UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

INDUSTRIAL DESIGN

FOR SUSTAINABLE DEVELOPMENT

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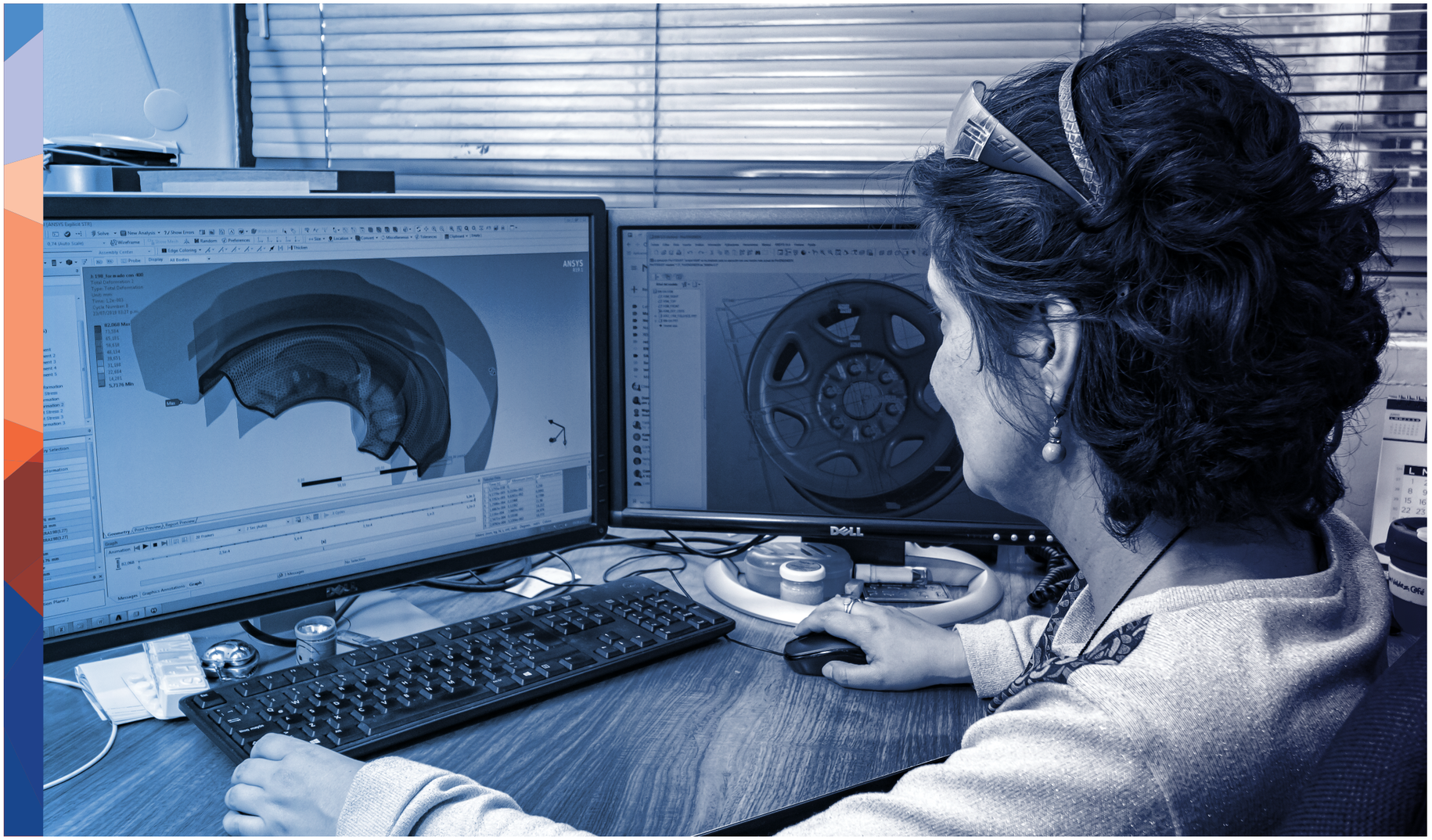


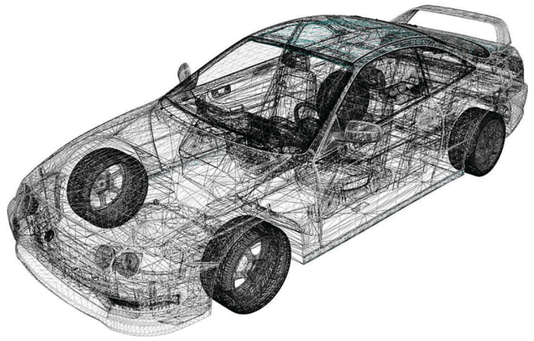
Industrial design, combining innovation and creativity, is essential for attaining the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs), especially Goal 9 on infrastructure, innovation, and sustainable industrialization.

INDUSTRIAL DESIGN
FOR SUSTAINABLE DEVELOPMENT

Industrial design is nurtured and fostered through innovation and creativity, which is becoming increasingly recognized across countries and industries. It is "a strategic problem-solving process that drives innovation, builds business success and leads to a better quality of life through innovative products, systems, services and experiences".

Acknowledging the key role of industrial design, UNIDO's Department of Digitalization, Technology and Innovation (DTI) provides a technical service module aimed to help countries maximize their value added and sustainability. Further, the module helps UNIDO to ensure that countries achieve enhanced productivity and international competitiveness, particularly that of small and medium-sized enterprises (SMEs) active in the manufacturing sector through innovative industrial design, upgrading technical and human capabilities for developing innovative industrial designs for locally produced goods. The DTI Module on Industrial Design benefits from UNIDO's extensive expertise and experience in the area, as well as from its network and growing number of partnerships with the private sector, including foundations and companies. Through harnessing the expertise and resources of the private sector, UNIDO supports the development of unique and competitive industrial designs and innovative product lines representing higher-value-added goods by manufacturers.

Jointly with its partners, UNIDO guides beneficiary companies on their way to maximizing their value and sustainability, increasing efficiency and effectiveness through innovative industrial design aiming to improve their industrial performance and create value for business and job generation in developing countries and economies in transition.



Over the past five decades, UNIDO has been transferring to developing countries and economies in transition its experiences and best practices in promoting industrial design thereby improving their socio-economic development through introducing and advancing industrial product development in line with principles of circular economy, energy and resource efficient manufacturing.

UNIDO's DTI Department strategically combines its own range of services in order to help countries develop competitive manufacturing capacity, prove conformity with market requirements and gain access to new markets. DTI offers specialized support to UNIDO Member States to successfully achieve the SDGs, and especially their industrial development targets. The Department supports developing countries, economies in transition and emerging economies to achieve enhanced industrial competitiveness and stimulate innovation. Special emphasis is placed on enhancing capacities of SMEs, as they make up more than 90% of all businesses worldwide and are essential to the 'path out of poverty' for many developing countries — the nurturing of SMEs in developing countries is crucial for improving the impact of business on society.

Further, focusing on the development of private sector manufacturing SMEs and strengthening their support infrastructure, DTI benefits from extensive experience in enhancing productivity and international competitiveness of SMEs in manufacturing, where a specific focus is placed on the improvement and introduction of industrial design processes, along with ensuring the up-scaling and sustainability of these activities through building appropriate infrastructure of technical expertise and institutional capacities for technical and business support to local producers. A holistic package of technical services is delivered to support the efforts of UNIDO Member States in strengthening the ability of enterprises to enter new market niches with innovative products with improved industrial design that meet international standards.

Among those are the technical assistance projects that promote innovative industrial design for inclusive and sustainable industrial development. Some of the examples of technical cooperation projects on industrial design include success stories in light industries (textile, garment, footwear, home textiles, others), food processing, metal industries, automotive and machine building, construction and building material production, as well as integrated technology solutions and business models for sustainable industrial design worldwide.

UNIDO provides comprehensive technical assistance sevices through various methodologies and tools, including intellectual property, product design and solution design, creative design, applying digital tools for design, prototyping and 3D modelling, market-driven design, material composition design, design of integrated technology plant solutions and design of productive business solutions.

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UNIDO'S PACKAGE OF SERVICES

for inclusive and sustainable industrialization through industrial design, offered by the UNIDO Directorate of Digitalization, Technology and Agri-Business, Department of Digitalization, Technology and Innovation (DTA/DTI).

DELIVER
trainings and coaching

from initial concept to technical illustrations and assembly diagrams for the end users

PROVIDE
industrial services at enterprise level

including consulting, data processing and product design using computer-aided design & computer-aided manufacturing

RAISE
awareness and foster knowledge exchange

for improved materials, manufacturing processes and product life cycles, promoting their efficient selection and application

FOCUS
on materials and technologies

for improving the product design, including sources of materials, processes, content and composition, and other dimensions

FOSTER
innovation and communication

help organizations and manufacturers to adapt a more open approach to innovative design

FACILITATE
modern product development

building prototypes and models as an essential component of industrial design

IMPROVE
manufacturing process design

providing a full technical description, analysis of applications, and information on cost, speed, and environmental impact

BOOST
quality compliance

of the designed products to the international quality standards and improve the national quality infrastructure

FACILITATE
industry support network

for export promotion of target industrial products on the national, regional and international markets

DEVELOP
smart design solution

for integrated and sustainable technology and business models oriented towards target markets

STRENGTHEN
computer-aided design skills

of industrial designers to catch up with the digitalization and the fourth industrial revolution

INTEGRATE
mechanical engineering concepts

into the industrial design processes for future manufacturing of engineered products

IMPROVE
IP protection capacity

for product design, including intellectual property rights (patents), trademarks, and copyright

STRENGTHEN
institutional and business linkages

between manufacturers, technical support institutions, academia and the public sector for improved industrial design

DEMONSTRATE
innovative industrial design products

at the industry-specific national, regional and international platforms (fairs, exhibitions, B2B meetings, etc.)

At its heart,
industrial design
links innovation,
technology,
research, business
and customers
providing new value
and competitive
advantages across
economic, social
and environmental
spheres

SUCCESS STORIES

TAJIKISTAN

Industrial modernization and competitiveness improvement of carpet weaving, embroidery and textile sector

UNIDO experience includes projects focusing on market-oriented designs in light industries in East Europe and Central Asia. UNIDO supported the industrial upgrading of pilot enterprises in Tajikistan in productivity and quality improvement, development of new designs for home textiles, accessories and carpet collections, and improving access to the local, regional and international markets. Hundreds of experts, mostly women, were pulled from the margins of society, acquiring and strengthening their skills through newly introduced training opportunities. Numerous contracts were signed with leading domestic and international hotel, restaurant, retail chains and other partners, generating jobs and higher incomes.

ARMENIA

Improving competitiveness of export-oriented industries in Armenia

Through the initiative focusing on unique garment and shoe design in Armenia that reflects the customer demand and adds value for improved access to high fashion markets, a new generation of fashion designers was trained at a fashion school established as part of the UNIDO project in collaboration with a leading design school in Italy. Specifically, SPACE59 Training and Service Center, established as part of the UNIDO project, launched a “DIGI SPACE” platform providing professional courses on pattern-making, fashion illustration and digital product design, virtual prototyping, to satisfy the need in skilled expertise well-versed in the most recent digital design development tools and approaches. These efforts also ensured sustainability by delivery of design capacity building activities on a continuous basis.

INDIA

Enhancing the global competitiveness of the Indian Bicycle sector

The bicycle industry upgrading project in India aimed to build global competitiveness of this sector through a series of capacity building initiatives, channelled through the industry’s nodal technical institution and industry associations. In order to be globally competitive, the Indian bicycle industry must prioritize the production of aesthetically and technically advanced bicycle models. UNIDO intoduced capacity building programmes on e-bike design, global design trends, key design parameters and geometries, design targets, ergonomics, components’ interface and advanced tools such as computational fluid dynamics and finite element analysis. These activities have also involved the design of the tools, jigs and fixtures as well as special purpose machines to achieve overall design targets using 3D design software for prototype development as well as product-testing simulations.

CUBA

Technological and enterprise upgrading of agro-chemicals and agricultural machinery production sectors

UNIDO supported the development of a complex design of a new liquid fertilizer production plant, while also establishing the full production cycle. The project supported the industrial design development for agricultural machinery, such as the local design of liquid fertilizer sprayers adapted to the needs of Cuban agricultural sector. These designs represent a strategically important contribution to food security in Cuba based on efficient marketing and branding approaches, thereby filling the long-standing gap in fertilizer production and addressing the needs of growing tourism industry.

MEDITERRANEAN

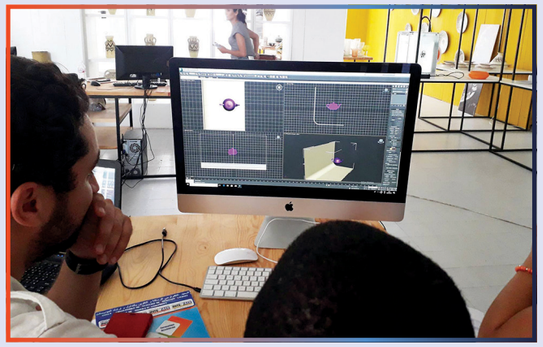
Cultural and Creative Industry Clusters in the Southern Mediterranean region

In its design-oriented project “Creative Mediterranean” implemented in Algeria, Egypt, Jordan, and Lebanon, UNIDO has given a major boost to creative industries across the Mediterranean to improve and modernize designs blending traditional and modern elements. Through this Project, UNIDO enables resilience and generates employment in the region, thereby creating a virtuous cycle of growth.

LEBANON

Enhanced access to export markets and improvement of Quality Infrastructure to increase TBT/SPS Compliance

In Lebanon, UNIDO launched the “LibanPack” packaging centre, an all-national service centre that provides services for packaging design and labelling, networking and training for manufacturers, users, converters, suppliers, designers, testing institutions, packaging specialists, providers and students of training and educational programs. This initiative unleashed the creativity of more than 240 students who developed a number of outstanding new packaging designs in Lebanon and throughout the region. The project created a bridge between the young generation of future graphic designers and industrial engineers, reinforcing the center’s role as an exchange platform fostering professional linkages and promoting long-term partnerships.



COLOMBIA

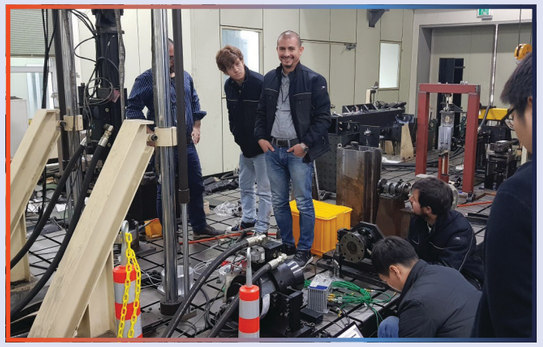
Sustainable and inclusive industrial development of the automotive supply chain through enhanced quality and productivity

In Colombia, UNIDO contributed to sustainable industrial development of the automotive industry by introducing for the first time a component on auto parts design and simulation. Awareness was raised amongst auto component suppliers fostering a better understanding of the design’s importance in this industry. Furthermore, a network of companies and institutions that have the capacities to offer design services (e.g. companies from ship building and aerospace industry that have idle capacities that the automotive industry could use) was also established.

CHINA

Promoting eco-design principles for inclusive and sustainable industrial development

UNIDO promotes green design, repair, remanufacturing and recycling of products. It also provides technical assistance to enterprises and governments on Resource Efficient and Cleaner Production (RECP) techniques. Established in China in 2018, the International Eco-Design Promotion Center serves as a major platform facilitating the creation of a global eco-design promotion network, encouraging the dissemination of successful experiences, creative ideas and innovative practices in eco-design. The UNIDO Institute for Capacity Development regularly conducts capacity building programmes and specialized professional trainings on eco-design in close collaboration with international academia and the network of UNIDO Investment and Technology Promotion Offices worldwide.



THEORY OF CHANGE

Through capacity building, workshops and other activities supporting the industrial design education and innovation ecosystem, beneficiaries can improve their socio-economic conditions and commercial performance, as well as market competitiveness. Design allows for a more substantial portion of value added that remains with its creators, thereby producing significant impact, ensuring higher income margins and productive job generation.

The inputs initiating change can be applied at various levels, from companies to policy-makers, thus extending influence on different parts of the insitutional setup. The changes can be tracked and evaluated using the indicators as suggested on the following page.

Such inputs are tailored to the specific needs of each beneficiary operator providing respective technical support activities, from which SMEs, macro- and meso-level institutions, as well as individual companies could benefit. These actions lead to changes in business practices and processes – that in turn are usually accompanied by solid innovation management – and also new products, all of which allows higher value added to be retained in the target sectors of specific countries and regions. •

Impact

Advancing economic competitiveness

→**ECO.1:** Number of firms with economic gains (additional sales, savings)
→**ECO.2:** Number of firms with improved labor productivity
→**ECO.3:** Number of firms with an increase in exports

Creating shared prosperity

→**SOC.2:** Number of SMEs with increased inclusion in value chains

Safeguarding the environment

→**ENV.5:** Number of new or improved green products made available or used

Outcome

Investments

→**INV.1:** Number of investment-ready proposals elaborated

Knowledge, attitude, skill and/or aspirations change

→**KASA.1:** Number of actors gaining awareness/knowledge on UNIDO knowledge areas
→**KASA.2:** Number of actors gaining skills on UNIDO knowledge areas

Reactions

→**REACT.1:** Percentage of actors satisfied with UNIDO interventions

Reach

→**REA.1:** Number of actors reached (by kind of actor)

Outputs

Technical Cooperation

→**TCO.1:** Number of capacity building activities provided
→**TCO.3:** Number of toolkits and guidelines produced

Policy Analysis

→**PAO.2:** Number of analytical and statistical publications produced

Convening and partnerships

→**CPO.1:** Number of global fora, workshops/EGM/side events organized
→**CPO.2:** Number of UN interagency mechanisms with UNIDO participation

DIGITALIZATION
TECHNOLOGY
INNOVATION

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

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