The BIO TEN

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The BIO TEN are a set of strategies to help designers navigate biobased, local, and circular design in a transition to sustainability.

BIOBASED

By using biobased materials, designers can reduce dependency on finite and polluting fossil resources. Biobased materials can come from nature in the form of fibres or can also be extracted from biomass. Biomass can be grown specifically to produce textiles, or it can be found as a by-product of agricultural processes.

LOCAL

To move away from our over-reliance on complex and fragile global supply chains, designers can look at local ecosystems, where their products are made and used, making sure employment in the sector is fair and fulfilling.

CIRCULAR

Design for a circular economy means that products and services are made and recaptured at end of life in ways which enables the recirculation of resources; thus avoiding landfill and incineration. Biobased materials and products can be designed to circulate and then recirculate in local systems.

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DESIGN FOR COLLABORATION

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DESIGN FOR COLLABORATION

Design that considers the perspective of multiple stakeholders and involves them in the process.

A. MATERIALS

Design approaches that consider production and use of materials as a collaborative process for circularity. *E.g. A material made from waste resources collected by a facility in a local area.*

B. MODELS

Design that collaboratively develops new business models and social Collaborative design approaches that develop new business models and social systems for circularity. *E.g. An open-source community-based textile prototyping lab that supports new and non-conventional production methods.*

C. MINDSETS

Design approaches that support collaborative mindsets and behaviours in individuals, organisations and institutions. *E.g. A business that allocates profits and time resources to climate justice organisations.*

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DESIGN FOR SYSTEMS

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DESIGN FOR SYSTEMS

Design that considers full systems in a transition to biobased, local and circular textiles.

A. LOCAL ECOSYSTEMS

Design approaches that are embedded within the specific parameters of a local environment or bioregion. *E.g. A product that uses locally grown or foraged fibres and plant dyes.*

B. TIMEFRAMES

Design approaches that consider the variable duration of a circular lifecycle and responds with appropriate materials and processes. *E.g. A product that is made to last a short time but has a very low impact in production and end of life recycling.*

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DESIGN FOR COMMUNICATION

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DESIGN FOR COMMUNICATION

Design that improve the flows of information between actors in the supply chain and end users.

A. LABELLING

The design of communication outputs that address transparency and clarity of information on digital and physical product labels. *E.g. A digital product passport that shows the field in which the product's fibre was grown.*

B. MARKETTING

The design of marketing and communication campaigns that aims to support circular behaviour change across a range of stakeholders. *E.g. A communication campaign that is transparent about the challenges in a brand's journey to circularity.*

C. ACTIVISM

The design of events and communication strategies to increase consumer and designer knowledge about environmental and social impacts. *E.g. An online campaign to encourage citizens to learn about the biobased materials in their wardrobes.*

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DESIGN FOR RECYCLING

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DESIGN FOR RECYCLING

The design of materials and products optimising recovery and diversion from landfill at end-of-life.

A. DESIGN FOR END OF LIFE TRAJECTORIES

Design approaches that consider the most appropriate recycling solution which avoids disruptors and contamination. *E.g. A product that is made of one material to be recycled mechanically at end of life.*

B. DESIGN FOR COLLECTING AND SORTING

The design of products and services that enable the recovery and identification of a product for a suitable recycling technology at end of life. *E.g. A service to take back end of life garments and sort them with infrared technology.*

C. DESIGN FOR DISASSEMBLY

The design of a material or product in a way that enables its efficient disassembly into parts that can easily be reused or recycled. *E.g. A biobased outerwear product that includes a detachable waterproof layer that is not biobased.*

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DESIGN TO MINIMISE IMPACTS

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DESIGN TO MINIMISE IMPACTS

Design that reduces impacts such as water, energy, carbon, resource consumption, and pollution.

A. SELECTING

The selection of materials or processes for circular products that have lower impacts compared to conventional options. *E.g. A product made from a low impact, locally produced biobased material.*

B. FINISHING

The choice of technical or aesthetic finishes (anti pilling, dyes, etc) for circular products that have reduced impacts compared to conventional options. *E.g. A product dyed using locally produced bacterial dyes.*

C. EMBELLISHING

The choice of embellishment or surface decoration on a circular material or product that uses low impact resources and processes. *E.g. A product decorated with biobased sequins.*

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DESIGN TO MINIMISE WASTE

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DESIGN TO MINIMISE WASTE

Design that avoids the wasting of material resources both in the production of new products and at end of life.

A. ZERO WASTE DESIGN

A proactive approach to designing full products where no offcuts are created, either through making the product shape directly into the fabric structure, or by making full use of the flat fabric surface.
E.g. A product knitted directly into shape using 3-d technology.

B. DESIGN WITH WASTE

Design approaches that divert materials from landfill or incineration to make them into new products. *E.g. A product made using cutting waste from local factories.*

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DESIGN FOR LONGEVITY

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DESIGN FOR LONGEVITY

Design that aim to extend the useful life of a product and delays the need to buy a replacement product.

A. PHYSICAL DURABILITY

Design approaches that consider the usual points of physical failure in a product - such as tearing, or trims breaking - and works to avoid them. *E.g. A product made with reinforced seams and resistant fabric, sold with a durability guarantee.*

B. AESTHETIC DURABILITY

Design approaches that avoid trends in order to provide a timeless aesthetic, that can be relevant and desirable for many years. *E.g. A product designed with classic tailoring, subtly textured fabric in muted tones.*

C. EMOTIONAL DURABILITY

Design approaches that create a connection to the user through story-telling or personal memories to foster an emotional attachment that aims to encourage the product be kept longer. *E.g. A product designed to evolve with the physical impacts of usage and acquire an attractive patina.*

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DESIGN FOR TRANSFORMATION

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DESIGN FOR TRANSFORMATION

Design that anticipates the changing needs of users, aiming to replace the need for several products with one.

A. MULTIFUNCTION

Product design approaches that offers the functionality of different garments within a single item by incorporating ways to change shape or appearance. *E.g. A reversible product that can show a plain or patterned outer layer depending on the users' choice.*

B. ADAPTABILITY

Product design that can change over time, adapting to the needs of the user across different stages of their life. *E.g. A product that has adaptable seams to change as the user's body shape changes.*

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DESIGN FOR SHARING

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DESIGN FOR SHARING

Design for multiple users to access a single item, replacing the need for each user to buy a separate product.

A. DESIGN FOR RENTAL AND SWAPPING

Approaches to product and service design that enable garments to circulate between multiple users through B2C or C2C leasing or swapping platforms. *E.g. A peer-to-peer (C2C) platform to swap clothes in a local area.*

B. DESIGN TO FIT MANY

Product design approaches that enables a garment to be worn by different users, with little or no changes being needed. *E.g. A genderless-design garment that can be worn by multiple members of a family or household.*

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DESIGN FOR UPCYCLING

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DESIGN FOR UPCYCLING

Design that puts waste garments back into circulation without returning them to a raw material state.

A. REPAIR

Design of service interventions that restore a broken or used product to its former function. Repair can be purely functional but can also restore or create a new aesthetic finish. *E.g. A service to collect broken products and deliver them to local repair shops.*

B. REMANUFACTURING

Design approaches to encourage a future remaking process, making a new product out of one, or several, end-of-life products. *E.g. A product designed with large sections of fabric in places unlikely to get worn or stained that can be reused for a new product at end of life.*