1934–69 period, the decline in the area of old-growth, pine and other forest lands together with open, brush and grass lands paralleled the increase in the area of unproductive forest, reproduction brush, farm and urban lands. In particular, the expansion of farm and urban lands during the period corresponded with the increase of alienable and disposable lands. Apart from the shift of forest lands into unproductive forest and non-forest lands, the process of land conversion also entailed the transfer of some lands from the public domain into alienable and disposable status. Specifically, about 2.2 million hectares of open brush and grass lands together with some residual and unproductive forest lands were stricken off the public domain and privatized.

    The process of forest land conversion continued and worsened in the 1969–88 period. About 3.8 million hectares of old-growth forests and 5.8 million hectares of unproductive forests were lost while open, brush and grass lands and farm and urban lands, respectively, expanded by 7.3 million hectares and about 2.2 million hectares. However, unlike the previous period, the transfer of 1.5 million hectares from the public domain to alienable and disposable lands from 1969 to 1988 did not keep pace with the expansion of farm and urban lands. See Germelino Bautista, "The Forest, Economic Development, and the Philippine State: The Primacy of Market Considerations", in *Debt, Development, and the Environment*, edited by Philippine Resource Center (forthcoming).
11. *Lunduyan Magazine* (1992).
12. Ibid.
13. The environmental benefits of the forest extends beyond the national boundary. On the regional level, for instance, the deforestation in Indonesia and the resulting turbidity of the South China Sea is said to be a cause of the El Nino phenomenon which is responsible for the droughts and loss of marine resources in other parts of the region. This observation is based on a German team study cited in Philip Hurst, *Rainforest Politics: Ecological Destruction in Southeast Asia* (Zed Books Ltd, 1990).
14. The physiocrats considered the natural yield of the land, rivers, and sea to be the original source of surplus. Although Senior and John Stuart Mill discussed the energy in nature as a source, they did not explicitly identify it

as a surplus. According to the former, rent is the reward for not withholding the use of the land, while for the latter who advocated economic and social reforms, it is associated with the expedient institution of property.

According to some writers in the eighteenth and nineteenth centuries, the appropriation of land and its resources or the establishment of private property was effected through force, violence, deceit, and the desire for accumulation. While Pastor Malthus attributed it to Divine Providence, J.S. Mill saw it as a product of historical expediency, hence subject to social intervention.

15. According to David Ricardo, rising prices resulted from the increasing labour (cost) requirements of cultivation as it extended to the margins. While he ascribed to the labour theory of value, he situated production in the margins in the context of a growing population. He, therefore, implicitly referred to the role of rising market demand.
16. In some instances, Malthus considered the landowners to be a productive segment of society while Adam Smith Ricardo and other classical political economists held the opposing view.
17. The political economic issues in nineteenth century England reflected the concern over the impediments landed property posed to economic prosperity. The controversy with regard to the Corn Law, which prevented importation of agricultural products, was an example of this concern. So was the investigation into the extent the separation of land ownership from the ownership of the working capital of the mines impeded the progress of the coal industry and the overall economy.
18. In the economic history of the Philippines and Malaysia, for instance, early colonialization effected limited community displacement and environmental destruction compared to later colonial and post-colonial periods.
19. The full surplus or excess profit is defined by either the value of the appropriated natural yield or the residual after compensating the cost of labour and materials (capital) at their average value. In the absence of competition or in the context of monopsony and monopoly power, there is a larger residual.
20. The loss of use values for displaced indigenous communities and the depletion of the stock of natural resources are not reflected in the national income accounts. In effect, national income and its growth are overstated because the loss of use values is not deducted from the consumption of marketed goods while the stock of natural resources and its depletion are not included in gross (net) capital formation (see Repetto and Gillis, eds., *Public Policies and the Misuse of Forest Resources* [Cambridge University Press, 1988]).

In its *World Development Report 1992*, the World Bank seems insensitive

to the historical cause and loss of environmental quality in raw-material-producing underdeveloped economies. Specifically, it fails to relate the environmental damage per unit of input to natural resource extraction and exportation.

21. A production-based tax does not have an effect on price at all. This is in contrast to a sales (domestic and export) tax which increases the price if supply is elastic and demand inelastic.
22. For a giver per unit of excess profit (ep), an increase in the quantity (t) or value (%t) tax directly reduces the extractor or supplier's excess profit (pep). The effect of tax is given in equation form, as follows:

Quantity Tax	*Value Tax*
ep = (P − AC − np) + t	ep = (P − AC − np) + (%t)P
= pep + t	= pep + (%t)P

where P is the price received by the supplier
AC is the average cost of production which includes np
np is the per unit normal profit, and
pep is the per unit excess profit retained by the supplier.

23. Shafik and Bandyopadhayay, "Development and the Environment", background paper for the World Bank, *World Development Report 1992* (Oxford University Press, 1992).
24. Waste dumping and the relocation of polluting industries became more apparent in the Southeast Asian region from the 1970s.
25. Nicolas Georgescu-Roegen, *The Entrophy Law and the Economic Process* (Harvard University Press, 1971).
26. Common resources refer to those which are used by many rivals who, motivated by their individual interests, would degrade or exhaust the resource. Some neo-institutional economists, therefore, argue that the delineation of property rights would prevent degradation and maintain the resource. Critics, however, would posit the limits to property rights.
27. Because environmental service is not a product of human labour, it does not enter the market.
28. The use of market prices for metal as a measure of scarcity value must critically consider the subsidies and incentives given by the governments of the external investor and the mineral-rich country.
29. The succeeding statements are based on various forestry administrative orders of the Department of (Agriculture) Environment and Natural Resources. See C. Cruz and M.S. de los Angeles, *Policy Issue on Commercial Forest Management*, PIDS Working Paper Series 84-03 (Philippine Institute for Development Studies, 1984); and M.S. de los Angeles and N. Lasmarias, *A Review of Philippine Natural Resource and Environmental Management*

1986–1988, PIDS Working Paper Series 90-08 (Philippine Institute for Development Studies, January 1990).

30. In the 1960s, a number of legislative measures were proposed to increase the basic forest charge through a system of stumpage valuation and bidding, expanding the taxable base by updating the specie group classification, and imposing additional charges. All these efforts, however, met with strong opposition. Thus, the basic forest charge remained fixed from 1939 to 1980.

    The estimation of excess profit is one approach to operationalize stumpage value. In turn, the excess profit is measured on the more efficient firm level by the difference between total revenue and total average cost, which includes the average or normal profit margin and cost of reforestation. Excess profit, therefore, represents the above-normal returns which can be realized by the more efficient suppliers of raw and processed goods in the industry. See Germelino Bautista, *The Forestry Revenue System in the Philippines: Its Concept and History* (Natural Resources Management Program [NRMP] Policy Studies, June 1992).
31. Marianne S. de los Angeles, "Research on forest policies for Philippine development planning: A survey", in *Survey of Philippine Development Research: II* (Philippine Institute for Development Studies, 1982); and E. Boado, "Incentive policies and forest use in the Philippines", in *Public Policy and the Misuse of Forest Resources*, edited by E. Repetto and M. Gillis (Washington, D.C.: World Resource Institute, 1988).
32. Bautista, *The Forestry Revenue System in the Philippines*.
33. Chamber of Mines, *Annual Reports*; and *Newsletter*, various issues. The valuation of forest resources has recently been undertaken in a USAID project under the direction of Dr Marianne S. de los Angeles.
34. J. Trudinger and E. Caballero et al., *Formulation of Policy and Standards for the Disposal of Mine Tailings from Mining Operations in the Philippines*, Technical Resources Project Number 492-0432 (Dames and Moore Consultants, 14 June 1991).
35. According to the estimates of Benguet Corporation in its Grand Antomok Project (BC-GAP), it hopes to obtain 2.99 gm of gold per metric ton out of the expected 14.1 million tons of its mineable ore output, and the generated waste is expected to be 80.97 million metric tons. (This is also cited in the files of the Legal Resource Center, *Campaign data: BC open pit mining operations*.)

    Based on the above ratio, one can infer the total annual generated wastes of the 12 major mines in the country whose annual ore production amounts to 48.315 million tons.
36. Trudinger et al., op. cit.

37. The United Nations Environmental Program (UNEP) study of 1985 reports that the tailings discharges of the gold and copper mines in the Northern Luzon region are primarily responsible for the siltation of its prime agricultural lands.
38. Center for Environmental Concerns, Cordillera Resource Center for Indigenous Peoples' Rights, Mining Communities Development Center, Inc., and the United Concerned Citizens of Ucab, "A report on the environmental investigation mission on the issue of open pit mining", August–September 1991. Mimeographed.
39. Bharat Dhar, *Assessment of the mineral environment policies of the government of the Philippines* (Mission report prepared for the UNDPCD, 1991).
40. Bautista, *The Forestry Revenue System in the Philippines*.

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