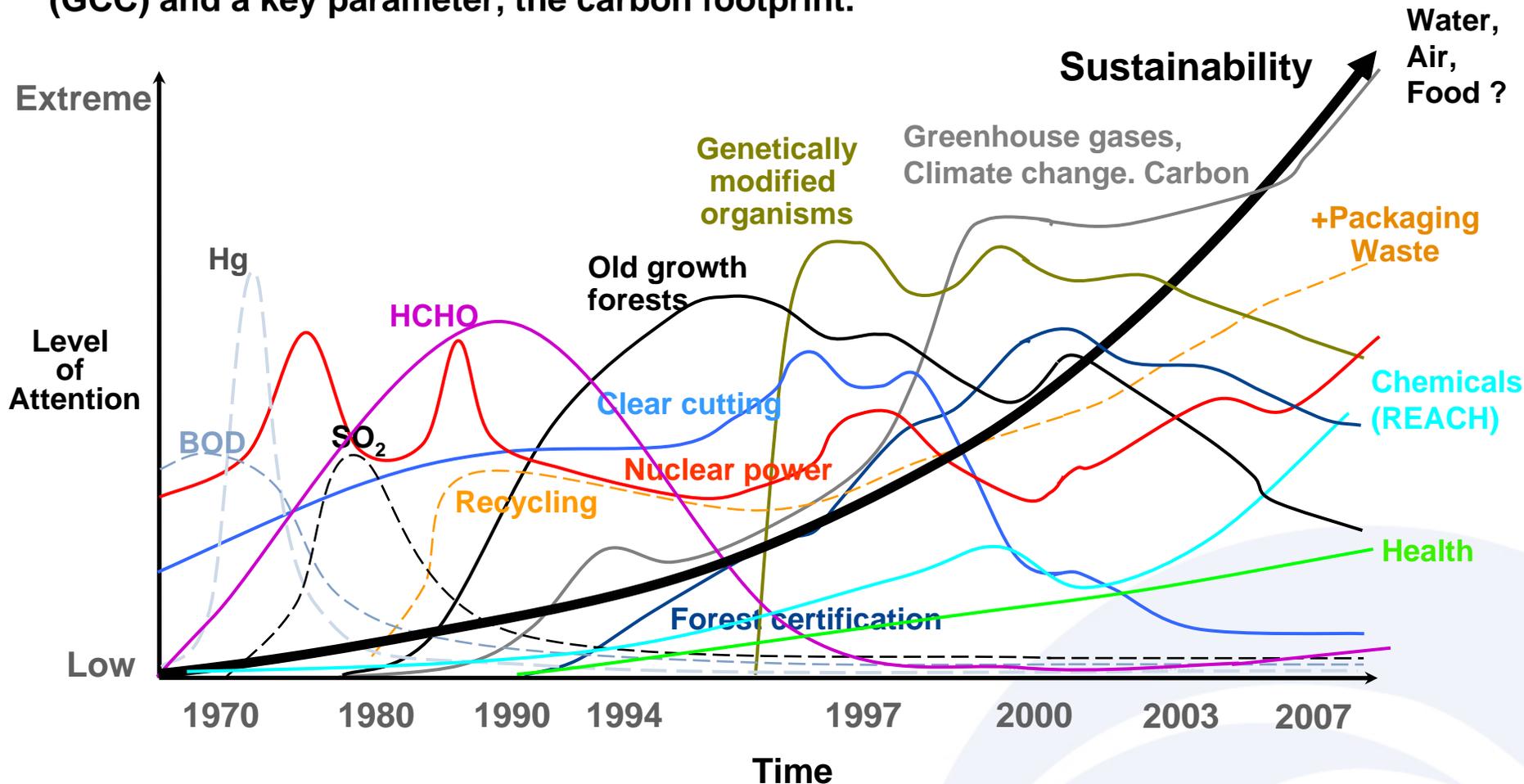


The Carbon Footprint – As a Management Tool

Robert Wilson
Pöyry Consulting Ltd
Sept 18, 2008

Sustainability: As a Business Driver - Where it Began...

The environment has been a growing force over 30 years. Issue follows issue, but with a residual accumulating impact. The collective direction is one of 'sustainability' – of life, quality, aspiration. The hot spot is global climate change (GCC) and a key parameter, the carbon footprint.



Based on survey of issue intensity – articles, profiles, debate

Carbon Footprint

Many aspects

Environment – Climate Change

Technical – What is it ?

Markets – Mechanisms, Regulation

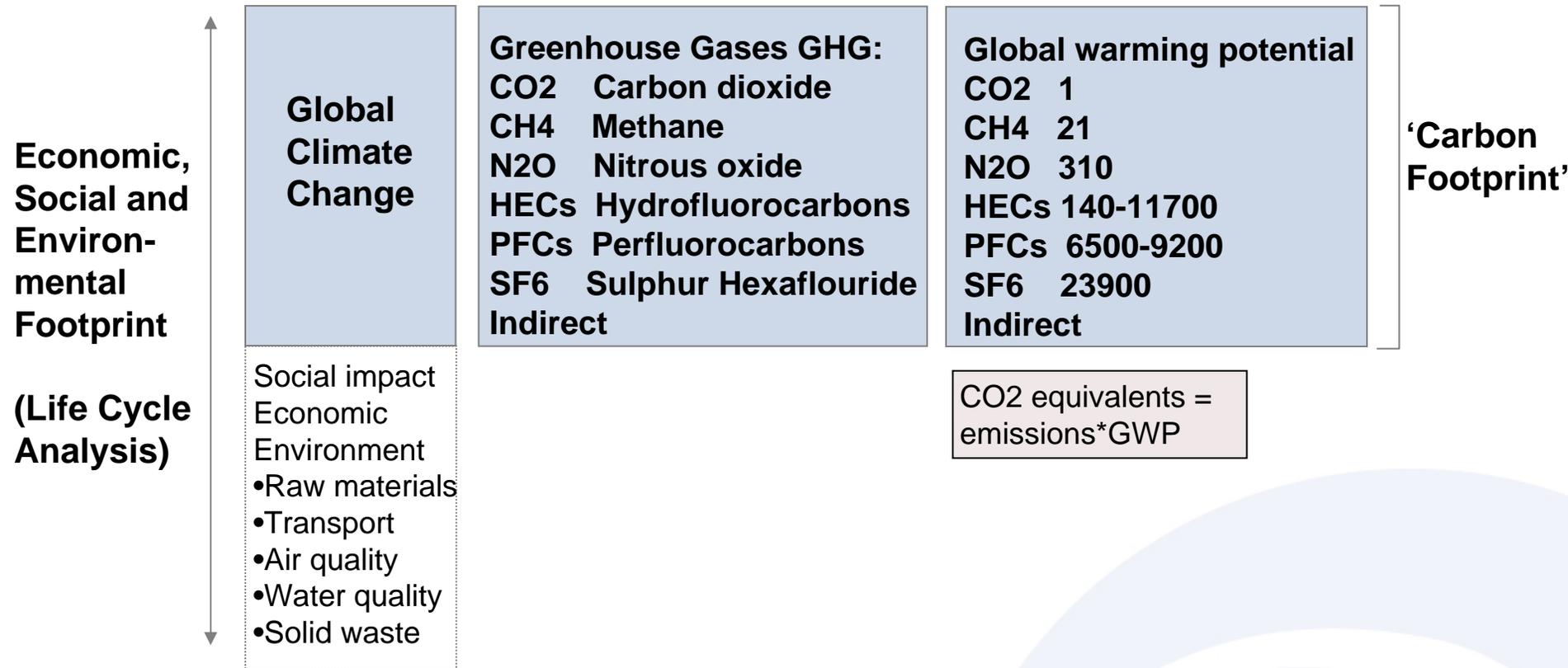
Measurement – Life Cycle Analyses, Standards

Opportunity – New revenue streams



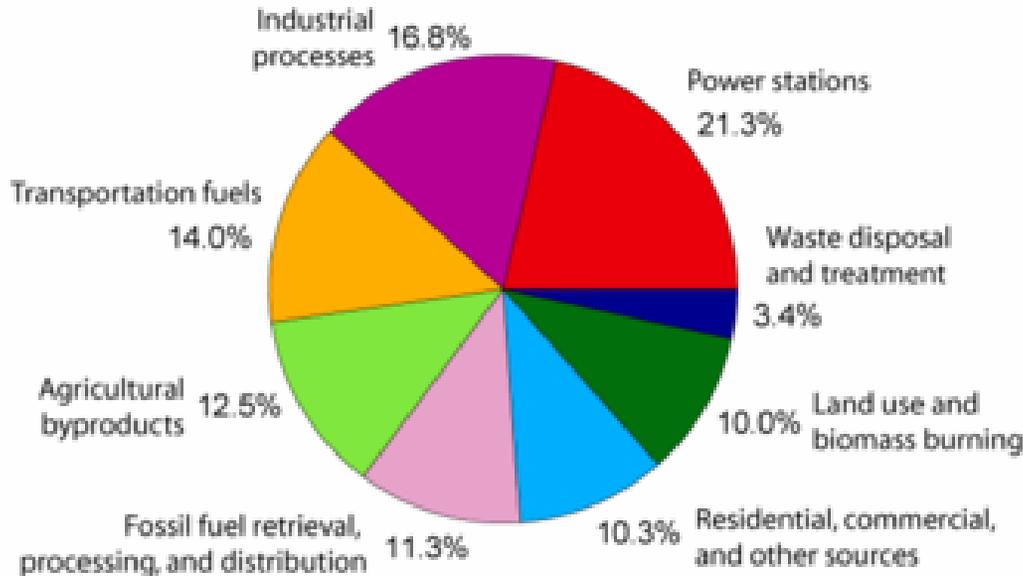
Carbon Footprint - Technical

The emergence of sustainability in the consumer and corporate psyche, has produced new behavioural principles, management practices and goals e.g. corporate social responsibility, Kyoto agreement, household recycling. As the issue of the day, GCC is targeted and its root cause – greenhouse gases.



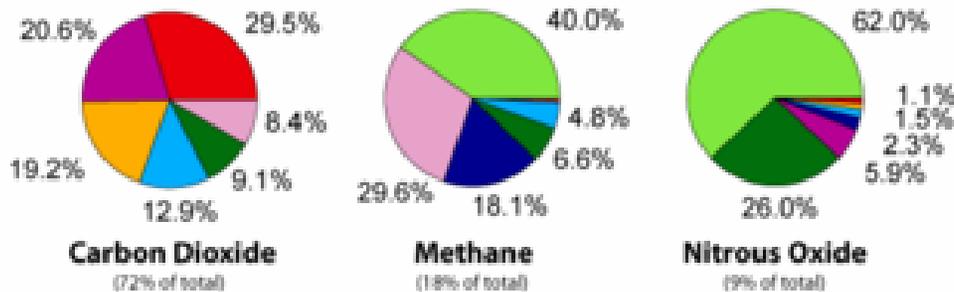
Greenhouse Gas Sources

Annual Greenhouse Gas Emissions by Sector



Some of the main sources of greenhouse gases due to human activity include:

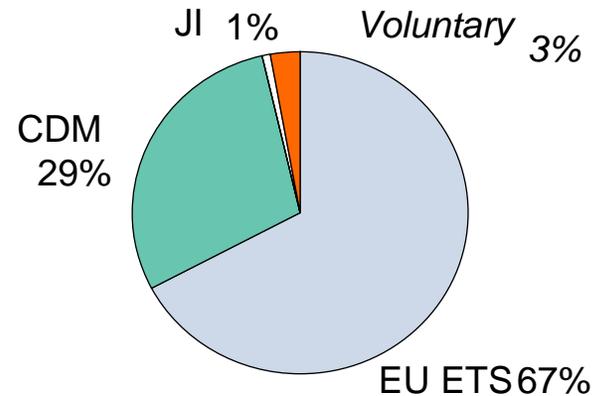
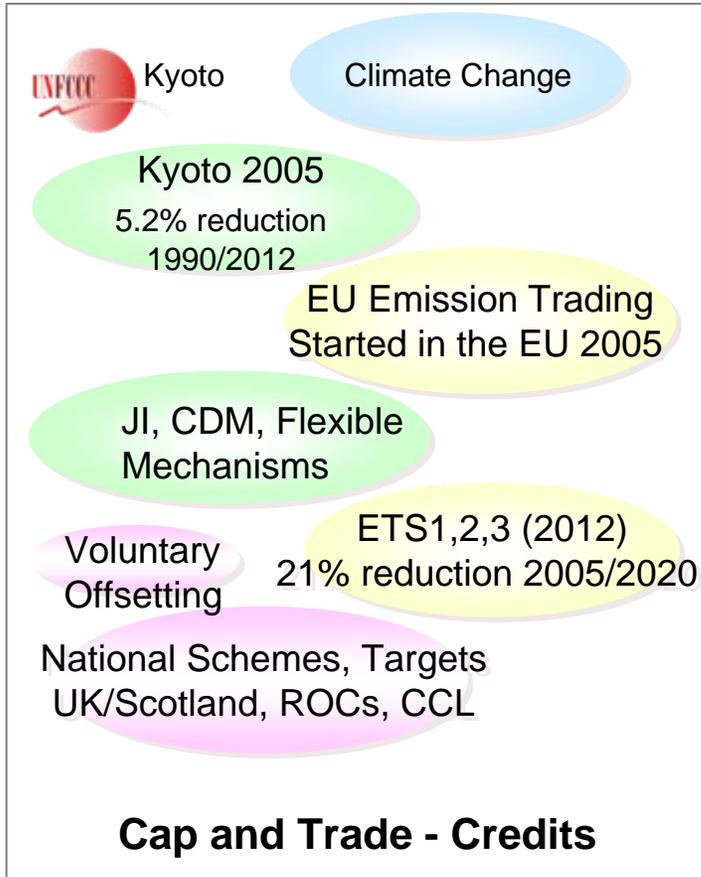
- Burning of fossil fuels and deforestation - Land use change (mainly deforestation in the tropics) account for up to one third of total human sourced CO₂ emissions.
- Livestock and manure management, paddy rice farming, and covered vented landfill emissions leading to higher methane concentrations.
- Agricultural activities, including the use of fertilizers, that lead to higher nitrous oxide concentrations.
- Use of chlorofluorocarbons (CFCs) in refrigeration systems, and use of CFCs and halons in fire suppression systems and manufacturing processes.



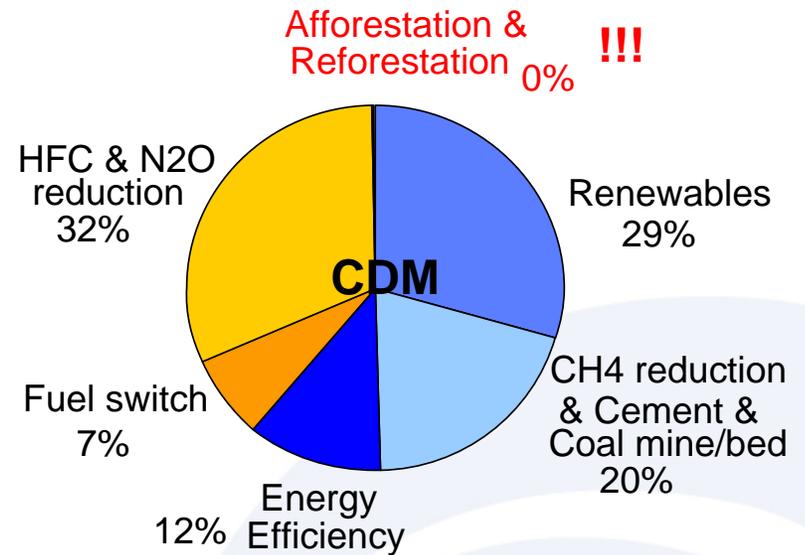
Source: Wikipedia. Greenhouse Gas.

Markets - Mechanisms

Market Mechanisms. (Inter) Governmental



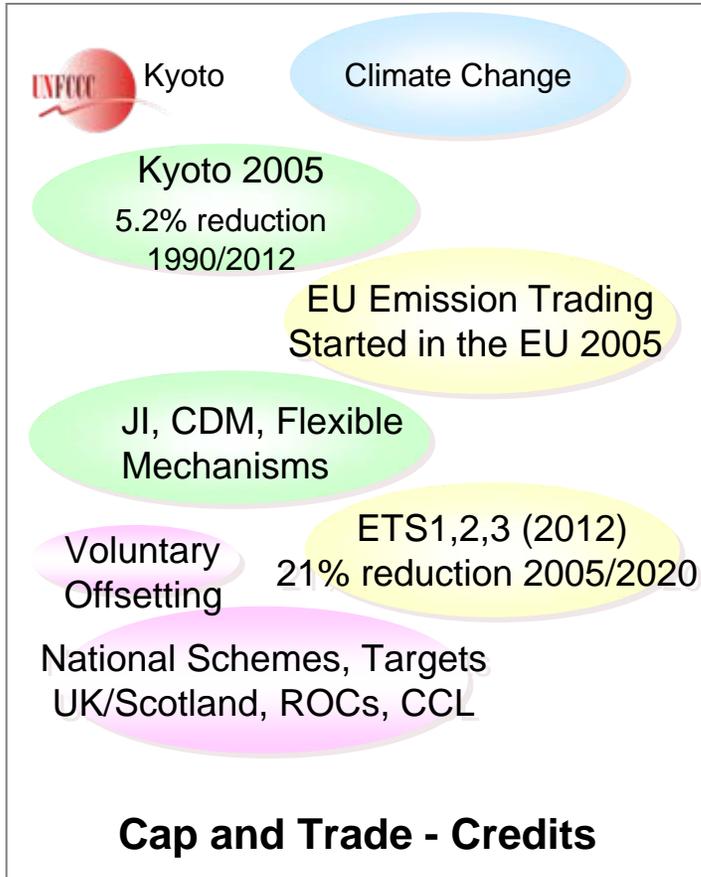
Total market 1,636 MtCO₂e, USD 29 Bn



2012 MCERs 2423.4

Markets - Mechanisms

Market Mechanisms. (Inter) Governmental



Retail, Corporate (Consumer)



Which ones do you choose – what works (required) for you.

Measurement - Paper Contribution

Average Carbon Footprint 1.7t CO₂/ t paper (printed; logistics).
Household of 4 (@ 0.125t/an
Total printed papers carbon footprint = 0.85t CO₂/an.

Is this good or bad ?



Excluding printing

174 gm CO₂ in (to make) this newspaper
1600 gm CO₂, copier ream

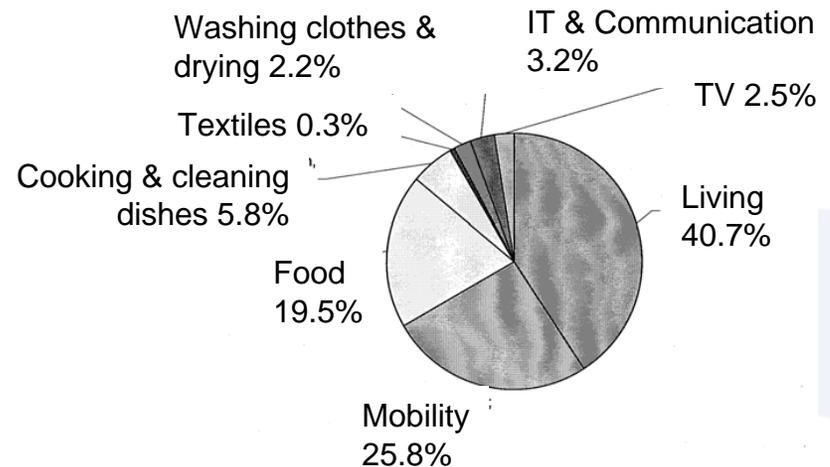
1 km driving in the car
9 km

Personal. Daily paper, 12 reams/year
= **4.5%** of the paper+car carbon footprint

10000 km/an (own use)

**At the household individual (one person), their paper consumption could contribute ~ 2-3% of carbon footprint.
And then there is packaging**

Example – Household CO₂ footprint



Opportunity - Wal-Mart Packaging Scorecard

Wal-Mart have introduced a packaging scorecard to compare suppliers in terms of innovations, environmental standard, energy and resource use. The scorecard measures nine metrics – this comes through to pulp producers through the paper maker requests.

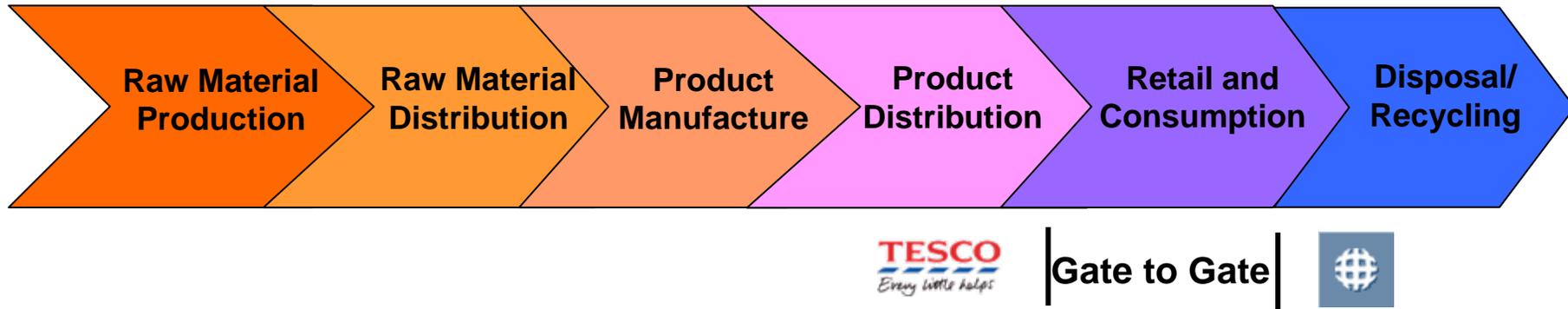


- Wal-Mart are introducing a “**Packaging Scorecard**” with the aim of reducing packaging across its global supply chain. Wal-Mart’s overall target is to reach a 5 percent packaging reduction across their supply chain by 2013.
- It measures its entire supply chain based upon each company’s ability to use less packaging, utilize more effective materials in packaging, and source these materials more efficiently relative to other suppliers.

15% GHG/CO₂ per ton of Production	10% Recycled Content
15% Material Value	10% Recovery Value
15% Product/Package Ratio	10% Transport
15% Cube Utilization	5% Renewable Energy
	5% Innovation

Procurement function in the supply chain moves to qualification

Opportunity - Carbon Footprint as a Qualification



Sustainability led to the re-ranking of preferred newsprint suppliers – based on carbon footprint. Producers with this capability win the business.

- News International, like many consumer businesses, has a stated intention to achieve 'carbon neutral' within the next few years (CSR)
- 'Carbon neutral' – on narrow, limited boundaries (internal Tesco, NI presses)
- Newsprint producers have been assessed and ranked on carbon footprint. Long term contracts are offered to the lowest carbon footprint.
- Newsprint producer leveraged low carbon (hydro power, virgin fibre) position to secure the top supplier position –new product concepts - carbon neutral paper.
- New KPIs: embedded water, zero to landfill, recyclability, renewability.....
- Single KPI (C Footprint), limited boundaries - create distortions. **Virgin vs Recycled**

Opportunity – Closed Loops (Cradle to Cradle)

Two key concepts have emerged: recyclability and renewability, which are leveraged to secure advantage. New business models and supply chains (closed loop) have appeared based on this. Both of these sustainability KPIs impact pulp.

Recyclability – waste becomes a product, contained in value added closed loops



A new business model – ‘closed loop’

- A European paper merchant. Yo-Yo paper
- (Office) customers offered - buy, use, recycle, remanufacture and ‘buy their paper again’ – through the merchant owned supply chain.
- A website calculator shows savings in cost (supply chain efficiency – one drop/collection) and carbon. **The merchant offers the consumer a lower carbon footprint as a paper purchasing reward.**
- The paper merchant ‘owns’ the paper the whole way through the cycle – leases its use.

Renewability – upstream re-specification of raw materials and sourcing for personal care products

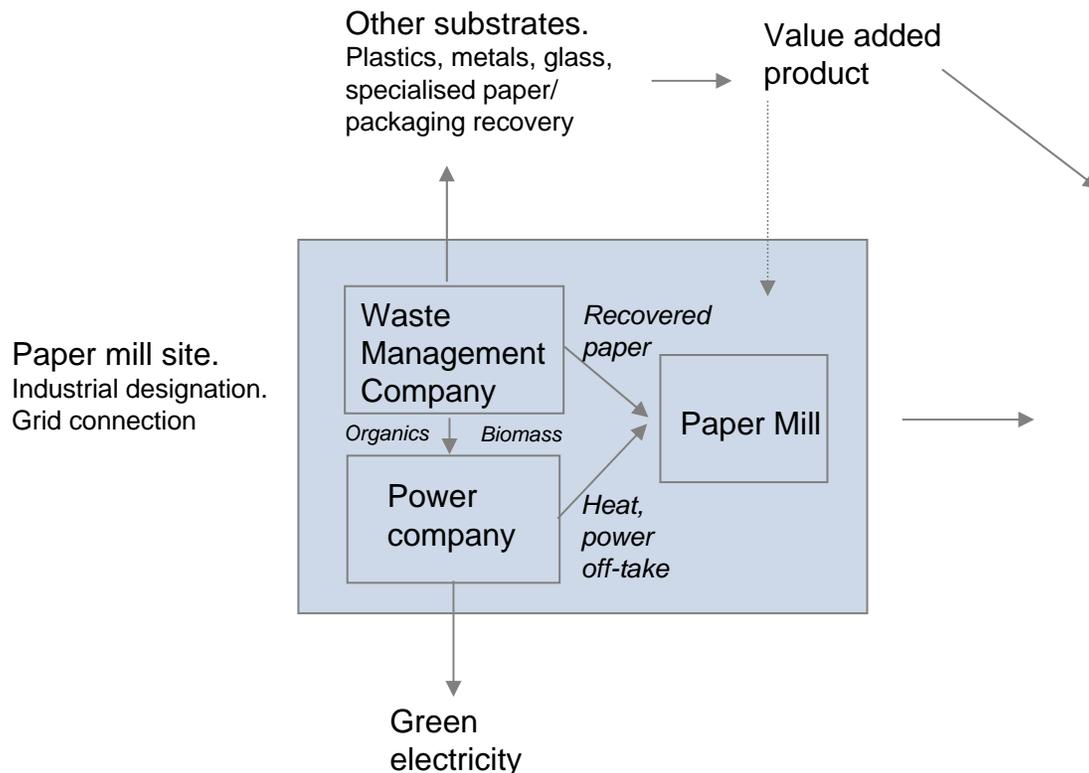


Result.

- Cost saving: reduced exposure to oil based raw materials
- Further gains: Growing raw materials supply base (renewable). Bio-degradability – reduced waste profile

Opportunity – ‘New’ Paper Mills – Low carbon approach saves cost

Sustainability has created another business model for the paper industry – possibly even who owns this business. In these cases the issues of energy cost, raw material security, return on real estate, even future products, can be resolved. The ‘new’ integration is with power companies (green energy, heat offtake) and waste management – recovered paper. Low carbon approach saves cost



- Paper maker leases its land at low rent, to an energy company (bio-energy)
- In return the paper maker off-takes the heat, and receives green electricity
- Good for papermaker = low cost heat and energy in the long term – solves the energy problem
- Good for bio-energy company – industrial site, planning permission, grid connection.
- Next site partner ? Waste management company. Provides substrate for manufacture = recovered paper, plastics, metals. Can provide organic waste for energy company.

Sustainability is about concrete actions which improve the business

Renewable Energy - Bioenergy, Biomass, Pellets, Biofuels

Carbon Management - Footprints, Neutral, Offsetting

Life Cycle - Cradle to cradle, new product/process design, recyclability

Recycling - Business models, Infra-structure. Paper, plastics, metals, glass

Waste management - Closed loops, infrastructure. Waste to product/energy

Product Design - Total cost of ownership/ shelf space, packaging strategies

Procurement - Specification, design, certification, scorecards

Logistics, supply chain - Business models, infrastructure, (C) optimisation

Raw Materials - Sourcing, chain of custody, renewability, efficiency. Wood, paper, plastics, biomass, chemicals, water

All these initiatives are part of managing the carbon footprint

Pöyry Sustainability Projects

Sustainability as a competitive advantage needs concrete and measurable actions – matched to achieving the business objectives



Clear Objectives and Scope - Why are we doing this ?

A clear objective is key to the success of carbon footprint assessment to put the work into the correct context. To define its application – why is the work being undertaken – leads to objectives and content. We can start with carbon but in the end we need a ‘sustainability’ measure

‘Global’ Social Responsibility



‘Personal’ Social Responsibility



Sustainability Initiative

‘Market’ Social Responsibility



ISO 14001/14040



‘Corporate’ Social Responsibility, and more...

Product, system comparison



Labels and standards

Branding, Promotion

New procurement

Alternative products, supply chains

Social reporting
Internal assessment
Compliance
Competition

Energy saving

Business scenarios

Current/Best available technology,

Packaging and Packaging Waste Directive

Promotions, obsolescence management

YOU

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