III. Current Status in the APEC Region

The term "Recycling Based Economy" (RBE) means different things to different people and is also interpreted differently within alternative APEC economies.

Each economy has identified its own priorities based on its' own circumstances. For example, where water is short, water efficiency may take a higher priority or, if energy is a critical concern, energy efficiency takes a higher priority. Each economy's political structure and policies also influence the type of recycling-based programmes being undertaken, as does the level of infrastructure existing within the economy.

Definitions for words such as "waste" and "recycling rate" and how statistics are presented vary between the economies, so making simple comparisons can be misleading.

1. Economy Specific Status

The following information is summarized from the presentations of the experts. The full texts of presentations are available on the APEC website[4].

Canada
Canada has various regulations, bylaws and policies set at the provincial level. These typically include: waste reduction targets, landfill and/or collection bans, mandatory source separation and extended producer responsibility. Canada has over 54 extended producer responsibility programmes, mostly at the provincial level, and has small voluntary programmes for some computer components. In 2002 the recycling rate was 21% measured as a percentage diversion from disposal including composting.

Chile
An Integral Solid Waste Management policy was approved in 2005 with an objective of reducing the health and environmental hazards associated with waste. It sets the highest priority on the avoidance or prevention of waste in the first place, followed by minimising the waste that is generated. Current recycling rates are approximately 9% for the metropolitan region. In 2004 24% of the total production of steel was recycled.

China
China introduced a law focusing on energy savings in 1998, and then, in 2003, introduced a law to promote cleaner production. The Government has introduced preferential taxation policies to support such initiatives within industry and has a very strong focus on efficient energy utilisation.

Indonesia
Government policy previously focused on the "end-of-the-pipe" but in recent years, there has been a shift towards cleaner production. A national policy on cleaner production was

[4] http://www.apec.org/apec/publications/all_publications/human_resources_development.html

introduced in 2003 and, in 2004, a Cleaner Production Centre was established.

Japan

In 1999, the Japan Business Machine Industry Association established a joint reverse logistic system for copy machines. In 2001 Japan introduced a law promoting the creation of a recycling orientated society. There are also various recycling laws covering specific products/materials such as containers/packaging, home appliances, construction material and end of life vehicles. Current recycling requirements for home appliances range from 50% for washing machines and refrigerators, 55% for TVs and 60% for air conditioners. A collection scheme for personal computers was introduced in 2003.

Korea

Korea currently recycles 43% of the municipal waste generated. Korea has introduced a Comprehensive Waste Management Plan, which sets the framework for waste minimisation, reuse and recycling. It includes a wide range of initiatives including polluter-pays levies and collection fees, packaging regulations, a beverage container deposit system, extended producer responsibility and support mechanisms for recycling industries.

Malaysia

Malaysia has no specific law on the "3R's" but it introduced a national recycling programme in 2000. A target of reducing waste generation by 22% by the year 2020 has been set. Current recycling is estimated to be 3 – 5%.

Mexico

Mexico introduced hazardous waste regulations in 1988 and waste legislation in 2003. It also has various local and state regulations. Current recycling rates range from 12% for plastic, 50% for glass, 82% for paper/card and 95% for aluminium cans (measured as a percentage of production). Mexico has small voluntary programmes for some components of computers. In 2004, the Soft Drink Association set up a voluntary program to collect PET bottles.

New Zealand

There is no specific waste legislation in New Zealand, with current legislation being 'end-of-pipe' focused. A Government strategy on waste was adopted in 2002 which included targets such as diverting 60% of garden waste from landfill by 2005 and 95% by 2010. However these targets are voluntary. Current recycling rates include 19% for plastic packaging, 36% for steel packaging, 48% for glass packaging, 62% for aluminium cans and 69% for paper packaging (as a percentage of consumption).

Peru

A general law on solid waste was introduced in 2000 and specific rules covering recycling, pollution prevention and waste minimisation were introduced in 2004. The current recycling rate is estimated at approximately 5%, and consists mainly of domestic waste.

Philippines

An Ecological Solid Waste Management Act was introduced in 2000 and along with the Toxic Substances & Hazardous and Nuclear Control Act this provides the legislative framework for managing wastes in the Philippines. The Government has introduced a green procurement programme and promotes a materials/waste exchange. The current recycling rate for Metro Manila is 12% measured as a percentage of waste generated.

Chinese Taipei

The trend in government policy has changed over recent years in Chinese Taipei from focusing on the prevention of public hazard (of waste) towards the sustainable utilisation of resources and waste. Waste types are classified through legislation. In 2004, 20.4 % of municipal waste was recycled.

Thailand

Thailand is in the process of developing an appropriate legislative framework but has in place policies which promote cleaner technology, eco-efficiency and material/waste exchange, and to control packaging. A national recycling target has been established for 50% by 2008, with current recycling rates ranging from 23% for plastic, 32% for paper and 51% for glass. A draft strategic plan and draft directives have been prepared for the control of e-waste.

United States

USA has an extensive legislative framework for controlling waste, with variations from state to state. In 2001, 30% of municipal solid waste generated was recycled. Individual product recycling rates range from 21% for glass containers, 36% for plastic drink containers, 45% for paper, and 58% for steel cans. Many states/municipalities are in the process of addressing electronic waste.

2. Trans-boundary Status

The international trade in recyclables is increasing, in particular toward some of the APEC economies. The increased activities in the recycling sector have developed in response to increased demands for resources which is a result of growing economies, and the relatively low labor rates. Basically, it must be expected that some economies cannot recycle all of their own wastes, and hence there must be attention given to trans-boundary shipment of these materials for recycling.

International trade fills a part of demand of resources in growing APEC regions. For example, in 2004 China imported 4 million tons of waste plastics, 12 million tons of used paper and 12 million ton of steel scraps. This represents a growth rate in the imported amount since 2003 of 35%, 31% and 10% respectively.

Most APEC economies have ratified the Basel Convention which control trans-boundary movement of hazardous waste. As an alternative, or in addition, some economies have their own regulations such as pre-shipment inspection, registration of exporting companies, and inspection of foreign recycling facilities.

3. Common Approaches/Trends for Implementing RBE

APEC economies are adopting a combination of approaches to implement RBE, including:

1) Education and awareness programs

2) Energy efficiency and conservation

3) Cleaner production - a strategy for businesses to make the most efficient use of resources including raw materials, water, energy, time, and money whilst preventing pollution and minimising their impact on the environment.

4) Eco-design /design for the environment - to design a product taking into account its whole lifecycle from manufacture, use to "end-of-use" to decrease the adverse effects on the environment, increase resource efficiency, and allow for re-use and recycling.

5) Reduce, reuse and recycling initiatives

6) Extended producer responsibility (EPR) for difficult wastes (e.g., TVs, refrigerators, tires) also known as Product Stewardship, requires manufacturers to positively manage environmental impacts throughout the lifecycle of their products.

7) Container deposit or refund legislation, litter and waste levies, polluter pays or user pays for some types of wastes.

Within APEC economies there has been a general trend from "end-of-pipe" controls on waste such as treatment and disposal standards, towards reducing or avoiding waste generation in the first place, and then reusing and recycling the waste.

While there are many examples of often small-scale voluntary approaches to reducing and managing waste within APEC economies, there is a clear move towards taking a regulatory approach through the introduction of appropriate legislation or regulations. There is also recognition that no single approach will address all of the waste issues, and that a combination of approaches is required.

Initially, many economies focused on addressing municipal or domestic waste through the introduction of recycling schemes; however, there is now a much wider focus including all waste streams.

There is a move towards introducing EPR schemes for selected difficult wastes.

4. Case Studies

1) A targeted waste approach - Electronic Waste

The amount of electronic waste being generated in APEC economies is growing rapidly. Many APEC economies are only just starting to address this type of waste.

Japan has established a shared responsibility model for refrigerators, washing machines, televisions, and air conditioners, where the manufacturers set up the collection points and recycling plants, retailers undertake the collection and transport, and the consumers pay for the recycling collection and transport costs.

Korea has introduced a mandatory "take back" requirement for refrigerators, washing machines, televisions, air conditioners and personal computers where the producers are required to fund recycling costs and satisfy minimum recycling rate.

Chinese Taipei has built a recycling system for electric and electronic waste since 1997. The recycling rate was 36.4% in 2004. Manufacturers and importers are required to pay a fee which is used to subsidize the final collection and recycling operation.

Thailand has prepared draft directives including definitions and standards for recycling of electronic waste and has prepared a draft strategic plan for managing these wastes. This includes provisions for responsibilities of producer/importer/consumers, the polluter pays principle, the establishment of a recycling fund, consumer education, and R & D into eco-product development.

There are many examples of voluntary initiatives being developed within APEC economies for the purposes of collection and recycling of electronic waste. However, there is no consistency of approach or standards.

2) A targeted waste approach – End-of-Life Vehicles

Dealing with end-of-life vehicles (ELV) is a common issue faced by APEC economies. In many economies, there are existing scrap metal recycling initiatives, but the main issue is separating and dealing with the non-metal and hazardous components in the vehicles.

Japan has recently introduced an ELV law which recognises the existing scrap metal recycling industry and compliments this by targeting the "most difficult to treat" components. Under the ELV law, vehicle manufacturers and importers are required to collect and properly treat fluorocarbon gas from the vehicles' air conditioning unit, airbags and automobile shredder residue.

A recycling fee is charged at the time of purchasing the vehicle and is collected by the Japan Automobile Recycling Promotion Center which manages the overall coordination of the recycling system. The Center uses this fund to refund the cost of treating the three components collected from ELV. A compulsory reporting system linked to the chassis

number and registration number has been established to collect information and monitor compliance. The current recycling rate is 80% and the vehicle manufacturers are aiming to increase this rate to 95% by the year 2015.

Korea has set standards for the dismantling process and facilities under its Automobile Management Act. It has also required recyclability to be considered in the design of new vehicles and set a target of over 85% reusability and recyclability by July 2007.

Chinese Taipei has built a recycling system for ELV and constructed three waste automobile processing plants since 1999. Its objectives are to integrate waste auto processing to recycle used cars, to consolidate the management of contaminants, to generate economic values from recycling, and to reduce pollution from arc furnaces in steel mills. The recycling rate of vehicles was 31.4% in 2004.

3) An individual company approach - Fuji Xerox

Fuji Xerox introduced a company-wide environmental policy in 1991 and a product recycling policy in 1995.

Its 2001 Environmental Strategy strengthened the company's goals to transform Fuji Xerox into a fully recycle-oriented company, to offer outstanding environmentally-conscious products and environmental solutions to its customers, and to strengthen the infrastructure for environmental management. Targets include doubling eco-efficiency by 2010 and reducing the use of hazardous chemicals by the adoption of a phase-out plan for specific chemicals.

A "closed-loop system" has been introduced to utilise resources which focuses on dismantling of recycled products and reuse of the recovered parts and materials. The first step is one of "inverse manufacturing" or the design of the machines. The design of new machines has been changed to increase the use of recycled parts and materials and also to make the eventual dismantling and recycling of the machines at the end of their life easier with the aim of zero-waste to landfill.

In 2004, Fuji Xerox established the Eco-Manufacturing Company in Thailand as an integrated recycling system establishing an international resource recycling network.