



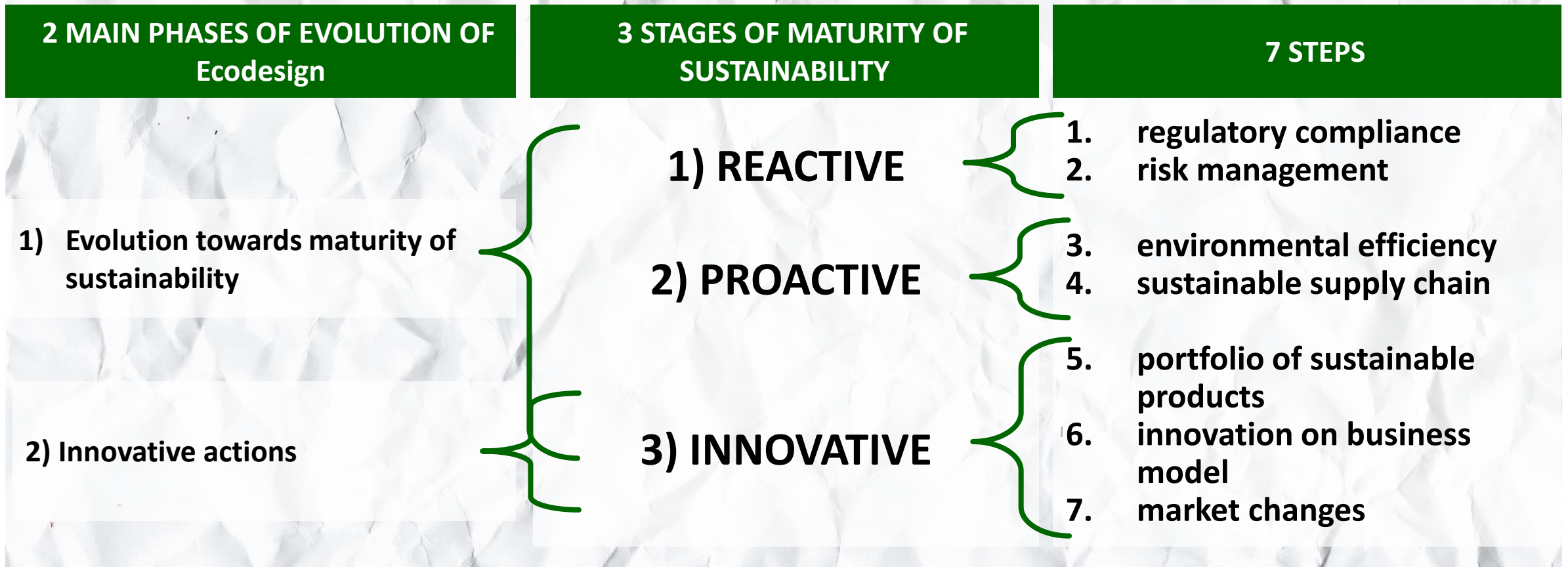
ECOSIGN

Ecodesign in the Textile sector

Unit 09: Ecodesign approaches in the textile products



General framework of Ecodesign strategies



Evolution towards maturity of sustainability

REACTIVE PHASE

It addresses environmental issues by taking into account existing mandatory regulations and voluntary certifications available.

See contents of Units 03 and 04

PROACTIVE PHASE

It regard the awareness of what happens during the product life cycle. It face to understand the dynamics and opportunities that arise from the analysis of supply chain and use phase of product in order to increase operational efficiency.

See contents Unit 05 and 07

INNOVATIVE PHASE

It foresee the development and implementation of innovation policies. It intervene in strategic innovation plans by integrating sustainability actions, which can also involve and develop the business model.

It concerns this Unit 09 and next Unit 10.

Design for Sustainability (DFS)

WHAT'S THIS

It consists of a series of guidelines that put the environment at the centre of a product's development process jointly with traditional parameters regarding economic, functional, performance and aesthetic aspects.

ORIGIN

DFS was born at the University of Delft in the Netherlands, It covers several sectors, and it is still evolving.
A set of general guidelines for D4S implementation can be downloaded from <http://www.d4s-sbs.org/>

HOW IT WORKS

The DFS intervenes in three phases of the product life cycle:

- materials selection
- optimisation of production processes
- rethinking design

Design for Sustainability (DFS)

MATERIALS SELECTION

Material selection is the first step in the DFS method.

The guidelines provide a list of priorities for the choices:

- to direct design towards the use of materials from renewable and biodegradable sources
- to prefer high quality fibres in order to provide better performance and extend the life of the product
- to prefer the use of certified fibres meeting environmental standards
- to evaluate fibre substitution with lower impact fibres
- to give priority to materials with the lowest energy consumption and environmental impacts
- delete unnecessary parts
- to evaluate the substitution of virgin fibres by recycled ones

Design for Sustainability (DFS)

OPTIMISATION OF PRODUCTION PROCESSES

New production techniques allow Ecodesigners to introduce new and more sustainable scenarios.

A constant update on the state of the art allows to have access to innovations that could give concrete results and can make a significant difference.

The Ecodesign principles aimed at optimizing production chains include:

- maximizing energy efficiency
- reducing production phases and avoid unnecessary processes
- reducing waste and adopting guidelines to improve waste recycling
- ensure the application of best available standards for the supply chain (especially in case of outsourcing)
- optimizing the distribution system

Design for Sustainability (DFS)

RETHINKING DESIGN

The rethinking of design must ensure to meet the needs of the consumer and at the same time, it requires the evaluation of new methods to improve sustainability:

- Increase product functionality
- Optimize product end of life, Design for Disassembly (DFD)

Also the ISO 14062:2002 set out five criteria for the design phase:

- cost reduction through process optimisation
- development of new products consistent with innovative and creative aesthetic aspects
- development of new products with recycled materials
- consider trends and changes in social behaviour
- consider the improvement of the brand image

Design for Recycling (DFR) and Design for Disassembly (DFD)

DESIGN FOR RECYCLING (DFR)

Design lists to promote reuse and recycling of products starting from the initial design phase, in order to develop products that are easy to recycle in order to maintain a high resale value and optimize the Circular Economy.

According to the DFR principles, the priority of preferences for maximizing recycling potential is:

- **white fabrics** for easy dyeing;
- **natural fibres** that are easier to "extract" and more versatile;
- **good quality fibres** that can be processed on faster machines;
- **pure fibres** that require less processing than fibre mixtures, guaranteeing reliable results and efficiency in the recycling process.

DESIGN FOR DISASSEMBLY (DFD)

Design methodology that provides:

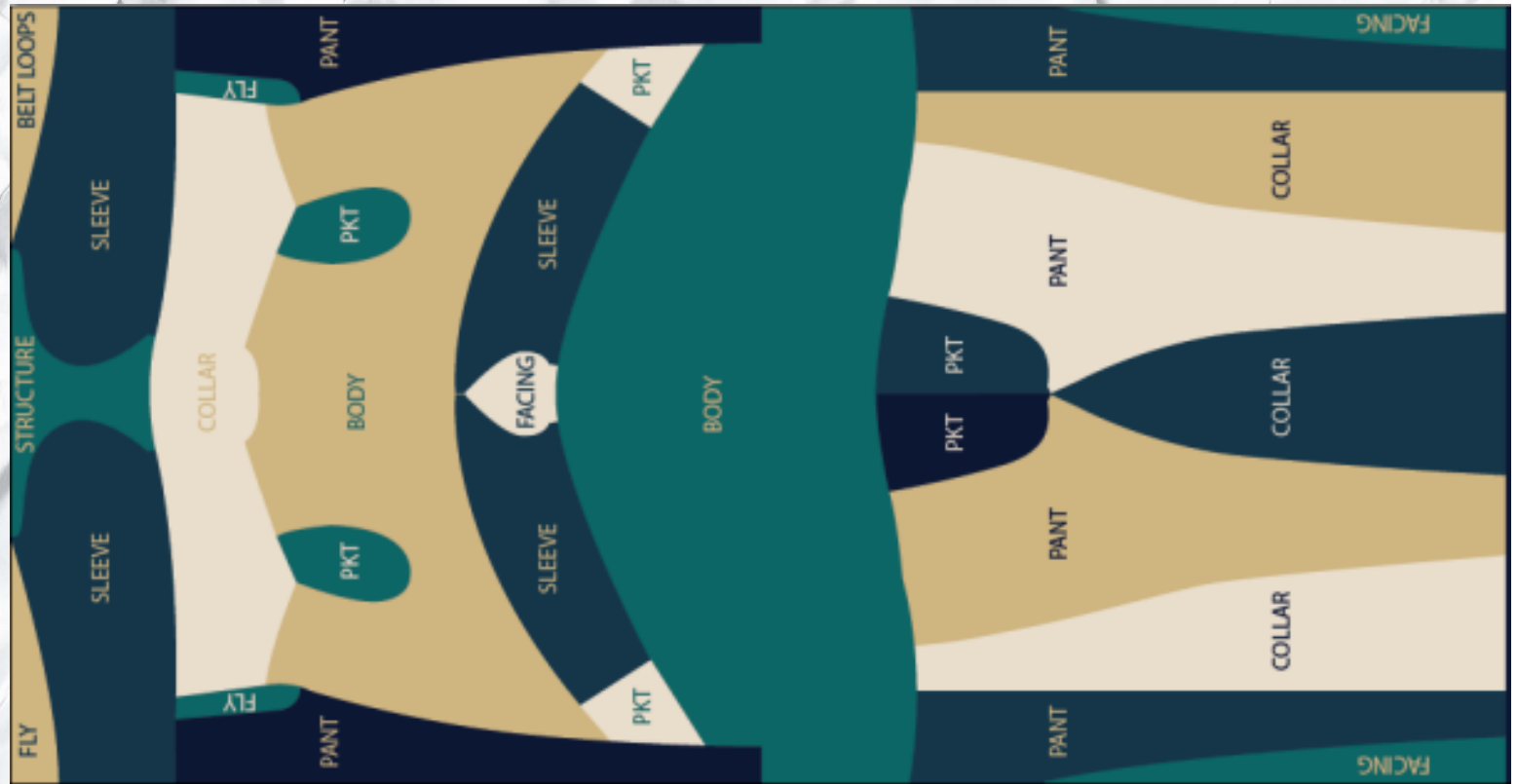
- the reduction of the elements of the final product, trying to avoid unnecessary components.
- Increase ease of disassembly at the end of life to optimize material recycling.

Zero waste pattern cutting

ZERO WASTE PATTERN CUTTING

For fabrics, adaptation of the pattern of each component of the garment in order to "fit it like in a puzzle", up to exploiting 100% of the useful surface.

Some software are enabling this by positioning, development and allows to simulate the finished garment.



Zero Waste pattern Cutting – Holly McQuillan

Zero waste pattern cutting

“A Piece Of Cloth”

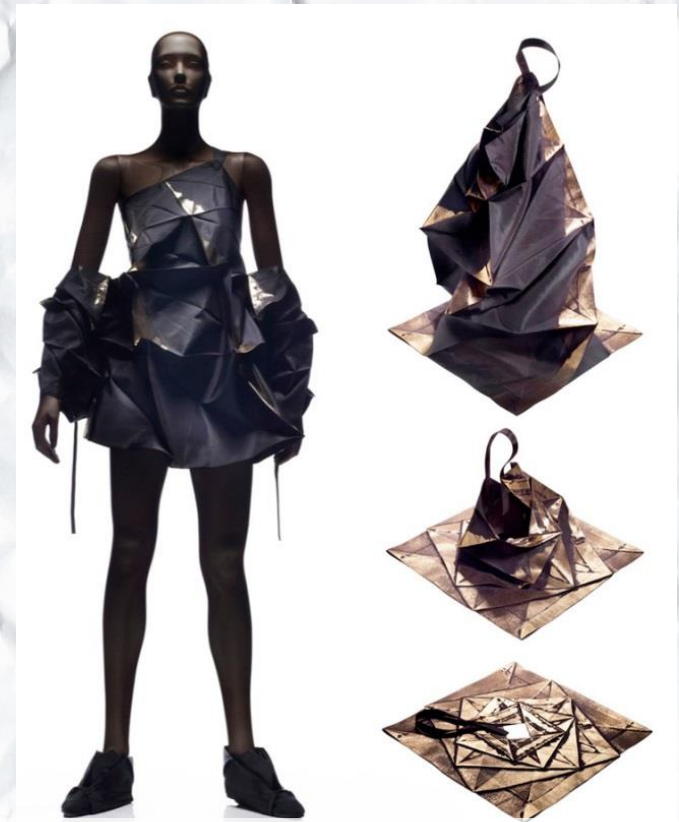
Other examples:

1976, Issey Miyake, concept "A Piece Of Cloth": concept of design focused on extracting from a single piece of fabric a single garment able to dress the body without failing to "normal" needs, indeed, re-establishing the canons of aesthetics.

Currently, SEAMLESS knitwear is a technology that allows this approach.



A piece of Cloth – Issey Miyake



Design For Longevity

WHAT'S THIS

A strategy for improving the environmental aspects of a textile product, focusing on extending the useful life of the product. It is in contrast with the "fashion bulimic" generated by Fast Fashion.

ORIGIN

By the British organization WRAP, which deals with sustainability in various sectors. They have produced several studies, downloadable from their website <http://www.wrap.org.uk/sustainable-textiles>, which help Ecodesigners and companies develop guidelines for sustainable design.

HOW IT WORKS

The principles of Design For Longevity are aimed to intervene from the initial design phase in order to maximize the useful life of a product, counteracting the early obsolescence of the product itself.

Design For Longevity - Studio

STUDY

- 8 assessed categories :
- children's clothing
 - formal dresses
 - knitwear
 - tailoring
 - denim
 - sportswear
 - casual clothing
 - underwear

ASPECTS COVERED

- cost implications
- expected impact on longevity
- overall environmental impact

4 AREAS OF FOCUS

1. Sizes, dimensions and shapes, by designing clothes that can be easily adjusted
2. Fabric quality
3. Colours and styles
4. Care and consumer awareness

Thank you

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