WASTE TYRE MANAGEMENT IN MALAYSIA

By

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Thesis Submitted to the School of Graduate Studies, Unversiti Putra Malaysia
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Faculty : Environmental Studies

The research aim and objectives of this study was fourfold as follows: Firstly, to evaluate the number of motorcar waste tyres generated annually in Malaysia. Secondly, to study the current disposal methods and their impacts on the environment. Thirdly to determine the various issues /problems pertaining to waste tyre management, and finally to evaluate the status of current policies and regulations in relation to waste tyre management

The methodology for the study consisted of desktop research, field observations, questionnaire surveys and discussions with relevant authorities and associations in the public and private sectors. The field `work was carried out from September 2002 to December 2003 in the Klang Valley (Kuala Lumpur and Selangor Darul Eshan). Three different sets of interview forms was pre-tested in September 2002, (for tyre

dealers, related associations, tyre manufacturers and government agencies), improved and used to gather primary data beginning December 2002. A total of 109 tyre dealers, 13 government agencies, 3 tyre manufacturers, 3 landfill operators, 3 waste tyre users (recycling and reusers), 2 tyre related associations, 2 principal rubbish collectors, 2 related organizations and 50 tyre consumers were interviewed in the survey. All data were then analyzed quantitatively and qualitatively.

The results of the study indicated the following:

i. There is a steady increase in the motorcar waste tyre generated annually in the country. The number of motorcar waste tyres generated annually in the country was estimated to be 8.2 million or approximately 57,391 tonnes. About 60% of the waste tyres are disposed via unknown routes.

ii. Waste tyres in Malaysia are neither categorized as solid waste or hazardous waste. It is generally considered as business or trade waste; hence currently, there is no specific law or regulation, which govern waste tyre management.

iii. Tyre dealers face considerable pressure when the waste tyres accumulates in their premises, often resulting in improper storage of the wastes, which in turn invites penalties from the local authority. In light of the above situation, they usually employ private rubbish collectors to dispose their waste tyres. They do not have any guidance or assistance from their principals or authorities for proper management and disposal of waste tyres.

iv. Although private rubbish collectors charge a fee to collect waste tyres, it is unknown to what extend these tyres are disposed off in an environmental friendly and legal way. There is no verifiable data on this issue. However, the private waste collectors complained that the gate fees at the landfill are not attractive for their business.

v. Other industry users such as tyre shredders, recyclers and other physical users also make use of waste tyres. Currently there is no institutional approach for managing waste tyre as a resource in Malaysia. Existing companies operate purely on business ethics, with profit being the bottom line. Without a policy and management structure in place, it is costly and difficult for the recycling companies to get a steady supply of waste tyres. Thus, these companies are now using alternative materials such as used and rejected gloves and tyre buffing, hence reducing the demand for waste tyres. This is a complex issue and highlights the need to examine the “tyre dumping” practices in Malaysia.

vi. Although the landfill is the easiest and a legal avenue to dispose waste tyres, the gate fee for waste tyres disposal is considered expensive by many private rubbish collectors. Private rubbish collectors collect waste tyres from the dealer’s premises together with other rubbish: thus they charge a minimum extra fee. On the other hand, a high gate fee at the landfill deters the private rubbish collectors from dumping waste tyres at the landfill. Left with little choice they have to find alternative places within their budget to dispose the tyres.

vii. Other industry users collect waste tyres for retreading, rubber reclaim and shredding. However, the demand for products made of recycled waste tyre materials is very limited and there is no regulatory support as in some developed countries Although there are some beneficial applications of waste tyres, the controlling or hindering factors are a steady market demand for the end products and a continuous supply of waste tyres.

viii. High waste tyre volume consuming options such as ‘artificial reef construction ’ and ‘rubberized asphalt road surfacing’ seems not to be favoured options today. The Department of Fisheries has stopped using waste tyres to construct artificial reefs, whereas the latter option never got started commercially in the country. Large-scale operations that can remove this waste quickly and cheaply is needed. With these major options being discarded or less favoured the volume of waste tyres to be disposed would increase rapidly.

ix. The adverse environmental impacts due to improper management of waste tyres, was deduced from field observations and “ad-hoc” data from nterviews with municipal health inspectors and landfill operators. They include mosquito breeding , air pollution associated with open burning of tyres (particulates, odour, visual impacts, and other harmful contaminants such as polycyclic aromatic hydrocarbon, dioxin, furans and oxides of nitrogen), aesthetic pollution caused by waste tyre stockpiles and illegal waste tyre dumps (habitat for vermin such as rats and snakes), and other impacts such as alterations in hydrological regimes when gullies and watercourses become dumping sites. These environmentally related problems occur because of the lack of a formal, well-coordinated management system for waste tyres.

x. There is a serious lack of producer responsibility for waste tyre management in Malaysia. Tyre producers or manufacturers are not concerned about the final disposal of their product at the end of its life. They leave it solely to their dealers to tackle this issue. The lack of producer responsibility in managing the waste makes the management of waste tyres a more difficult task.

xi. Generally there is a lack of awareness and concern among the industry and the public on the environmental and health impacts due to improper management of waste tyres.

xii. Lack of consistent and available information/data about waste tyre generation and management hinders the understanding of current management scenarios, which is critical in order to formulate pragmatic solutions. There is a lot of uncertainty how an issue in one sector of the industry can influence a sustainable change in another sector.

xiii. It is concluded from the study that the important factors for establishing an effective waste tyre management system includes (a) the formulation of a national policy for waste tyre management, (b) the creation of incentives for the use of waste tyre recovered materials and to mandate the use of these materials in specified activities, (c) a single qualified concessionaire, (d) assistance to exploit value from waste tyres,(e) imposition of a levy, (f) extended producer responsibility, (g) a centralized administration and enforcement structure, and (h) public awareness programme.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk Ijazah Doktor Falsafah

PENGURUSAN TAYAR SISA DI MALAYSIA

Oleh

SANDRA KUMAR A/L THIRUVANGODAN

Mac 2006

Pengerusi : Profesor Madya Mohammad Ismail Bin Yaziz, PhD

Fakulti : Pengajian Alam Sekitar

Tujuan penyelidikan dan objektif kajian ini mengandungi empat perkara seperti berikut: Pertama, untuk mengira jumlah tayar terpakai kereta yang dihasilkan setiap tahun di Malaysia. Kedua, untuk mengkaji cara pelupusan tayar terpakai dan kesannya terhadap alam sekitar. Ketiga, untuk mengenalpasti masalah/isu yang dihadapi berkaitan pengurusan tayar terpakai, dan akhirnya untuk mengkaji status dasar dan undang-undang yang sedia ada terhadap pengurusan tayar sisa

Kaedah yang digunakan dalam kajian ini meliputi pemerhatian lapangan, tinjauan soal-selidik, perbincangan dengan pegawai kerajaan, agensi swasta dan persatuan-persatuan yang berkaitan. Kerja lapangan dimulakan dari bulan September 2002 hingga Disember 2003 di Lembah Kelang (Kuala Lumpur dan Selangor). Tiga set borang temuduga yang berlainan telah di pra uji pada bulan September 2002 (untuk

peniaga tayar, persatuan yang berkaitan, pengilang tayar dan agensi kerajaan) di tambahbaik dan digunakan untuk mengutip data mulai bulan Disember 2002. Sejumlah 109 peniaga tayar, 13 agensi kerajaan, 3 pengilang tayar, 3 penguna tayar sisa (kitar semula dan guna semula), 3 operator tapak pelupusan sampah, 2 persatuan yang berkaitan dengan tayar, 2 syarikat kutipan sisa sampah, 2 organisasi berkaitan, dan 50 pengguna tayar telah di temuduga dalam kajian soal selidik ini. Semua data kemudiannya di analisakan secara kualitatif dan kuantitatif.

Kesimpulan yang didapati daripada kajian ini adalah:

i. Penghasilan tayar sisa meningkat pada setiap tahun di negara ini. Jumlah tayar sisa kereta yang dihasilkan di negara ini setiap tahun adalah dianggar sebanyak 8.2 juta atau lebih kurang 57,391 ton. Adalah di jangka sebanyak 60% daripada jumlah tayar sisa ini dilupuskan melalui cara yang tidak dapat di kenalpasti.

ii. Di Malaysia, tayar sisa tidak dikategorikan sebagai sisa pepejal atau sisa merbahaya. Ia dianggap sebagai sisa bisnes atau perdagangan; pada masakini tidak ada peraturan atau perundangan yang khusus berkaitan dengan pengurusan tayar sisa.

iii. Peniaga tayar menghadapi tekanan apabila bilangan tayar sisa mula terkumpul di premis mereka. Akibat keadaan seumpama ini adalah tayar sisa disimpan di merata tempat dan perbuatan ini menyalahi Akta Kerajaan Tempatan dan mereka disaman oleh pihak Majlis Tempatan. Bagi mengatasi isu ini, mereka menggunakan perkhidmatan pengutip sampah swasta atau melantik agen untuk mengutip tayar sisanya. Peniaga tayar tidak menerima apa-apa tunjuk ajar atau bantuan daripada pembekal atau pihak Majlis mengenai cara yang betul untuk menguruskan tayar sisa.

iv. Walaupun pengutip sampah swasta mengenakan bayaran untuk mengutip tayar sisa, tetapi cara mereka melupuskan sisa ini samada mengikut cara yang mesra alam atau yang mematuhi undang-undang tidak diketahui. Tiada data yang kukuh untuk menentukan hal ini. Walau bagaimanapun, pengutip tayar sisa sering mengadu bahawa caj yang dikenakan di tapak lupusan sampah untuk membuang tayar sisa adalah tidak mengalakan untuk bisnes mereka.

v. Industri lain seperti syarikat carekkan tayar (shredding), kitar semula, dan penguna fisikal juga mengunakan tayar sisa , tetapi tiada rekod disimpan mengenai akitiviti ini. Pada masakini tidak wujud suatu pendekatan institusi bagi menguruskan tayar sisa sebagai sumber di Malaysia. Syarikat yang beroperasi semasa menjalankan aktiviti mereka sebagai suatu entiti bisnes dengan tujuan untuk mendapatkan keuntungan. Tanpa sesuatu polisi dan struktur pengurusan, syarikat ini akan menghadapi kesulitan untuk mendapatakan bekalan tayar sisa secara berterusan. Maka syarikat ini kini menggunakan bahan alternatif seperti sisa sarung tangan getah atau terpakai dan ‘tyre buffing’ . Perbuatan ini mengurangkan permintaan untuk tayar sisa. Ini adalah satu isu yang kompleks dan menitikberatkan kajian terhadap amalan “ pembuangan tayar “ (tyre dumping) di Malaysia.

vi. Walaupun tapak pelupusan sampah merupakan tempat yang paling senang dan diterima dari segi undang-undang untuk membuang tayar sisa, tetapi caj yang dikenakan dianggap tinggi oleh kebanyakan pengutip tayar sisa. Pengutip sampah swasta mengutip tayar daripada premis penjual tayar bersama-sama dengan sampah lain maka mereka mengenakan bayaran lebihan yang rendah sahaja. Caj yang tinggi di tapak pelupusan sampah untuk membuang tayar sisa mengurangkan pengutip sampah swasta untuk menggunakan tapak ini untuk membuang tayar sisa. Dengan pemilihan yang terhad, pengutip sampah terpaksa menggunakan tapak pembuangan alternatif bersamaan dengan kemampuan mereka untuk membuang tayar sisa.

vii. Industri lain juga mengutip tayar sisa untuk aktiviti seperti celup tayar, kitar semula dan mencarekan. Walau bagaimanapun, permintaan untuk produk yang dibuat daripada bahan kitar semula adalah terhad dan tidak wujud peraturan atau perundagan tertentu untuk menggalakannya seperti di negara maju. Walaupun terdapat aplikasi yang bermanfaat bagi tayar sisa, factor penghalang termasuk tiada permintaan pasaran yang kekal bagi produk yang dibuat daripada bahan kitar semula dan ketidakstabilan bekalan tayar sisa.

viii. Aktiviti yang mengunakan kuantiti tayar sisa dengan banyak seperti tukun tiruan dan ‘rubberized asphalt road surfacing’ kini tidak lagi menjadi opsyen yang dipilih. Kegunaan tayar sisa oleh Jabatan Perikanan untuk membina tukun tiruan telah diberhentikan, manakala kegunaan tayar untuk ‘rubberized asphalt road surfacing’ tidak pernah dimulakan secara komersial. Aktiviti besar-besaran ini diperlukan untuk mengunakan tayar sisa secara cepat dan murah. Memandangkan aktiviti-aktiviti yang tersebut diatas diberhentikan atau tidak digalakan, kuantiti tayar sisa yang terhasil dan perlu diurus akan betambah dengan cepat.

ix. Kesan buruk alam sekitar akibat pengurusan tayar sisa yang kurang memuaskan telah di simpulkan melalui pemerhatian di lapangan dan maklumat “ad-hoc” hasil temubual dengan pegawai kesihatan Majlis dan operator tapak pelupusan sampah. Ini termasuk pengwujudan tapak pembiakan nyamuk, pencemaran udara berkaitan dengan pembakaran terbuka, pandaganan yang kurang memuaskan akibat simpanan stok tayar sisa dan pembuangan secara haram (tapak pembiakan tikus dan ular), dan impak yang lain seperti gangguan aliran air apabila tayar di buang di dalam sungai atau gaung. Masalah-masalah berkaitan alam sekitar ini ujud kerana tidak ada satu system pengurusan tayar sisa yang formal dan berkodinasi.

x. Adalah nyata terdapat kekurangan tanggungjawab oleh pengilang tayar mengenai pengurusan tayar sisa di Malaysia. Pengilang tayar tidak mengambiltahu tentang cara manakah tayar yang dikeluarkan oleh mereka di uruskan selepas usia kegunaannya luput dan menjadi tayar sisa. Mereka melepaskan tanggungjawab ini kepada peniaga tayar. Kekurangan tanggungjawab oleh pengilang tayar menjadikan pengurusan tayar sisa lebih rumit.

xi. Secara amnya terdapat kekurangan kesedaran dan sikap ketidakpedulian dikalangan industri dan umum mengenai kesan alam sekitar dan kesihatan akibat pengurusan tayar sisa yang kurang baik.

xii. Kekurangan maklumat yang konsistan dan benar tentang pengurusan tayar sisa menjadi satu punca penghalang untuk memahami isu-isu semasa dan ini merupakan satu faktor kritikal dalam penggubalan dasar baru yang effektif.

Selanjutnya, terdapat juga kekurangan pengetahuan mengenai bagaimana satu perubahan dalam sesuatu sektor industri akan mempengaruhi sektor lain.

xiii. Adalah dirumuskan daripada kajian ini bahawa faktor-faktor penting untuk mengwujudkan satu sistem pengurusan tayar sisa yang efektif termasuk (a) mengadakan satu polisi kebangsaan untuk menguruskan tayar sisa,(b) menyediakan galakan untuk mengguna bahan kitar semula yang dikeluarkan daripada tayar sisa dan untuk mandatkan kegunaan bahan ini di dalam aktiviti tertentu, (c) satu operator konsesi yang berkemampuan, (d) menyediakan bantuan supaya nilai dari tayar sisa digunakan sepenuhnya, (e) mengenakan levi, (f) melanjutkan tanggungjawab pengilang tayar, (g) struktur pentadbiran dan penguatkuasaan pusat, dan (h) mengadakan program kesedaran untuk orang awam.

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I am grateful to my mother who, inspite being ill, gave me the morale support and encouragement throughout my studies.

I certify that an Examination Committee has met on 7th March 2006 to conduct the final examination of Sandra Kumar s/o Thiruvangodan on his Doctor of Philosophy thesis entitled "Waste Tyre Management in Malaysia", in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the candidate be awarded the relevant degree. Members of the Examination Committee are as follows:

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This thesis submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy . The members of the Supervisory Committee are as follows:

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DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations, which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UPM or other institutions.

SANDRA KUMAR A/L THIRUVANGODAN

Date:

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