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Industrial solid waste disposal in Dubai, UAE: A study in economic geography

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This paper examines the Dubai government's role in handling industrial solid waste generated from increased industrial activities. It surveys the geographical distribution of solid waste treatment facilities in Dubai, the types of wastes, their collection, transportation, and treatment. Overall, this study evaluates government efforts to manage industrial solid waste and to provide treatment facilities that will encourage international companies to do business in the area.

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Introduction

As a byproduct of economic activities, industrial solid waste has been a problem since the Industrial Revolution. The current global situation divides into developing and developed countries, and their different abilities, policies and resources, to deal with this problem. It is clear that developed countries have established legislation to deal with such problems and are more or less able to enforce relevant rules and regulation. But for developing countries, such policies, legislation and enforcement remain a concern. Yet, the level and distribution of the problem differs greatly, as some countries have less industry while others have insufficient data on industrial pollution to even create an action-plan (Hettige et al., 1995; Horen, 2004).

Post-Cold War developments in the global economy, including regulations and arrangements organized through the World Trade Organization (WTO), the General Agreement on Trade and Tariff (GAAT), and the ideology of a New World Order (NWO), have led to many large multi-national corporations moving some business operations to Lesser Developed Countries (LDCs). This global shift of outsourcing production to LDCs takes advantage

of their natural resources, cheap labor force, unregulated markets, weak or non-existent environmental laws, and geographical location. While most of these companies are equipped with the latest technologies to meet environmental, worker safety and production standards in their home countries, this is not always the case in their offshore settings. Although technological efficiencies are desirable anywhere – and enable industry to use less raw materials, labor and energy to produce more commodities – even low tax, unregulated environments often lead to lower cost but less efficient technologies. This situation has pressured countries at intermediate levels of industrial development to review their legislation and renew their infrastructure to cope with the competition. But desire among LDCs for foreign investment of both financial and technical capital weighs heavily in favor of compromise between regulation and enforcement and laissez faire approaches to industrialization and its social and environmental consequences.

Quantitative and qualitative problems of industrialization in LDCs are widely recognized among international organizations, and a wide range of treaties, agreements and conventions have resulted (Halla and Majani, 1999). The present study is limited to international activities pertaining to industrial solid waste, for example, the 1989 Basel

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Convention on Controls of Trans-boundary Movements of Hazardous Wastes (HWs) and their Disposal. The Basel Convention requires developing countries to take some steps toward creating strategies to manage their industrial solid wastes (Kante, 1999). These steps include: (a) administration and legal issues, and (b) development of the infrastructure and support services, such as establishing recycling and treatment facilities.¹

A number of recent studies (Molley et al., 1995; Palmer et al., 1997; Post et al., 2003) have shown that from an economic perspective, implementation of some solid waste reduction policies – such as deposit and refund – could reduce the volume of non-recycling materials. Most of these studies demonstrate the cost benefits of generating solid waste, and they suggest several economic methods to reduce the cost of generating these wastes through source reduction or recycling. Also, most of these studies try to find ways to encourage the waste generators to gain the benefit of using recycled materials. In this regard, China is now the world's largest consumer of industrial waste, and all types of plastics in particular, and poses an economic challenge to both cost-effective recycling in countries of origin, and global availability of recycled plastics as a resource and raw materials for further production.²

Concerning export versus in-country management of industrial solid waste, this paper provides a somewhat different perspective. Dubai has become an economic powerhouse for non-petroleum related United Arab Emirates (UAE) economic activities, from services, tourism and trade, to industrial production. Having very recently joined the club of Newly Industrializing Countries (NIC), the UAE offers an excellent subject for studying many facets of economic and development geography. This study contributes to the information base for understanding local development in relation to investment and environment by assessing the geographical distribution of the industrial solid waste landfills in Dubai. It assumes that only a limited amount of UAE industrial waste will move into the international stream of waste transport, and most of what is generated locally will have to be disposed of locally. It therefore reviews new landfills and their capability to handle the hazardous and solid waste generated from the industrial activities in Dubai. This study also examines the readiness and preparation of Dubai's industrial zones, as well as its local authorities to administer disposal of solid and hazardous waste. In essence, this is an investigation of an issue that influences the economic geography, environment and development of the UAE.

This study begins by asking the crucial question – is Dubai is ready to cope with the new increase in hazardous waste, as a result of the increased number of new companies moving to the area? Second, what facilities are available to handle this type of industrial waste? Third, how and where will this waste be treated and disposed? The focus of this study is to answer these questions with an emphasis on spatial location as it relates to industry, environment, transport, storage and disposal.

Solid waste disposal in Dubai as a growing city

Solid waste disposal represents a major hazard and cost worldwide. But the problems are especially acute for rapidly urbanizing regions, and particularly those undergoing rapid industrialization. Waste generation and its disposal, as well as its reduction through more efficient technologies constitute problems at both global and local levels. The most significant global difference divides old industrial societies from newer. Generally, early-industrialized countries have evolved advanced technologies and face strong public concern about environmental quality, with policies and regulation to address those concerns. Europe, Japan and North America address these issues on all levels, even though best practices are not equally applied everywhere, and some business interests are continually lobbying to dilute regulation, reduce inspection and limit enforcement and penalties. But in many LDCs and NICs, such issues may not be properly addressed or have low priority in relation to other more pressing problems of poverty, population, hunger, water, sanitation, public health, or ethnic and political strife. While all these social, political and economic variables have global presence, their geographic dimensions also involve spatial distribution of underlying cultural values combined with the level of knowledge and experience populations and governments have with managing industrial processes and their environments.

The UAE represents an interesting case as a recent post-colonial country (1971) with a formerly marginal economy, now rapidly propelled into development by oil revenues. But as oil resources are not evenly distributed among the individual Emirates, and even though a national revenue-sharing scheme is in place, each has to find its own path to further development. In the case of Dubai, long a free port and trade entrepôt, various manufacturing and processing industries were a natural addition to their economic portfolio. But Dubai also grew into a post-modern city, heavily invested in service, retail and tourism industries, with a booming economy and exploding population base. As a result, the Dubai urban region now faced a multifaceted problem of waste disposal, especially as industries add hazardous materials to the waste stream. Fortunately, Dubai

¹See <http://www.arbld.unimelb.edu.au/envjust/papers/allpapers/brikell/home.htm>.

²See www.guardian.co.uk/waste/story/0,12188,1308278,00.htm.

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