

FINANCING AND INFRASTRUCTURE MODEL CHARACTERISTICS

Model		Switzerland (SWICO)	Norway (Elektronikkretur)	Netherlands (white/brown goods) (NVMP)
Product Scope		Office technology, consumer electronics, software, graphical industry waste + phones	Broad coverage, except for batteries, refrigerators w/CFCs	Appliances, TVs, stereos
Administration Entity		SWICO – PRO (Over 400 members)	Elektronikkretur —PRO for computers & consumer electronics	NVMP – PRO of OEMs and importers (650 members)
Stakeholders	Who collects from consumer?	Retailers, OEMs, local government	Retailer, local government, OEMs, waste mgmt companies	Retailers collect old for new (10% equipment); municipalities (90%)
	Who transports?/Who arranges for recycling?/Who recycles?	SWICO licenses transporters & recyclers, manages contracts	Retailers, local gov'ts transport to collection points; PRO arranges for further transport and recycling	NVMP contracts with transporters & recyclers
Flow of Funds (How are funds distributed?)		Collected by dealers, accrued in special OEM accounts, & used to pay SWICO invoices for recycling	OEMs/importers pay fees to PRO to cover collection & transport costs; recycling based on current market share	ARF collected into fund; 10% to retailers to pay for collection costs, rest pays for transport, recycling
Collection System/Flow of Product		Multi-point collecton→ SWICO licensed transporter → SWICO licensed recycler	Retailer/muni collect→ transport to collection points (4,000) → PRO arranges further transport,recycling	Collection at 65 regional municipal collection centers (RSS) & retailers NVMP-contracted entities do rest
Rates, Dates, & Accountability Mechanisms		Swiss law has no numerical targets	Agreed upon 80% collection & recycling goal by 2004	2000 Recycling Target for TVs: 69%; 2000 Actual Recovery: 78%
Processing	How are recyclers selected?	SWICO certifies recyclers	PRO arranges recycling	NVMP contracts with recyclers
	Is there licensing, certification?	SWICO licenses transporters and recyclers	Recyclers licensed by government	ISO is expected
	Are there recycling guidelines, requirements?		3/16/98 legislation defines recycling	OEMs/Importers propose plan & target rates, approval by Ministry
Who Pays?		Customers pay ARF	Producers/importers pay fees to PRO based on current market share; these are internalized	Producers & importers pay ARF into fund (Passed to Consumer often thru a visible ARF)
Where They Pay?		Point of Purchase	To PRO	Producer or importer reports 2x month on # of products sold & pay levy for them (Point of purchase)
What Fee Covers?		Collection, transport, recycling, administration	Collection, transport, recycling	Transport, sorting, processing, overhead, promotion; “buffer”
Legislation Needed?		Implemented without legislation; government later adopted/mandated program	Legislation adopted 3/98	Take-back mandated (1999), operational agreement (including recovery rates) set by negotiation between Ministry & stakeholders
Who Manages \$?		SWICO	Elektronikkretur	NVMP
How is Fee Set?		Prorated based on product sale price and product category	Based on costs of collection, transport, & recycling	Based on product category
Who Sets Fee?		SWICO IT group (made up of ~130 members)	Elektronikkretur	Set by OEMs/importers, approved by Ministry of Environment
Fee Visible, Invisible?		Visible fee to consumer and published	Invisible	Visible (but not everyone charges visibly)
Enforcement? Free Riders?		Consumers required by law to return EOL electronics; retailers, OEMs, munis required to take back	Government enforces; producers, importers report	Can be enforced under admin. & criminal law, focus on duty to give notification; <u>Not big issue</u> >95% producer/importers are in NVMP
Seal or label for participating products		Available	No	No
Uniform Fee (national)?		Yes, National program and fee schedule; varies by product price	Yes	National uniform fee; varies by product
Orphan, Historic?		Both covered using ARF from new product sales	Covered; retailers must accept on old-for-new basis	Both covered by ARF; retailers must accept old-for-new until 2005
Incentives	Consumer return?	Required by law, no EOL fee	Consumers return free of charge	NVMP promotes/markets system; No EOL fee; landfill ban by law
	dFe?	Only OEMs & dealers remove & reuse parts→disassembly changes	Side agreements with industry to reduce WEEE	No, still may be developed; shift to brand-related takeback in 2005
	Reuse?		Product reuse is exempt from waste treatment statutes	Decree requires reuse estimate as part of Ministry notification
Data on performance, effectiveness?		SWICO 2000 Activity Report; Fees have been reduced 2x	2000 collection results: 2.1 kg per citizen-computers, electronics only	2000 collection results: 57 million kg; 3.6 kg/inhabitant
Costs or fee levels?		ARF ranges from (SF) 0-1,000 by product price (~\$7, PC & monitor; TVs: \$12-\$42)	?	Euro 0 for small products to Euro 17 (\$15) refrigerators; TV \$4.40-15; System Cost=.45 Euro/kg

Model		Netherlands (grey goods) (ICT-Milieu)	Sweden EI-Kretsen	Japan Specified Home Appliance Recycling Law (SHAR Law)
Product Scope		Computers, printers, fax machines, copiers, telephones	Broad coverage, except refrigerators, freezers	Air conditioners, TVs, refrigerators, washing machines
Administration Entity		ICT-Milieu—PRO of manufacturers and importers	EI-Kretsen—PRO for OEMs, retailers	More than one
Stakeholders	Who collects from consumer?	Municipalities- often regionally (<5%); Retailers-old for new (95%)	Law: Retailers & OEMs old for new, local govt for those not purchasing new. PRO arranged local govt to collect (not retailers), local govt pays collection	Retailers (80%) municipalities (20%)
	Who transports?/Who arranges for recycling?/Who recycles?	ICT-Milieu contracts with 1 transporter (ABX Logistics) and 2 recyclers	PRO arranges for collection from local gov't, transport, and recycling	Retailers & municipalities transport to manufacturer who is responsible for recycling
Flow of Funds (How are funds distributed?)		Payment made (in arrears) by manufacturers and importers after equipment has been processed	Trade associations set fees for each sector, pay to PRO based on costs for that sector & type of product	Consumers pay retailers/munis fee (collect & transport) → retailers & munis pay OEMs fee (recycling)
Collection System/Flow of Product		Collection at 65 regional municipal collection centers (RSS) & retailers; ICT Milieu does rest	Collection by local govt collection centers, retailers direct consumers to local govt; PRO does rest	Retailer/muni collection & transport→ manufacturers do recycling
Rates, Dates, & Accountability Mechanisms		Registration system is set up for reporting processing statistics to Ministry of Environment	Swedish law does not require any recycling rate achievement	Recovery rates b/t 50-60% (by weight) among product categories; can meet thru reuse or recycling
Processing?	How are recyclers selected?	Approved processing plants (CRS) and MIREC do recycling	PRO selects recyclers	Recycling is handled by OEMs
	Is there licensing, certification?	ICT-Milieu contracts recyclers	Recyclers licensed by gov't	No
	Are there recycling guidelines, requirements?	OEMs/Importers propose plan & target rates, approval by Ministry	Yes, but no rates	?
Who Pays?		Producers pay based on company's share of collected & treated product	Consumer pays fee at point of purchase	Consumers--written into statute, not simply function of system
Where They Pay?		Processor sends invoice to OEM/importer	To trade association (then goes to PRO)	EOL (Panasonic: consumer buys ticket/ken at post office or retailer)
What Fee Covers?		Transport and Processing	Collection, transport, recycling	Transportation and Recycling
Legislation Needed?		Takeback mandated 1999; operational agreement (including recovery rates) set by negotiation b/t Ministry & stakeholders	Legislation took effect July 2001	Take-back legislation into force April 2001
Who Manages \$?		Recycling company	EI-Kretsen	Manufacturers, Retailers, and Municipalities
How is Fee Set?		Processing charges based on weight (Fee per kg)	Covers collection & recycling costs for that sector, but manner of setting fee within sectors varies	Manufacturers base fee on recycling costs; retailers add transportation costs
Who Sets Fee?		Negotiated by ICT	Trade association for each sector	Manufacturers set fees for their own products
Fee Visible, Invisible?		Invisible, charged to OEM by processor	Can be either, depends on sector	Visible
Enforcement? Free Riders?		Can be enforced under admin. & criminal law, Focus on notification duty; free riders= 10% of products	Government enforces; producers, retailers, importers report	Govt deals with free riders thru reporting requirement & sanctions
Seal or label for participating products?		No	No	No
Uniform Fee (national)?		No, invisible fee is based on actual recycling costs	Yes, for each sector's products	No, each mfr. sets recycling fee; collection fees uniform for retailers
Orphan, Historic?		Historic/orphan covered through extra processing charge to OEMs; 25% of products are orphans	Covered on old-for-new basis	Recycled by OEMs since paid by disposer
Incentives	Consumer return?	No EOL fee, landfill ban required by law	Consumers return free of charge	Required by law
	DfE?	Yes, processing fee based on weight and cost of processing	?	EOL fees based on recycling costs & competition between OEMs
	Reuse?	Decree requires reuse estimate as part of Ministry notification	?	Can fulfill target through product or part reuse
Data on performance, effectiveness?		?	No data yet	2.5 million products collected in 1 st 3 months
Costs or fee levels?		Complete PC (30 kg) cost approximately NLG 35 (\$14)	TVs \$3-8	Ranges from Yen 2,400 to 4,600 (\$18-34) (TVs-\$22) (recycling cost) + collection & transport cost

Model		Taiwan	Best Buy Retailer Drop Off Model	Australia Cell Phone (MPIRP)
Product Scope		Computers, household appliances, air conditioners	Electronics of any brand or model	Mobile handsets and batteries
Administration entity		No 3 rd Party	Retailer (Best Buy)	Australian Mobile Telecommunications Association (AMTA)
Stakeholders	Who collects from consumer?	Local government	Recycler	1650 retailers provide stores, some local govt
	Who transports?/Who arranges for recycling?/Who recycles?	Local government arranges for recycling	Retailer contracts recycler provide turnkey program for collection, transportation, & recycling.	MRI Pty Ltd (contracted by AMTA) provides all collection, sorting, and recycling
Flow of Funds (How are funds distributed?)		Fee collected by national govt; distributed to local government	Fees collected at EOL by retailer, retailer pays for program costs	AMTA sends invoices, collects the levies, and manages all costs
Collection System/Flow of Product		Local govt collects, recycler pick up and recycle	Drop off at retailer site with contracted recycler that handles collection, transport, & recycling	Retailers provided with bin; call 1800 number when bin is full to swap bins: MRI does rest
Rates, Dates, & Accountability Mechanisms		?	None	25% takeback rate by end of 2002; 50% by 2004
Processing?	How are recyclers selected?	Selected by local government	Retailer contracts recyclers	AMTA contracts with recycler
	Is there licensing, certification?	?	No	?
	Are there recycling guidelines, requirements?	General requirements for environmental performance	Retailer requires recycler to meet certain enviro performance, experience, & cost criteria.	?
Who Pays?		OEMs pay fee to gov't based on sales (ultimately passed on to consumer)	Consumers pay for CRT-containing devices, other products are free to the consumer	Manufacturer- \$0.30/handset sold; Network Carriers- \$0.12/ handset (Australian dollars)
Where They Pay?		Government	Point of disposal/End of Life	Paid to AMTA each month by mfrs based on market share, or for carriers, paid each month based on aggregate sales.
What Fee Covers?		Collection, transport, recycling, including local gov't costs	Covers some costs of program	Collection, sorting, recycling and promotion.
Legislation Needed?		Legislation adopted in 1998	No, voluntary program	No, MOU exists b/t AMTA, manufacturers and network carriers
Who Manages \$?		Government	Retailer (Best Buy)	AMTA
How is Fee Set?		Based on recycling costs	Determined by Retailer	Manufacturers - market share. Carriers - aggregate monthly mobile phone sales.
Who Sets Fee?		Government	Retailer	The mobile phone industry.
Fee Visible, Invisible?		Invisible	Visible for CRT devices	Invisible
Enforcement? Free Riders?		Government enforces	No free rider issue: fee for all TVs and monitors regardless of brand	Only two "minor manufacturers" are not paying the fee. AMTA expects to get help from the phone service carriers to bring these two free riders into the program.
Seal or label for participating products?		Invisible	No	?
Uniform Fee (national)?		Yes	No. Some variation in fee amount based on recycling costs in different markets and partner funds	No visible fee to consumers; 1 uniform fee for manufacturers & 1 uniform fee for carriers
Orphan, Historic?		Covered	Program accepts all electronic products	Covers all brands and vintages.
Incentives	Consumer Return?	Consumers return free of charge	Generally, no incentives to date; under consideration for Phase 2	None. National promo campaign with major environmental group
	DfE?	?	No	None.
	Reuse?	?	Most events had local non-profit on site to take products for reuse	?
Data on performance, effectiveness?		?	257,243 lbs collected, 10 events in 7 states, 2860 participants	?
Costs or fee levels?		TVs: \$4.28 (1998); Desktop computer: \$8.69 (1998); \$5.60 (2000)	Most events-- \$10 per monitor, \$15 per TV, all other electronic items were no fee.	Invisible to consumers. One fee level for manufacturers; different fee level for network providers.

Model		RBRC	British Columbia (PCA)	Lead Acid Batteries BCI Model Legislation
Product Scope		Rechargeable batteries – nickel cadmium (Ni-Cd), nickel metal hydride (Ni-MH), lithium ion (Li-Ion), and small sealed lead (Pb)	Paint, pesticides and flammable liquids (British Columbia province only)	Lead Acid Batteries (37 states adopted some form of legislation)
Administration entity		Rechargeable Battery Recycling Corporation (RBRC) - PRO	Product Care Association (PCA) – NGO, PRO	Retailer
Stakeholders	Who collects from consumer?	Municipalities, retailers, business and public agencies, licensees	104 collection depots (bottle recycling centers & muni recycling depots)	Retailer
	Who transports?/Who arranges for recycling?/Who recycles?	RBRC pays shipping costs; contracts with INMETCO to recycle, except business, public agency, and licensee batteries	PCA transports, contracts with private waste management companies for recycling	Battery manufacturers and/or lead smelters pay for transport and recycling
Flow of Funds (How are funds distributed?)		Brand owner pays licensing fee to RBRC; RBRC pays shipping costs and INMETCO to recycle	Brand owner/importer pays fee to PCA; PCA pays collection depots & recycling	Fees collected by retailer; retailer keeps unclaimed deposits; Mfrs and Pb Smelters pay for recycling
Collection System/Flow of Product		Collection (various) → Two consolidation points in US → INMETCO	Collection depots → 4 main hubs → Central Processing Center	Collect at retailer, truck (leaving new batteries) picks up & takes to distribution center or smelter
Rates, Dates, & Accountability Mechanisms		2000 target: 4.4 million lbs of Ni-Cd batteries; old goal 70% by 2001	None	None directly associated with model
Processing?	How are recyclers selected?	INMETCO does all recycling	PCA has processing facility for paint; contracts for other products	Recyclers of lead acid batteries are lead smelters (small # of smelters)
	Is there licensing, certification?	INMETCO does all recycling	Unclear	None specifically associated with model
	Are there recycling guidelines, requirements?	INMETCO uses EPA recognized process	Unclear	None specifically associated with model
Who Pays?		Brand owners pay RBRC licensing fee based on batteries sold	Brand owner/importer pays eco-fee to PCA; passed to individual and commercial consumers via visible eco-fee on shelf, price tag & receipt	Consumer pays deposit (\$4-\$10) when buy a battery without return of used battery
Where They Pay?		Brand owner licensee pays fee directly to RBRC on quarterly basis	Point of purchase	Point of purchase
What Fee Covers?		Shipping, recycling, collection materials, outreach	Collection, recycling and transportation plus moderate surplus for contingency	NOT collection system; <u>retailers often paid for old batteries.</u> Deposit is incentive for return.
Legislation Needed?		Federal law “facilitates” program, but does not mandate it per se	Backdrop legislation	Model Legislation reflected industry trend
Who Manages \$?		RBRC	BC Product Care	Retailers
How is Fee Set?		(battery voltage) x (amp-hours) x (RBRC fee) = what Brand Owners pay per battery sold	Based on product category and quantity	BCI recommended \$10 deposit in model legislation; most states that mandate deposit set it at \$5
Who Sets Fee?		RBRC	BC Product Care	States. In some cases, states set minimum; retailer can charge more
Fee Visible, Invisible?		Invisible	Visible	Visible
Enforcement? Free Riders?		RBRC send non- participants info. on state laws and the program	Backdrop legislation to enforce against free riders and those who don't fulfill obligations	Legislation has MSW ban, No free riders, deposits don't fund collection system
Seal or label for participating products?		Yes, RBRC seal available for licensees	No	No
Uniform Fee (national)?		Fee based on capacity of batteries placed on market	Uniform thru BC, based on product and volume	No, varies by state and/or retailer
Orphan, Historic?		Both covered	Both covered	Legislation requires retailers to accept old for new
Incentives	Return?	Residential consumers return free; public outreach program	None; customers return for free	Law prohibits disposal of batteries in landfill; return of battery waives deposit fee on new battery
	DfE?	None	None	No
	Reuse?	None	No	No, though value of lead encourages reuse by manufacturers
Data on performance, effectiveness?		2000 Annual report; mixed results reported at state level	Quarterly newsletter	Lead-acid battery recycling rate is 93.3%
Costs or fee levels?		\$.05 cell phone, \$.10 portable computer, \$.04-.12 power tool batteries	Paint fee ranges from (CN) \$.10 to \$1.00	Deposit fees vary by state

Model		Massachusetts, US (Used Oil Legislation)	South Carolina Tire Program	Pay As You Throw (PAYT)
Product Scope		Used oil (MA only)	Tires (SC, though many states have similar programs)	Municipal Solid Waste (MSW) (over 4000 municipalities in US)
Administration entity		State	State	Municipality
Stakeholders	Who collects from consumer?	Retailers, munis, service stations, quick oil change companies	Retailers (Tire dealers)	Public or private haulers from curbside or drop-off point
	Who transports?/Who arranges for recycling?/Who recycles?	Munis use statewide contract with hauler; Service stations & quick changers use haz waste haulers	Registered scrap tire haulers transport, permitted tire recycling facilities perform recycling	MSW hauler does transport; recycling can be done publicly or privately
Flow of Funds (How are funds distributed?)		Fees go into state-managed fund to pay for all costs	Fees collected by retailer, retained by State Treasurer for distribution to counties and Waste Tire Grant Fund.	Varies by program
Collection System/Flow of Product		Multi-point collection→ Hazardous waste hauler→ Industrial boilers for energy (usually) or re-refining	Tire Dealer collects→ Registered Tire Collector→ Permitted Tire Processor or Tire Facility	Varies, ex) curbside &/or dropoff collection→transfer station &/or MRF→ recycling markets
Rates, Dates, & Accountability Mechanisms		None directly associated with model	None directly associated with model	None specific to PAYT programs
Processing?	How are recyclers selected?	Not directly associated with model	Tire recycling facilities are permitted by state	Municipalities establish contracts
	Is there licensing, certification?	Not directly associated with model	Tire recycling facilities are permitted by state; Scrap tire haulers must register with regulatory agency.	For MSW, haulers only have to be registered
	Are there recycling guidelines, requirements?	Not directly associated with model	None directly associated with model	None specific to PAYT programs
Who Pays?		Petroleum manufacturer or oil distributor at wholesale level	Consumer at point of purchase	Consumers
Where They Pay?		First sale of product in State	Point of purchase, regulated similar to sales tax, remitted to state revenue	Varies—direct payment at retailer or muni office for bags/tags, subscription for cans, or billing based on amount/volume set out
What Fee Covers?		<u>Not collection/recycling</u> (cost= 0); Incentive payments to collection centers, collection equipment, operational expenses, public educ.	Transport and recycling; local scrap tire mgmt; grant fund for recovery of tires; market development; retailer burden (3%)	Covers all costs of solid waste program, or significant portion of those costs
Legislation Needed?		Yes, based on negotiated agreement	Yes, at state level; landfill restrictions also in place	Local ordinances often passed to implement PAYT programs
Who Manages \$?		State	State revenue (tax) agency	Municipality
How is Fee Set?		Set by legislation (incentive payment of \$.05 per quart)	Retail, state and local govt, manufacturers develop fee	Municipality often determines fees based on program costs and political feasibility or does RFP
Who Sets Fee?		Agreed on through negotiations b/t retailers, NGOs, service stations, quick oil change companies	State legislation set fee	Municipality
Fee Visible, Invisible?		Invisible	Visible	Visible
Enforcement? Free Riders?		State regulators enforce program with staff paid for by fund	Periodic audits by state tax agency on tire retailers.	Illegal dumping enforcement is important
Seal or label for participating products?		No	No	No
Uniform Fee (national)?		Uniform throughout state	Not nationally, but uniform in each state	No varies by program
Orphan, Historic?		Both covered (product is usually less than a year old)	Fees can be used to pay recycling costs of abandoned tires	No orphan or historic issue—short product life span
Incentives	Consumer return?	\$.05 per quart of used oil returned	Landfill restrictions in place.	Consumers receive price signal to recycle more, throw away less
	DfE?	No, but state agreed to purchase re-refined oil and give incentives for muni purchase of re-refined oil.	Some state programs have used funds to encourage tire mfrs to use recycled rubber in new tires	No
	Reuse?	See DfE incentive.	Not directly, funds can be used for market development	Consumers receive price incentive to reduce waste, increase reuse
Data on performance, effectiveness?		Not in effect yet.	Similar programs in other states have been effective	EPA web site; 15-28% reduction in waste, 32-59% increased recycling
Costs or fee levels?		\$.05 per quart, resulting in estimated \$2 million/year fund	Set \$2 fee in S.C. (varies nationally but \$1-\$2 is typical)	PAYT fees vary by program, recycling component is usu. free; extra fee for bulky products poss.

Model		"Ideal" Model
Product Scope		
Administration entity		
Stakeholders	Who collects from consumer?	
	Who transports?/Who arranges for recycling?/Who recycles?	
Flow of Funds (How are funds distributed?)		
Collection System/Flow of Product		
Rates, Dates, & Accountability Mechanisms		
Processing?	How are recyclers selected?	
	Is there licensing, certification?	
	Are there recycling guidelines, requirements?	
Who Pays?		
Where They Pay?		
What Fee Covers?		
Legislation Needed?		
Who Manages \$?		
How is Fee Set?		
Who Sets Fee?		
Fee Visible, Invisible?		
Enforcement? Free Riders?		
Seal or label for participating products?		
Uniform Fee (national)?		
Orphan, Historic?		
Incentives	Return?	
	DfE?	
	Reuse?	
Data on performance, effectiveness?		
Costs or fee levels?		