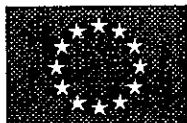


## EUROPEAN PARLIAMENT

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8 April 2004

**REPORT**

on the communication from the Commission to the Council and the European Parliament on Integrated Product Policy – Building on Environmental Life-Cycle Thinking  
(COM(2003) 302 – C5-0550/2003 – 2003/2221(INI))

Committee on the Environment, Public Health and Consumer Policy

Rapporteur: Anders Wijkman



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## PROCEDURAL PAGE

By letter of 18 June 2003 the Commission forwarded to Parliament its communication to the Council and the European Parliament on Integrated Product Policy – Building on Environmental Life-Cycle Thinking (COM(2003) 302), which had been referred for information to the Committee on the Environment, Public Health and Consumer Policy and the Committee on Industry, External Trade, Research and Energy.

At the sitting of 18 December 2003 the President of Parliament announced that the Committee on the Environment, Public Health and Consumer Policy had been authorised to draw up an own-initiative report on the subject under Rules 47(2) and 163, and the Committee on Industry, External Trade, Research and Energy for its opinion (C5-0550/2003).

The Committee on the Environment, Public Health and Consumer Policy had appointed Anders Wijkman rapporteur at its meeting of 26 November 2003.

The committee considered the draft report at its meetings of 16 March 2004 and 6 April 2004.

At the last meeting it adopted the motion for a resolution by 26 votes to 16, with 4 abstentions.

The following were present for the vote: Caroline F. Jackson, chairman; Anders Wijkman (for Raquel Cardoso), rapporteur; Bent Hindrup Andersen (for Jean-Louis Bernié), María del Pilar Ayuso González, María Luisa Bergaz Conesa, Hans Blokland, John Bowis, Hiltrud Breyer, Martin Callanan, Dorette Corbey, Alexander de Roo, Saïd El Khadraoui, Anne Ferreira, Christel Fiebiger (for Jonas Sjöstedt), Karl-Heinz Florenz, Cristina García-Orcóyen Tormo, Robert Goodwill, Françoise Grossetête, Martin Kastler, Hedwig Keppelhoff-Wiechert (for Marialiese Flemming), Christa Kläß, Eija-Riitta Anneli Korhola, Hans Kronberger, Bernd Lange, Paul A.A.J.G. Lannoye (for Marie Anne Isler Béguin), Peter Liese, Giorgio Lisi, Minerva Melpomeni Malliori, Patricia McKenna, Rosemarie Müller, Riitta Myller, Ria G.H.C. Oomen-Ruijten, Marit Paulsen, Dagmar Roth-Behrendt, Guido Sacconi, Yvonne Sandberg-Fries, Karin Scheele, Inger Schörling, María Sornosa Martfnez, Catherine Stähler, Robert William Sturdy (for Giuseppe Nisticò), Nicole Thomas-Mauro, Astrid Thors, Antonios Trakatellis, Peder Wachtmeister, Phillip Whitehead.

The Committee on Industry, External Trade, Research and Energy decided on 2 October 2003 not to deliver an opinion.

The report was tabled on 8 April 2004.

## MOTION FOR A EUROPEAN PARLIAMENT RESOLUTION

**on the communication from the Commission to the Council and the European Parliament on Integrated Product Policy – Building on Environmental Life-Cycle Thinking**  
**(COM(2003) 302 – C5-0550/2003 – 2003/2221(INI))**

*The European Parliament,*

- having regard to the communication from the Commission to the Council and the European Parliament on Integrated Product Policy – Building on Environmental Life-Cycle Thinking (COM(2003) 302 – C5-0550/2003)<sup>1</sup>,
  - having regard to The Sixth Environmental Action Program<sup>2</sup>,
  - having regard to The Fifth and Sixth Framework Programs for Research, Technological Development and Demonstration Activities,
  - having regard to the Lisbon Process, Council Conclusions 15-16 June 2001,
  - having regard to the Directive on Public Procurement 98/4/EC amending directive 93/38/EEC<sup>3</sup>,
  - having regard to the proposed Directive on Energy-Using Products, (COM (2003) 453),
  - having regard to the communication of the Commission on a Thematic Strategy on the Sustainable use of Natural Resources (COM(2003) 572) and the Action Plan on Environmental Technologies (COM(2004) 38),
  - having regard to Rules 47(2) and 163 of its Rules of Procedure,
  - having regard to the report of the Committee on the Environment, Public Health and Consumer Policy (A5-0261/2004),
- A. whereas economies are like ecosystems: both systems take in energy and materials and turn them into products and processes, the difference being that our economy follows linear resource flows whereas nature is cyclic; and whereas ecosystems perform functions which convert waste into resources, by transferring energy from the sunlight, and whereas industrial processes are not able to do this; whereas, against the backdrop of rapidly growing economies and populations, production and products that lead to waste streams which nature cannot absorb and turn into new resources are increasingly problematic from the point of view of sustainability,
- B. whereas the changes in the biosphere induced by human society are widespread,
- C. whereas incremental policy steps have led to improvements, but real progress towards

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<sup>1</sup>Not yet published in OJ.

<sup>2</sup> OJ L 242, 10.9.2002, p. 1.

<sup>3</sup> OJ L 101, 1.4.1998, pag. 1.

sustainable development can not be achieved through such measures alone,

- D. whereas to exceed the carrying capacity of the earth can help society temporarily to raise material living standards but, at the same time it puts our natural capital in serious decline; whereas limitations to prosperity in the future will be determined by natural capital rather than industrial innovation and skills,
- E. whereas the interests of commerce and the environment need not be in conflict, recognising at the same time that sustained economic prosperity in the future will only be possible in a market-based system in which all forms of capital, including natural capital, are fully valued, and the costs of damage to human health and the environment are fully internalised into product prices,
- F. whereas a transformation of the present system of production and consumption is urgently needed; whereas the main objective is to change consumption in a sustainable direction and bring the processes of raw material extraction, production and product design as much into line with natural processes and designs as possible,
- G. whereas society depends primarily on products made up of a set of different materials i.e.: biological, mineral and synthetic materials, which are often combined to produce composite materials and whereas these materials ought to be used and handled in such a way, that, when the useful life of the products is over, they do not become useless waste,
- H. whereas the creation of product life cycles would be facilitated significantly by the phaseout of substances that are persistent, toxic and bioaccumulative, or of similar concern,
- I. whereas the IPP concept offers opportunities to create a framework for the systematic bundling of those instruments of substance-oriented environmental policy and policies on the protection of natural elements (such as water, air, etc.), conducted to date, and which have had an isolated impact, so as to make instruments for resource efficiency, waste minimization and controlled use of hazardous substances more coherent and more transparent for consumers and industry,
- J. whereas the Commission proposal, giving priority to "working with the market" has its merits whereas such a strategy should be accompanied by sound scientific research into the internalisation of external costs and can only be successful if scientifically clear boundary conditions are set, based on the carrying capacity and preserved health of the natural systems,
- K. whereas the IPP is meant to be an integrating concept, providing principles to be observed by EU environmental policies in general,
- L. whereas the Commission has launched a variety of policy proposals, all related to IPP, without sufficient attention being paid to the need for an integrating systems view and to the many links and synergies that do exist,
- M. whereas the Commission initially devotes all its attention to products; whereas this is highly regrettable since it is by offering services, rather than products, that powerful

incentives are created for a more efficient use of energy as well as materials,

- N. whereas our industrial system feeds on distant ecosystems by means of trade and is often insensitive to their degradation; whereas this implies that efforts to promote the IPP-approach on an international level as pointed out in the Communication are highly important;
- O. whereas consumers are in great need of relevant information as regards the environmental characteristics of products and whereas the various eco-label systems were launched with the best of intentions; whereas, however, most eco-label efforts have not come up to expectations, one reason being that no work has ever been done on reduced VAT for eco-label products; whereas the most obvious shortcomings are those observed at EU level,
- P. whereas the information flow through the whole product chain needs to be improved and whereas there is a need for the development and co-ordination of different information instruments, not least to facilitate reuse and recycling;
1. Welcomes the IPP communication but regrets that it provides only limited guidance on how to move society in the direction of truly sustainable systems of product development and design;
  2. Calls on the Commission to present, at the earliest possible opportunity, a framework directive for IPP based on a set of clearly defined principles and objectives; points out that the objective is not to present detailed requirements on all products but to establish framework conditions aimed at facilitating business practices in the future which should be built on systems thinking, giving priority to resource efficiency and should be structured progressively along biological lines;
  3. Notes that the IPP concept must be geared to creating a framework for product-related systematic bundling of those instruments of substances-oriented environmental policy and policies on the protection of natural elements (such as air, water, etc.), which have been conducted to date and which have had an isolated impact and for making those instruments coherent; calls on the Commission to formulate tangible objectives aimed at establishing coherence and consistency in the area of product-related environmental protection;
  4. Suggests that the main principles guiding the IPP framework have to be based on:
    - a) systems-based approach, where life-cycle thinking is at the core and primary attention is given to product design,
    - b) an enhanced understanding of how natural systems work and of how structuring business along biological lines can improve both the environment and establish the bottom line.
    - c) ensuring that products, whose useful life is over, should ideally not become useless waste but be separated and reconditioned to become inputs for new production cycles,
    - d) an enhanced understanding of how consumption patterns are formed and how they can be changed to contribute to sustainable development.
    - e) optimization of the product design process, by the selection of low-impact materials - giving preference to bio-based materials; moreover, scarce elements, like many heavy

- metals, should not be allowed systematically to increase in concentration in the biosphere; furthermore, chemicals should be used in a non-dissipatory way; safety of chemicals should be assessed through a science-based hazard and/or risk-approach; priority, should be given, however, to the substitution principle meaning that hazardous substances including many heavy metals should preferably be replaced by more benign ones or safeguarded through tightly controlled closed-loop recycling,
- f) optimization of production techniques, by giving preference to the clustering of production by encouraging reuse and recycling of materials, in particular by developing techniques for the separation and reconditioning of used products and materials to become input for new production cycles,
  - g) reduction of impact during use,
  - h) making full use of the potential offered by ICT to promote miniaturisation and dematerialisation, enhancing energy and material efficiency and reducing transport demand turning products into sustainable services,
  - i) maximum involvement of stakeholders;
5. Suggests that the short-term objectives for the IPP framework ought to be focused on reductions in emissions of greenhouse, eutrophying and acidifying gases and air pollutants, reductions in energy intensity, reductions in the use of hazardous substances and reductions in the intensity of virgin material resource use, water use, waste production and increase in renewable material use;
6. Recognises that, without the creation of such a framework the necessary signals and incentives are not put across to designers and decision makers; insists that the IPP framework should provide clear targets for these priority environmental objectives, drawing from existing and future targets and objectives in the relevant framework directives, international conventions and thematic strategies so as to send a clear orientation to designers and decision makers;
7. Calls on the Commission to assist industry in the on-going IPP process by means of coherent and consistent rules in order to promote sustainable development and rethink traditional business models in an effort to facilitate the evolution of more integrated and systems-based practices, such as for instance **the clustering of production, functional thinking** (turning products into services), **dematerialisation** and **technology development based on imitating nature**;
8. Calls on the Commission to give priority to the following actions:
- g) develop the necessary incentives to promote IPP,
  - h) identify key R&D areas and pilot projects,
  - i) develop and implement effective information tools at the consumer level (product registers, eco-labels and/or comparable tools); present a strategy on how different information instruments can be developed and co-ordinated in order to improve the information flow in the whole product chain,
  - j) develop and implement education and awareness-raising programs in society at large, giving special attention to certain target groups,
  - k) integrate IPP and life-cycle thinking in all major EU policy areas,
  - l) draw up a plan for co-ordinating IPP with other on-going processes such as relevant thematic strategies, the follow-up to Johannesburg, Chemical Strategies, Climate



action plan etc.

9. Calls on the Commission to explore possible measures for the promotion of sustainable consumption with a focus on reduced resource consumption and resource efficiency, enabling consumers to act in a more sustainable way;
10. Calls on the Commission to make the various IPP instruments (including eco-labels, management systems, public procurement, EMAS, product information, etc.) dovetail with each other, to make them clear for the consumer and practicable for all undertakings;
11. Calls on the Commission, when refining the IPP concept, to attach particular importance to knowledge transfer and environmental information for consumers;
12. Recommends that the Commission develop the concept of life-cycle thinking into a policy principle that could be referenced but stresses the need to have a realistic understanding of the value and manifold limitations of life-cycle assessments (LCAs), in particular given the continuing problems with regard to the availability, quality and comparability of LCA data;
13. Calls on the Commission to mainstream the IPP concept in all its relevant legislative proposals;
14. Recommends that the Commission draw up a strategy within the Copernicus Charter in order to add the life-cycle and eco-design concept as an objective in primary and higher education and engineering training;
15. Calls on the Commission to carry out an IPP compatibility review of existing legislation;
16. Calls on the Commission to develop a system of benchmarking for key product groups in order for improvements in environmental performance to be measured over time and to formulate mandatory minimum design obligations;
17. Urges the Commission to recognise the key role played by the availability, quality and comparability of environmental lifecycle data of products in enabling IPP – especially for benchmarking, labelling and other IPP tools;
18. Urges the Commission to initiate a process whereby the targets outlined in the previously presented Action Plan on Green Public Procurement become binding;
19. Urges the Commission to develop systems for technology procurement at EU-level, ideally managed by the Commission or managed by the member states and coordinated by the Commission, the purpose being to stimulate the development of more functionally-oriented innovations, including enhanced environmental performance;
20. Insists that market prices must reflect the true social and ecological costs of production and consumption in order for "green products" to attract the interest of consumers and in order to encourage the evolution of more sustainable products; urges the Commission to reduce and/or eliminate subsidies counteracting IPP; urges the Commission to take the lead in implementing the Polluters Pays Principle; calls on the Commission to promote

'working with the market', to which the Commission proposal attaches priority, and have this accompanied by sound scientific research into the internalisation of external costs;

21. Calls on the Commission to give at least equal relevance to "service design" (functional and system thinking) as compared to "product design" and to undertake clear actions within IPP to shift from products to services, where possible and environmentally beneficial;
22. Calls on the Commission to assess the achievements and limitations of the New approach and present proposal for the revision of the New Approach;
23. Calls on the Commission and on the Member States to make available sufficient resources to implement IPP;
24. Recommends that the role of retailers in delivering product information be further investigated, and that the critical role of marketing and indeed of the finance and insurance sectors should be recognised;
25. Considers that public access to environmental information on products is a fundamental prerequisite for and incentive to manufacturers to reduce the life-cycle impacts of their products;
26. Calls on the Commission, to take into consideration on-going R&D programs on eco-design and to use resources within the Sixth Framework Programme proactively to stimulate the necessary trans-disciplinary research needed for IPP, including the development of appropriate business models; takes the view that special emphasis should be given to the development of standards for re-usable materials and separation techniques for multi-layer materials;
27. Calls on the Commission to establish a steering committee for IPP as well as working groups in specific areas, such as systems design, economic tools, product environmental lifecycle data and consumption policy; is of the opinion that parallel to this, clear stakeholder procedures and a detailed workplan and timetable for actions, initiatives and implementation foreseen by the Commission should be established; believes, moreover, that a study should be initiated to clarify how and in what way the various tools and instruments considered to promote IPP interact, strengthen and support each other; takes the view that important aspects to be taken into consideration would be measures that enable and motivate individuals as well as companies to take lifecycle concerns in their decisions, measures that stimulate and reward leaders and measures that force laggards to improve, measures that address immediate challenges as well as long term objectives;
28. Calls on the Commission to take initiatives to promote the transfer of IPP knowledge (LCA, eco-design, etc.) to developing countries;
29. Instructs its President to forward this resolution to the Council and Commission.

## Explanatory Statement

### Background

Traditional environmental policies have been relatively successful in combating point source emissions. However, despite all our efforts, waste flows are increasing and the negative impact from non-point sources, notably consumption and transportation, is becoming increasingly serious. Its dispersed nature makes the problem difficult to manage through standard regulatory approaches.

The resource efficiency gains and environmental improvements gained through stricter pollution control and enhanced energy and material efficiency, have been offset by the tremendous scale of economic growth and by consumer choices that favour energy- and material-intensive lifestyles. A recent report by the EEA (European Environment Agency) confirms that the total volume of waste within EU member states increased by more than 15% during the 1990's. Studies from other OECD countries tell of a similar picture.

If this is the picture in the EU, the situation globally is even more problematic. Through globalisation, western production and consumption patterns are rapidly spreading across the world. This means that levels of waste and pollution will continue to rise globally and lead to increasing pressure on the biosphere.

### Natural Capital alarmingly scarce

At the beginning of the industrial revolution both skilled labour and financial capital were relatively scarce, while global stocks of natural capital were abundant and little exploited. Today the situation has radically changed and nature is becoming alarmingly scarce. The main problem is not that we will run out of finite materials, like minerals or oil. No, the main problem is the potential loss of living systems, on which we all ultimately depend.

The market system, as practised, has so far been financially profitable. But it is not sustainable, the main reason being its neglect to assign a correct value to the largest stocks of capital it employs – the natural resources and living systems. Many of the services we receive from the living systems have no known substitutes at any price.

Besides climate, the changes in the biosphere are widespread. In the past fifty years the world has lost an estimated fourth of its topsoil and a third of its forest cover. We are losing fresh water ecosystems at the rate of 6% a year and marine eco-systems by 4% a year. Moreover, as a result of prevailing production and consumption patterns, a gradual build-up in nature of potentially hazardous substances is taking place.

Few of the major environmental problems experienced so far have been predicted by science before they were actually observed. The fact is that our understanding of the complete make-up and functions of the global eco-system is very incomplete. One reason for this is the vertical organisation of both science and education.

There are numerous historical examples of products and practices, assumed to be have been "without danger", but which later on have been revealed as inherently unsustainable for large-scale societal use. Examples include CFC's, PCB, DDT as well as the methyl mercury in biota. Other examples, potentially more serious, are now being discussed: brominated flame retardants in our blood, endocrine disruption of human foetal development by plastic additives, man-made antibiotics leaking into nature, cadmium accumulating in our bodies etc.

## **To pollute less is not good enough**

To exceed the carrying capacity of the earth can help society temporarily to raise material living standards but, at the same time, it puts our natural capital in serious decline. To use a metaphor: the ability to accelerate a car that is low on gasoline does not prove that the tank is full.

The world is likely to face at least a tripling of world GDP over the next 30-40 years. If we continue business as usual the resulting increase in waste and pollution levels will be devastating.

We cannot expect developing countries to be at the vanguard of addressing these kinds of problems. They lack the necessary financial as well as scientific and technological resources. The main responsibility rests with industrialized countries. If Europe were to take the lead, it would be likely to dominate technology markets in the future.

A transformation of the industrial system is urgently needed. Materials introduced in society will eventually leak from the techno-sphere and disperse in nature. For example, recent studies have found hormones, endocrine disrupters, heavy metals and other dangerous compounds in bodies of water that receive "treated" sewage effluents.

The products and services offered must therefore be clean and in co-evolution with nature. Only then will air, water and soil be able to absorb all the waste products.

Incremental step-by-step approaches by governments have led to improvements, but are far from sufficient. "To pollute less" is simply not good enough. We have to move away from linear resource flows to a system dominated by resource efficiency, waste minimization, controlled use of hazardous substances and restoration and expansion of the stocks of natural capital.

## **IPP - a vehicle for change**

The 6<sup>th</sup> Environment Action Programme of the EU stresses the need for greater resource efficiency and improved waste management, in order to decouple resource use from economic growth. The programme further describes a number of measures in order to speed up development towards more sustainable production and consumption patterns. Thematic strategies, e.g. on the use of natural resources and prevention and recycling of waste, are supposed to outline more detailed policy recommendations.

The IPP concept (Integrated Product Policy) should be seen against this background. Based on life-cycle thinking, IPP offers good opportunities to create framework conditions in support of resource efficiency, waste minimization, controlled use of hazardous substances and restoration and expansion of the stocks of natural capital. A life cycle perspective in policy-making is necessary to ensure that environmental impacts are not transferred between different life cycle phases or different life cycle media. The negative impact on the biosphere by the increased volumes of waste and pollution is to a great extent the result of the way products as well as services are designed. By focussing on making product design more intelligent – based on preventive strategic planning and thinking – waste streams could be substantially reduced, notably those which nature cannot absorb.

In the proposal by the European Commission, IPP is presented as an integral part of the European Union's sustainable development strategy. Whether or not IPP will be an effective instrument depends on how the policy is defined and what measures will be included. In the Commission's proposal it is emphasized that the chances of meeting this challenge will be smaller without an explicit product dimension in environmental policy. Specifically, the Commission proposal stresses that IPP will be a key part of the implementing measures for

the Thematic Strategy on the Sustainable Use of Resources, and that on Prevention and Recycling of Waste.<sup>1</sup>

## **EU environmental policy lacks coherence**

Seen in retrospect, EU environmental policy has been lacking in coherence. A variety of policy proposals have been launched over the years, focussing on specific and, indeed, important problems but without sufficient attention being paid to the many interlinkages and synergies that exist. IPP is meant to be an integrating force and thereby capable of pulling together various policy instruments, providing coherence and supporting a systems view. This is crucial, since many of the challenges faced with regard to sustainable development can only be addressed through a systems-based approach. The vertical organisation of society and the lack of a systems perspective, is definitely one of the major reasons why we often experience a clash between the conventional model of economic growth and environmental sustainability.

The IPP concept offers excellent opportunities to create a framework of incentives for both businesses and consumers to move away from a production model of linear flows of resource use to one characterized by resource efficiency, waste minimization, controlled use of hazardous substances and restoration and expansion of the stocks of natural capital. Such a shift will not happen over night. It will require a long-term vision of the role of IPP in the necessary transformation of the industrial system of production. Moreover, clear environmental objectives are needed for short-term action. The Commission proposal is conspicuously vague on both these counts. To turn the obvious potential of IPP into reality will require a much more proactive approach than the one presented by the Commission.

## **The Commission proposal is too vague and too passive**

The Commission proposal sets out to "support sustainable development by reducing resource use and the negative impact from waste disposal, and by reducing the environmental impact from products throughout their life-cycle." Moreover, the Commission professes to "establish the framework conditions for the continued environmental improvements of all products."

However, the Commission proposal provides limited guidance as how to bring about the necessary changes. The required framework for IPP is simply not there. Were we to follow the Commission proposal, very little would be achieved in terms of eco-design and cleaner production in the years to come.

The Commission proposal stresses the importance of "working with the market" This is a worthy objective. However, the market economy has its clear limitations when it comes to dealing with pollution and environment scarcity. To address such problems, the right policy frameworks have to be established that provide clear incentives for eco-design and clean production.

Take one example: there is nothing in the market by itself that gives a signal when the capacity of the biosphere to absorb CO<sub>2</sub>-emissions is exhausted. So "working with the market" will only be successful within a policy framework where natural capital is assigned a correct value (today it has practically no value at all) and where clean and non-polluting products and services are given priority.

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<sup>1</sup> Communication p. 5-6

One important element of such a framework would be the implementation of the "polluter pays principle". As long as environmentally benign products are more expensive than pollution-intensive ones, we cannot expect much change to happen.

A crucial aspect is related to the increasingly important role played by financial markets: Companies have no inbuilt propensity to pollute. But they have to make money and are in fierce competition for financial performance and shareholder value. It would therefore seem feasible to create incentives for those companies that demonstrate that they minimize resource consumption and make efforts for eco-design.

### **Imitate Nature**

Another important framework condition would be to stimulate business practices that are based on systems thinking and structured along biological lines. The potential impact on industrial practices of learning from biology is enormous and has been well explained by a number of scientists. Among them Gunter Pauli and the ZERI foundation should be specifically mentioned. Gunter's work is pioneering and has helped numerous communities in the South to benefit from the opportunities provided by an enhanced understanding of how nature works ([www.zeri.org](http://www.zeri.org)).

Another important contribution is the book "Natural Capitalism" by Paul Hawken and Amory Lovins. The authors point out that structuring business practices along biological lines can significantly improve the bottom line. Nature has developed systems on how to fabricate materials that are the envy of engineers. Many companies are focussing on harvesting enzymes from organisms in the environment for use in industrial processes. Others try to imitate nature when it comes to developing high-strength materials. Prominent examples of such materials, fabricated by biology at low temperature, pressure and energy cost, are spider silk and abalone shell.

Materials that are bio-based will cause no harm to nature. Renewable energy is a case in point. But there are many other examples, like, for instance, plastics made of starch that could replace conventional plastics. Moreover, by studying how different species interact, solutions can be found to many problems. Japanese scientists have recently been able to separate the ingoing materials in CDs and DVDs (plastics and aluminium) by the use of algae. Similarly, Colombian scientists have been able to separate aluminium, plastics and paper from drink containers, using bacteria. These are just examples. But, in order for such practices to develop, the incentives structure of the economy must encourage the development of solutions like these. Furthermore, R&D work must be reoriented and stimulate the necessary trans-disciplinary efforts to address problems like these.

Consumption today is based on products made up primarily of the following types of materials: **renewables, minerals, chemicals and composite materials**. To enhance material efficiency does not only mean to do more with less. Materials should be handled in such a manner that, when the useful life of a product is over, it does not become useless waste but can be separated and reconditioned to become inputs for new productive use - or, when this is not possible, be turned into nutrients for biological processes. Such a direction of production and product design would offer benefits for society as well as for business.

A strategy like this would only work if it were based on the following principles and conditions:

**First,** to base production and product design as much as possible on renewable materials. By doing so, residue materials can easily be turned back to nature and be used as nutrients. For

instance, there are fascinating developments within biotechnology companies offering all kinds of non-petroleum plastics. Attention should be given to packaging, even if such materials don't belong to the most serious ones from a pollution point of view. Such materials make up a significant part of the waste volumes in society. A lot would be gained if the bulk of packaging was biodegradable. Why should tooth-paste tubes and ketchup bottles, to take a few examples, last for decades while their content is consumed more or less instantly.

**Second**, to stimulate the clustering of different production activities, regardless if they are based on biomass or non-renewables, so that residue materials from one process can be easily used as inputs in another process. By doing so new jobs would be created, the business cash-flow would improve and pollution would be reduced. In order for this to happen, present incentives structures in the economy as well as business models may have to be reconsidered.

**Third**, to encourage R&D to develop separation techniques for the increasing volume of composite materials in society. Many of these materials are positive from a functional point of view and often lead to reductions in energy and material use. However, in order for these materials not to become useless waste, they must undergo separation so as to be used again productively.

**Fourth**, to separate as much as possible material flows that are based on renewables from those based on minerals and/or chemicals. Scarce elements, like most heavy metals, should not be allowed to systematically increase in concentrations in the biosphere; they should either be substituted for by other materials or safeguarded in tight technical loops within society.

**Five**, to use chemicals in a non-dissipative way; priority hazardous substances should be replaced by more benign ones or safeguarded through tightly controlled closed-loop recycling.

**Six**, the IPP strategy must have a strong focus on innovation. A shift towards new production and consumption systems will depend a lot on innovation. It is surprising how little the Commission proposal emphasizes the role that IPP can play to trigger and support positive innovations such as systems design and systems innovation.

**Seven**, the IPP strategy must include services. Although the Commission explicitly notes that services are not excluded from the scope of IPP, the implementation strategy is focusing primarily on products. Both Council and Parliament have called on the Commission to make services a part of the strategy at once. There are three major arguments for this. Firstly, the service sector is a large and important sector, with considerable associated environmental impacts, particularly in the southern part of Europe where tourism is an important source of income. Secondly, many products are already sold as a package together with associated services; thus there is already an intrinsic link between products and services. Thirdly, the encouragement of new models of providing products, through for example product service systems, where a company sells the function of a product rather than the product itself, is one way to address the problems of our high levels of resource use and waste generation.

**Eighth**, the IPP-strategy needs to include education measures to a much larger extent. If people are to reflect on and include the lifecycle perspective into their decisions, education and information with regard to the underlying logic of lifecycle thinking is imperative. IPP must therefore include comprehensive plans for education activities directed at policy makers, current and future professionals in engineering, product design, marketing, purchasing, economy and general management as well as current and future consumers.

**Nine**, there is a need for a new generation of eco-labels. Consumers will play an important role in ensuring the overall success of the future IPP framework through the product and service choices that they make. The provision of a complete and balanced set of information regarding the 'sustainability' of any given product or service is therefore central in the drive

towards sustainable consumption. On the European level, the only system for environmental product information to the consumer is the EU-flower. In spite of good intentions the EU-flower has not been successful. It is therefore imperative that measures are taken either to greatly enhance the effectiveness and relevance of the EU-flower so it becomes a real tool for encouraging and enabling consumers to make a "green decision", or alternative tools for providing life-cycled based environmental product information need to be developed. **Ten**, Public Procurement as well as Technical procurement can play a major role. Public procurement represent an estimated 16 %of GDP within the EU. It could play a central role in enhancing demand for environmentally benign products. The same goes for technical procurement in areas of particular importance. Experience from several member states, such as Sweden, shows that well targeted technical procurement - as in the field of energy efficiency - has had a major impact on market developments.

I hope I have been able to explain the main rationale why a framework directive for IPP is urgently needed. Without such a directive, the necessary incentives will be missing to move business in the right direction. The objective for a framework directive is not to introduce detailed requirements for product design. Rather, the objective is to provide incentives to facilitate future business practices which are built on systems thinking, giving priority to resource efficiency and business practices progressively structured along biological lines.

Brussels, april , 2004

Anders Wijkman