TANNERIES, WATER QUALITY AND BARRIERS IN TAMIL NADU: AN AGENDA FOR MANAGEMENT

Paper presented at
Stockholm Water Symposium
10-14 August 1993, Stockholm, Sweden

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SUMMARY

Tanneries are industrial units that process skins and hides to make leather. They earn a foreign exchange of US$670 million, appreciating tremendously in recent years due to increasing demands for high quality leather products. The Leather Export Promotion Council envisages a 25 percent annual growth in leather exports over the next five years. North Arcot district of Tamil Nadu has two-thirds of India's production units and contributes 75 percent of all leather exports, from 820 tanneries located along the Palar River.

Tanneries are the most polluting of all industries, dumping waste waters generated in the tanning process (3000 litres for every 100 kg of leather processed) into rivers and on land surrounding production units. Only now, community treatment plants are being installed. This study is concerned with the generation, treatment and disposal of waste water, and accounts for the environmental, economic and social impacts of water use and effluent treatment. The paper considers managerial options toward treating waste water through community participation, and advocates an environmentally sound utilisation of water resources, because (a) water quality is affected by waste water disposal and (b) there are barriers to overcoming problems of water quality.

INTRODUCTION

Modern development processes, especially industrialization, have come in for a great deal of criticism for their disregard toward the environment. In India, leather tanning is one such development process where water quality is severely degraded through the addition of chemicals and dye without proper treatment of waste water.

IMPORTANCE OF LEATHER INDUSTRY

- The Leather industry is one of five foreign exchange earners for India.
- Leather exports earned US$ 850 million in 1990-1991, with average yearly earnings of US$ 650 million.
- The leather Export Promotion Council of India envisages a 25 percent annual growth in leather exports over the next five years.

EMPLOYMENT

The leather industry provides employment for 1,4 million persons in India. This breaks down into 600,000 in the flaying and curing of hides and skins; 700,000 in the cottage and small scale sectors and 100,000 in medium and large scale sector, such as footwear and garments. In Tamil Nadu, eighty to ninety percent of employment in footwear and leather garments has gone to women, where the unorganised sector amounts to as much as 60 percent.

In the Seventh Five Year Plan (1985-1990), the modern factory employment increased by 50,000 workers.

RESULTS AND DISCUSSION

TANNERIES

There are three stages of manufacture in leather:

1. Processing of raw hides and skins into semi-finished leather.
2. Processing of semi-finished leather into finished leather.
3. Manufacture of leather products such as footwear and garments.

First and the last are the domain of small scale industrial units, unorganised sector: Registered small scale units are 73,940 in 1990-1991; expected to grow to 112,400 by 1994-1995.

Organised sector units manufacture finished leather from semi-finished leather: 570 of the 1,083 registered tanneries in the country are in Tamil Nadu, with about 250 in North Arcot-Ambedkar district.

TANNING PROCESSES

1. Soaking - Seven to Ten days in a solution of 5 to 8 percent lime and 2.5 percent sodium Sulphide, to loosen hair and skins.
2. Dehairing - Washing and flushing with water to remove sodium chloride.
3. Deliming - Ammonium sulphate, ammonium chloride, sodium chloride and sodium bisulphate are used to bring the pH to neutral.
4. Oiling, drying, stretching and packing.
5. Dyeing and finishing.

BARRIERS TO WATER QUALITY CONTROL

- Country needs foreign exchange
- Community Effluent Treatment Plants (CETPs) are inadequate
- Pollution Prevention and Control Acts lack teeth
- Leather Tanners have political clout
- Polluter Pays Principle does not work: tanneries cheat CETP operators
- Constant power failures and operational cost escalations obstruct continuous CETP operations
- The general public is indifferent, even unconcerned
- Bureaucracy is corrupt and aids polluters
- Community participation in pollution prevention absent
- Educated take a 'wool in the eye' attitude

ORGANISATIONS INVOLVED IN THE PREVENTION OF POLLUTION

- Community Action Development (CAD), a voluntary organisation
- Tamil Nadu Pollution Control Board
- Tamil Nadu Leather Development Corporation
- Tamil Nadu Enviro-Control Systems
- Central Leather Research Institute, Madras

LEGAL PROVISIONS

- District Municipal Act (Prevention and Control of Pollution), 1920
- Water Act (Prevention and Control of Pollution), 1974
- Water Cess Act (Prevention and Control of Pollution), 1977
- Water Amendment Act (Prevention and Control of Pollution), 1978

CONCLUSIONS

Unless industrialists change their attitude, people come together in a collective effort and, most important, politicians stop interfering, there does not appear to be any way out of the problem of water quality control through the normal, official means of redressal. Technical problems are not difficult to solve.

It appears also that government machinery is behind industrial defaulters. This needs correction. Community participation alone could solve the problem in the long run. So we must activate people for their own welfare.

WATER AND CHEMICALS

Tanning involves operations such as soaking, liming, deliming, bating and pickling. All these consume large quantities of water and chemicals such as common salt, lime, sodium sulphide, sulphuric acid, ammonium chloride, chromium and vegetable tanning materials.

Effluents have high concentrations of sulphides, which are volatile solids causing unpleasant odour. High amounts of chlorides and dissolved solids present in tannery effluents affect groundwater sources up to 5 km away.

DISPOSAL OF EFFLUENTS

1. Effluent lagoons for evaporation of water - overflowing lagoons are a common sight.
2. Open drainage ending up in canals and rivers
3. Community Effluent Treatment Plants (CETPs)

CONSEQUENCES

Paddy yield declined by 8 percent in areas at 4 km from the source of water pollution, 27 percent at close quarters.

Nearly 20 percent reduction in ragi yield over 1981-1991.

In sugarcane, there is a reduction of 1 to 3 cm in nodal length due to water pollution.

Poor germination, poor root formation, poor pod development and wilting of leaves have been observed in crops.

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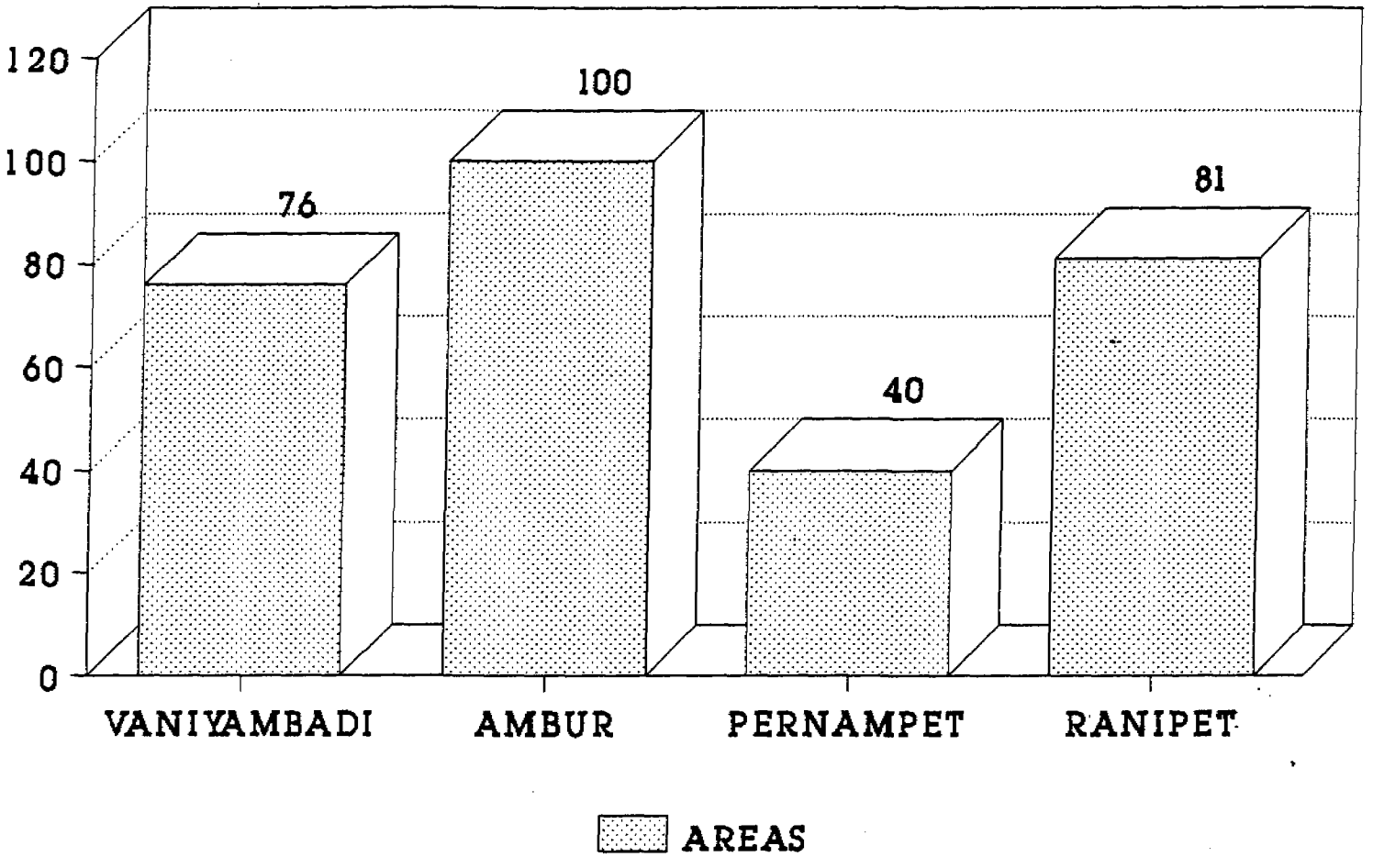
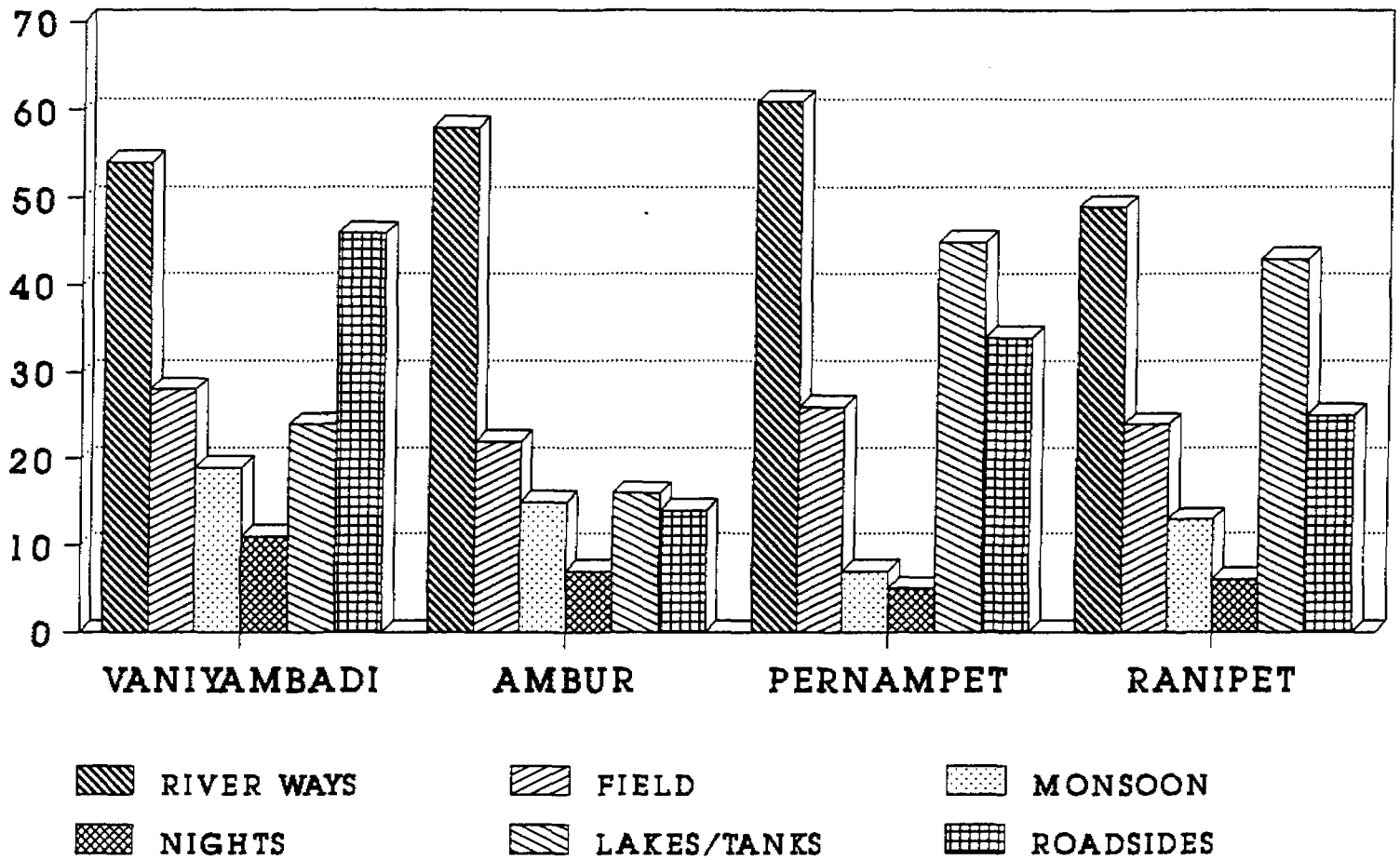
TANNERIES IN NORTH ARCOT-AMBEDKAR DIST.
TAMIL NADU, INDIA 1992

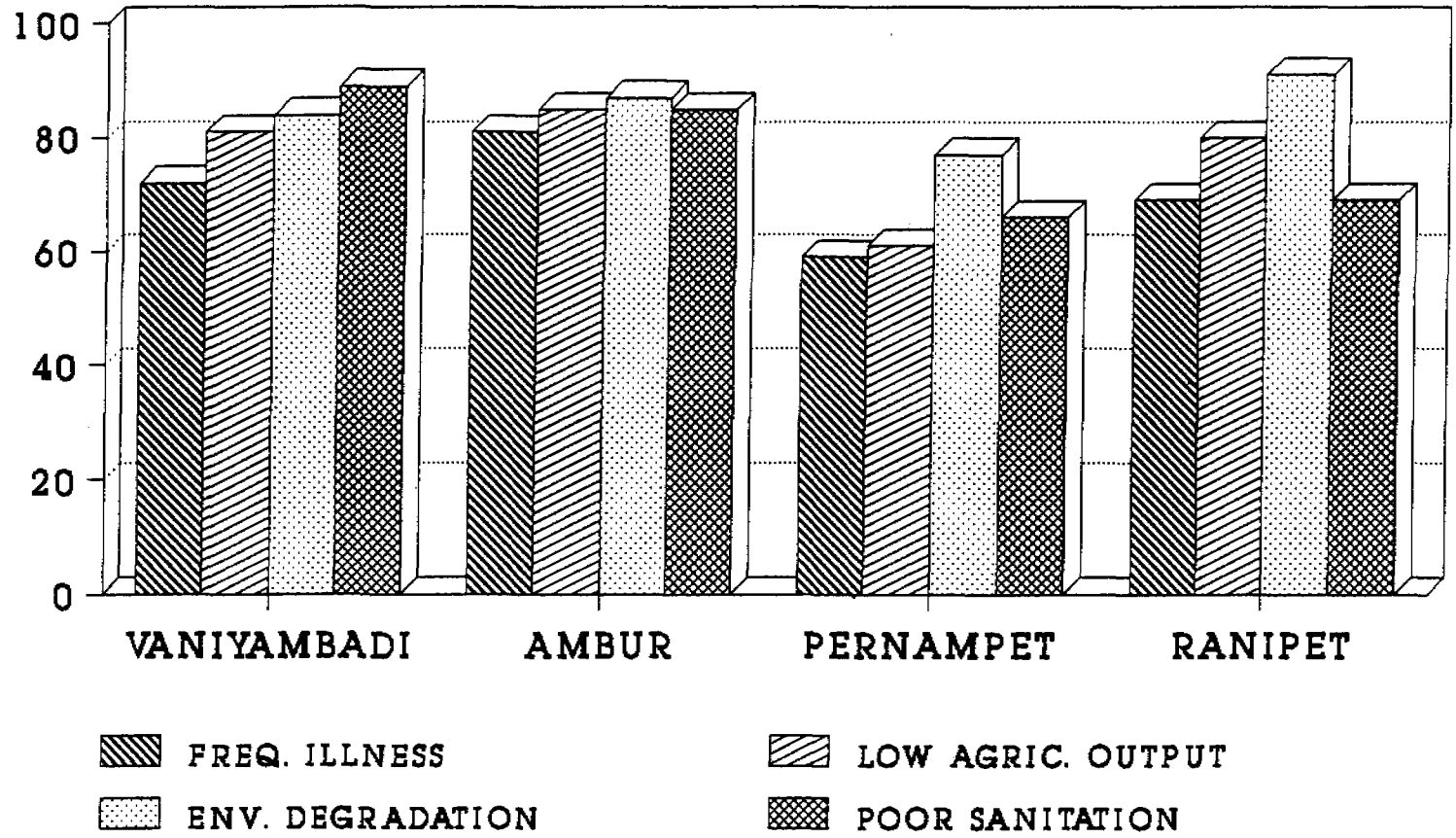


EFFLUENT DISPOSAL IN N.A-AMBEDKAR DIST. TAMIL NADU, INDIA 1992



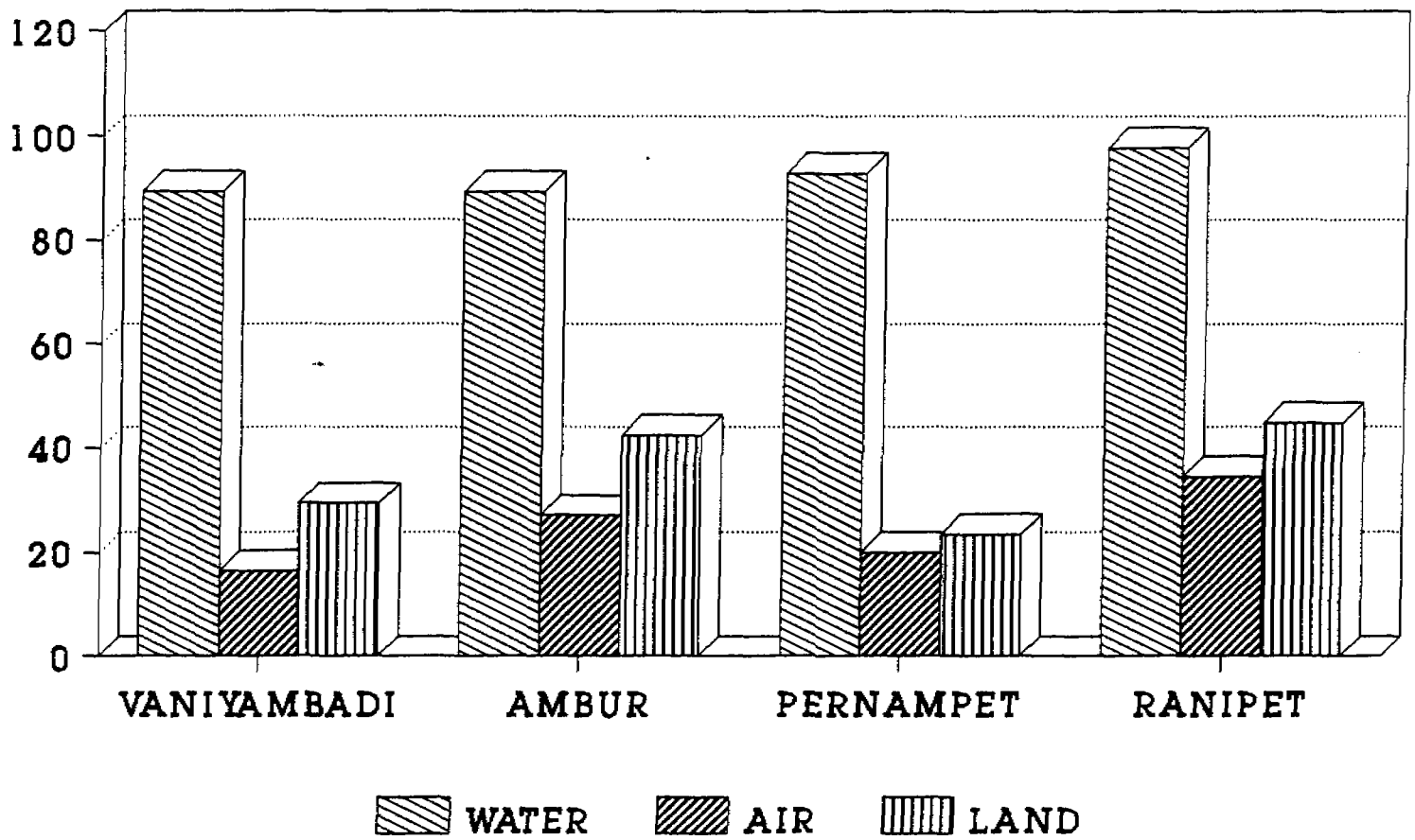
FARMER REVEALED DISPOSAL SITES/TIMES

CONSEQUENCES OF WATER POLLUTION IN N.A-AMBEDKAR DISTRICT, TAMIL NADU INDIA 1992



FARMER REVEALED CONSEQUENCES

SOURCES OF HEALTH HAZARDS
IN N.A-AMBEDKAR DISTRICT, TAMIL NADU
INDIA 1992



FARMER REVEALED SOURCES

WATER POLLUTION IN N.A-AMBEDKAR DISTRICT TAMIL NADU, INDIA 1992