UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

BRIEFING PAPER

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What is the United Nations Industrial Development Organization?

The UNIDO is a specialized agency of the United Nations that promotes industrial development for poverty reduction, inclusive and successful globalisation and environmental sustainability. Their main mission, as adopted in the 13th conference of UNIDO in 2013, is to promote and accelerate Inclusive and Sustainable Industrial Development (ISID). It was formed in November of 1966 and is currently being led by the Director General Li Yong, of China.

ISID came under the 7th goal (to 'ensure environmental sustainability') of the Millennium Development Goals, that ran from 2000 to 2015. It is also a part of the integrated approach to sustainable development as recognized by the 2030 Agenda for Sustainable Development.

The climate crisis is a central issue for the UNIDO discussion as large levels of greenhouse gases produced from large-scale industries are the main cause of global warming and thus, climate change. If these levels are reduced and more sustainable methods of production and energy sourcing are utilised, further increase in the temperature of the planet could be prevented. If left unchecked climate change will cause average global temperatures to increase beyond 3°C, and will adversely affect every ecosystem. Already, we are seeing how climate change can exacerbate storms and disasters, and threats such as food and water scarcity, which can lead to conflict.

As well as helping countries to act in a more sustainable manner, they also help countries prosper economically. In turn, this can help increase efforts in tackling climate change as if a country is financially stable, with excess income, they can invest into sustainable energy sources and help the industries within to be less wasteful and use alternate methods in producing and be more efficient.

What is the Current Climate Crisis?

Climate change is a global challenge that has no borders and combating it requires coordinated work from all countries. It is important to clarify two concepts often mistaken for synonyms: climate change and global warming. Global warming is just one aspect of climate change. "Global warming" refers to the rise in global temperatures due mainly to the increasing concentrations of greenhouse gases in the atmosphere. "Climate change" refers to the increasing changes in the measures of climate over a long period of time. The UNIDO works on reducing global warming, as industry is very impactful on levels of greenhouse gases. As the planet's temperature rises more than it would naturally, the climate varies.

Climate change affects human health and wellbeing through more extreme weather events and wildfires, decreased air quality, and diseases transmitted by insects, food, and water. Climate disruptions to agriculture have been increasing and are projected to become more severe over this century. Surface and groundwater supplies in some regions are already stressed, and water quality is diminishing in many areas, in part due to increasing sediment and contaminant concentrations after heavy downpours.

Given current concentrations and on-going emissions of greenhouse gases, it is likely that by the end of this century, the increase in global temperature will exceed 1.5°C compared to 1850 to 1900 for all but one scenario. The world's oceans will warm, and ice melt will continue. Average sea level rise is predicted as 24 – 30cm by 2065 and 40-63cm by 2100. Most aspects of climate change will persist for many centuries even if emissions are stopped, which makes it essential to prevent the worsening and lasting damages of climate change.

Broadly speaking, since the start of the modern environmental movement in the 1960's, developed countries have been managing the environmental impacts of industries fairly effectively. However, in developing countries, environmental management is lagging behind industrial growth, resulting being pockets of severe local pollution caused by industry, as well as an increase in worldwide pollution and global warming.

'Energy consumption is the main cause of greenhouse gas emissions and globally industry accounts for about one third of such consumption.'

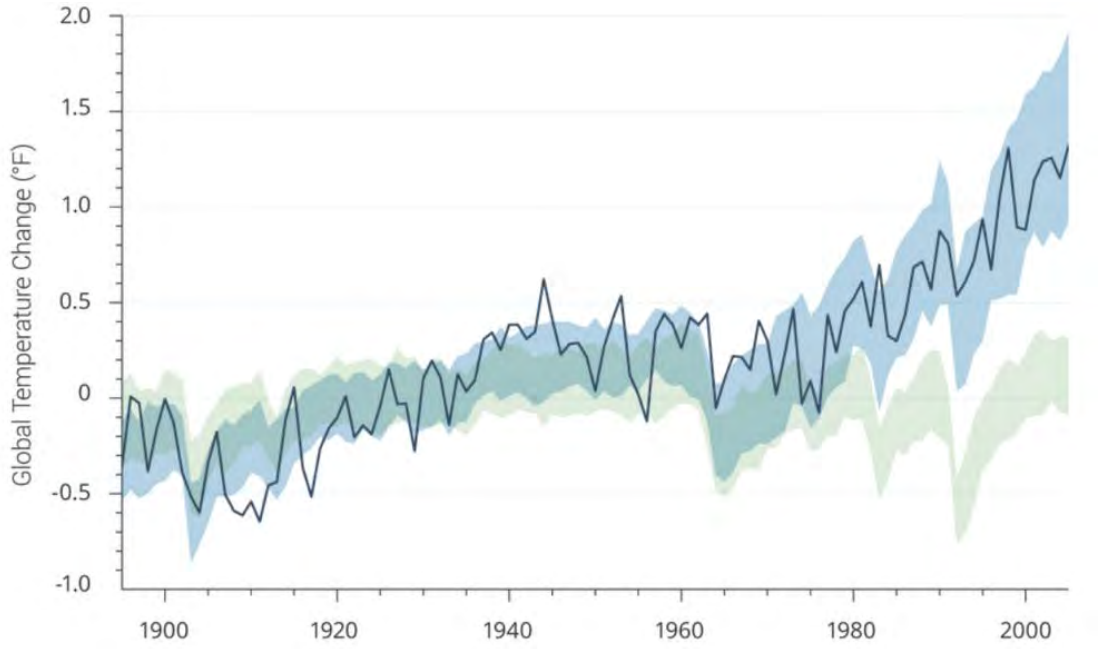
Marco Matteini, a UNIDO Industrial Development Officer

Industry and Its Effect on the Climate

Industrialization, while important for the economic growth and development of a society, can also be harmful to the environment. Amongst other things industrial process can cause climate change, pollution to air, water and soil, health issues, extinction of species, and more. Most of the fumes causing the climate crisis come from the combustion of fossil fuels in cars, buildings, factories, and power plants. The gas responsible for the most warming is carbon dioxide, or CO2.

As our society has become more industrialised, the levels of global warming and fumes in our air and atmosphere have greatly increased. Current levels of the greenhouse gases carbon dioxide, methane, and nitrous oxide in our atmosphere are higher than at any point over the past 800,000 years. For industry to continue and flourish in a sustainable manner, affordable and clean energy but be made available, alongside improved resource consumption efficiency.

Since the industrial revolution that took place in Europe and America from 1760 to 1840, levels have been slowly rising, and as more and more countries are beginning to industrialise, the levels of global warming and fumes in our air and atmosphere have greatly increased. Current levels of the greenhouse gases carbon dioxide, methane, and nitrous oxide in our atmosphere are higher than at any point over the past 800,000 years.



This graph shows the relationship between global temperature change and the prevalence of the causes of the change. Green represents natural causes such as the Earth's natural climate cycle and solar influences. Blue represents man made causes, such as increased greenhouse gas emissions The graph shows an exact positive correlation between the existence of man-made causes and global temperature.

Non-Renewable Energy sources and their impact on the environment

Non-renewable energy sources supply about 80 percent of the world's energy. They provide electricity, heat, and transportation, while also feeding the processes that make a huge range of products, from steel to plastic. When fossil fuels are burned, they release carbon dioxide and other greenhouse gases, which in turn trap heat in our atmosphere, making them the primary contributors to global warming and climate change.

Coal

Coal began to form during the Carboniferous period about 300 to 360 million years ago, when algae and debris from vegetation in swamp forests settled deeper and deeper under layers of mud. It is mined using surface and underground methods and supplies a third of all energy worldwide, with the top coal consumers and producers in 2018 being China, India, and the United States.

Carbon dioxide emissions from burning coal account for 44 percent of the world total, and it's the biggest single source of the global temperature increase above pre-industrial levels. The health and environmental consequences of coal use, along with competition from cheap natural gas, have contributed to its decline in the US and elsewhere. But in other places, most likely those that are recently industrialising, such as India, demand is expected to rise through 2023.

Oil

Crude oil is a liquid composed mainly of carbon and hydrogen that formed during the Mesozoic period, between 252 and 66 million years ago when plankton, algae, and other matter sank to the bottom of the sea and was eventually buried.

Extracted from onshore and offshore wells, crude oil is refined into a variety of petroleum products, including gasoline, diesel, and heating oil. The top oil-producing countries are the US, Saudi Arabia, and Russia, which together account for nearly 40 percent of the world's supply.

Petroleum use accounts for nearly half the carbon emissions in the US and about a third of the global total. In addition to the air pollution released when oil is burned, drilling and transport have led to several major accidents, such as the Exxon Valdez spill in 1989, the Deepwater Horizon disaster in 2010, the devastating Lac Megantic oil train derailment in 2013, and thousands of pipeline incidents. Nonetheless, oil demand continues to rise, driven not only by our thirst for mobility, but for the many products—including plastics—made using petrochemicals, which are generally derived from oil and gas

Natural Gas

Natural gas is an odourless gas composed primarily of methane that lies in deposits that formed millions of years ago from decaying plant matter and organisms. Both natural gas and oil production have surged in the US over the past two decades because of advances in the drilling technique most people know as fracking.

By using new methods such as combining fracking with horizontal drilling, the fossil-fuel industry has managed to extract resources that were previously too costly to reach. As a result, natural gas has surpassed coal to become the top fuel for US electricity production, and the US leads the world in natural gas production, followed by Russia and Iran.

Natural gas is cleaner than coal and oil in terms of emissions, but nonetheless accounts for a fifth of the world's total emissions, not counting the so-called fugitive emissions that escape from the industry.

Renewable Energy sources and their impact on the environment

Hydropower

Hydropower is the world's biggest source of renewable energy, with China, Brazil, Canada, the US, and Russia the leading hydropower producers. While hydropower is theoretically a clean energy source replenished by rain and snow, it also has several drawbacks. The most significant of these are the effect on local environment, its reliability on water availability and its high cost.

Dams have been primarily being used to harness water for energy, however this has expanded with tidal and wave energy projects become increasingly used across the globe. Currently, marine energy projects generate an estimated 500 megawatts of power—less than one percent of all renewables—but the potential is far greater. Programmes like Scotland's Saltire Prize have encouraged innovation in this area.

Wind

Harnessing the wind as a source of energy started more than 7,000 years ago. Now, electricity-generating wind turbines are proliferating around the globe, and China, the US, and Germany are the leading wind energy producers. From 2001 to 2017, cumulative wind capacity around the world increased to more than 539,000 megawatts from 23,900 mw—more than 22 fold.

Wind power holds huge advantages. These include – it doesn't contribute to local pollution or atmospheric emissions, is sustainable as it is a form of solar energy and is incredibly cost effective (around 4-5 cents per Kilowatt-hour).

While most wind power comes from onshore turbines, offshore projects are appearing too, with the most in the UK and Germany. The first US offshore wind farm opened in 2016 in Rhode Island, and other offshore projects are gaining momentum.

Solar

From home rooftops to utility-scale farms, solar power is reshaping energy markets around the world. In the decade from 2007 and 2017 the world's total installed energy capacity from photovoltaic panels increased a whopping 4,300 percent.

In addition to solar panels, which convert the sun's light to electricity, concentrating solar power (CSP) plants use mirrors to concentrate the sun's heat, deriving thermal energy instead.

China, Japan, and the US are leading the solar transformation, but solar still has a long way to go, accounting for around two percent of the total electricity generated in the US in 2017.

What has the UNIDO done to tackle global warming and the climate crisis in the past?

UNIDO was instrumental in the creation of the Sustainable Development Goals and shows full commitment to their achievement and deliverance of its mandate to support Member States in achieving the ISID. The sustainable development goals make up the core of the 2030 Agenda for Sustainable Development and guide all global, regional and national development endeavours for the next 15 years.

There are 17 Sustainable Development Goals, 4 of which loosely relate to the prevention of climate change and one that directly calls for an improvement action. These goals, the targets established, and the current success of these targets are detailed below.

Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all

- Increase the share of renewable energy in the Global mix
    - The global share of the population with access to clean cooking fuels and technologies reached 61 per cent in 2017, up from 57 per cent in 2010.
- Double the rate of improvement in energy efficiency
    - Energy efficiency rates decreased from 2010 to 2016
- Expand infrastructure and upgrade technology for supplying sustainable energy
    - Global investment into upgrading technology decreased by 11 per cent compared to 2017

Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable

- Provide safe, affordable and sustainable transport systems for all
    - No action
- Reduce the adverse environmental impact of cities
    - Breathing air is still very poor due to pollution and greenhouse gases, 9 in 10 people do not breathe air that meets the WHO's guidelines

Goal 12: Ensure sustainable consumption and production patterns

- Achieve the sustainable management and efficient use of natural resources
- Rationalize inefficient fossil fuel use
    - Little action has been taken to resolve either of these issues on a global scale

Goal 13: Take urgent action to combat climate change and its impacts

- Integrate climate change into national politics
    - More and more people are aware of climate change and it is regularly a topic in the UK Parliament, as well as many other places across the world
- Strengthen resilience towards climate related hazards
- Improve education on the matter
- Fully operationalize the Green Climate Fund through its capitalization
    - As of 20 May 2019, 28 countries had accessed Green Climate Fund grant financing for the formulation of national adaptation plans and other adaptation planning processes, with a value of $75 million

The UNIDO currently have 438 projects under the branch of 'Safeguarding the environment', where they have spent $116.2 million in 2019, and $629.86 million in total.

The Green Industry Initiative

UNIDO asserts that if humankind is committed to a sustainable and economically viable future, we need to ensure that industry does not harm the environment. This is called Green industry. The initiative that pioneered the promotion of this issue began in Vienna in 2010.

The initiative focuses on

- the promotion of low-carbon paths to industrial development
- efficient use of non-energy raw materials and of recycled industrial and non-industrial wastes;
- adoption of relevant products and technologies to meet international commitments or environmental standards
- adoption of environmental and related management systems

This initiative mainly focuses on developing countries and helping them to secure resource efficient, low carbon growth, whilst maintaining employment and even creating new jobs in the new industries. The programme also helps the countries move to new technologies and implement new environmental agreements, whilst providing support and a bank of knowledge simultaneously.

Energy Management Systems

The UNIDO helps countries and companies implement energy management systems that allow for the tracking of energy consumptions and the planning of new plans to improve their performance.

UNIDO's Energy Management System (EnMS) Programme in 18 countries has resulted in a total direct final energy saving of more than 7,500 GWh as of 2017, which is the same amount of energy consumed by about 1.5 million households in the European Union over a year. It also avoided the emission of 4.3m tons of CO2, the equivalent of the emissions from 1.75 million cars.

This programme forces private sector organizations to play their essential role in the fight against climate change and reaching SDG 13. Increasing industrial energy efficiency is an effective and cost-free way to do this.

Over the next 10 years, the UNIDO plans to roll out this program in many more countries due to its huge success in the 18 already on board.

Questions to consider

- How does climate change affect your country?
- How will climate change affect your country's industry?
- What has your country done to implement renewable energy resources and if they haven't, are there any plans for the future?
- How heavily does your country contribute to greenhouse gas emissions?
- Is your country committed to the Sustainable Development goals?

Useful websites

https://www.unido.org/sites/default/files/2015-12/ISID_SDG_brochure_final_0.pdf

https://open.unido.org/projects/list

https://eu.usatoday.com/story/money/2019/07/14/china-us-countries-that-produce-the-most-co-2-emissions/39548763/

https://www.unido.org