Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Target 9.b: Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities

Indicator 9.b.1: Proportion of medium and high-tech industry value added in total value added

Institutional information

Organization(s):

United Nations Industrial Development Organization (UNIDO)

Concepts and definitions

Definition:

The proportion of medium-high and high-tech industry (MHT hereafter) value added in total value added of manufacturing (MVA hereafter) is a ratio value between the value added of MHT industry and MVA.

Concepts:

The value added of an industry (industry value added) is a survey concept that refers to the given industry's net output derived from the difference of gross output and intermediate consumption. Manufacturing sector is defined according to the International Standard Industrial Classification of all Economic Activities (ISIC) Revision 3 (1990) or Revision 4 (2008). It refers to industries belonging to sector D in Revision 3 or sector C in Revision 4.

Technology classification is based on research and development (R&D) expenditure relative to value added otherwise referred as R&D intensity. Data for R&D intensity are presented in a report (Galindo-Rueda and Verger, 2016) published by the OECD in 2016, which also proposes a taxonomy for industry groups with different ranges of R&D expenditure relative to their gross value added. MHT industries have traditionally been defined exclusively to manufacturing industries. However, there have been recent efforts (Galindo-Rueda and Verger, 2016) to extend the definition to non-manufacturing industries as well. Nevertheless, medium-high and high technology sectors also in new paper are primarily represented by manufacturing industries.

ISIC Rev.4	Description	ISIC Rev.3	Description
20	Manufacture of chemicals and chemical products	24	Manufacture of chemicals and chemical products

21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	29	Manufacture of machinery and equipment n.e.c.
252	Manufacture of weapons and ammunition	30	Manufacture of office, accounting and computing machinery
26	Manufacture of computer, electronic and optical products	31	Manufacture of electrical machinery and apparatus n.e.c.
27	Manufacture of electrical equipment	32	Manufacture of radio, television and communication equipment and apparatus
28	Manufacture of machinery and equipment n.e.c.	33	Manufacture of medical, precision and optical instruments, watches and clocks
29	Manufacture of motor vehicles, trailers and semi-trailers	34	Manufacture of motor vehicles, trailers and semi-trailers
30*	Manufacture of other transport equipment	35**	Manufacture of other transport equipment
325	Manufacture of medical and dental instruments and supplies		

***** Excluding 301 (Building of ships and boats)

****** Excluding 351 (Building and repairing of ships and boats)

MVA is the value added of manufacturing industry, which is Section C of ISIC Rev.4, and Section D of ISIC Rev.3.

Rationale:

Industrial development generally entails a structural transition from resource-based and low technology activities to MHT activities. A modern, highly complex production structure offers better opportunities for skills development and technological innovation. MHT activities are also the high value addition industries of manufacturing with higher technological intensity and labour productivity. Increasing the share of MHT sectors also reflects the impact of innovation.

Comments and limitations:

Value added by economic activity should be reported at least at 3-digit ISIC for compiling MHT values.

Methodology

Computation method:

The indicator is calculated as the share of the sum of the value added from MHT economic activities to MVA.

(Sum of value added in MHT economic activities/MVA) *100

Treatment of missing values:

- ***At country level:***

Missing values are imputed based on the methodology from Competitive Industrial Performance Report (UNIDO, 2016)

- ***At regional and global levels:***

Imputation applied at country level.

Regional aggregates:

Regional and global aggregates are calculated as a weighted average of countries' MHT shares in a group. Weights are taken based on the MVA share in a group (UNIDO MVA Database).

Sources of discrepancies:

Conversion to USD or difference in ISIC combinations may cause discrepancy between national and international figures.

Data sources

Description:

Data can be found in UNIDO INDSTAT4 Database by ISIC Revision 3 and ISIC Revision 4 respectively.

Collection process:

Data are collected using General Industrial Statistics Questionnaire which is filled by NSOs and submitted to UNIDO annually. Data for OECD countries are obtained directly from OECD. Country data are also collected from official publications and official web-sites.

Data availability

Description:

More than 140 economies

Time series:

Data for this indicator are available as of 2000 in the UN Global SDG Database, but longer time series are available in the CIP database.

Disaggregation:

No disaggregation available.

Calendar

Data collection:

Data are collected annually from NSOs and OECD.

Data release:

UNIDO INDSTAT database is updated between March and April every year.

Data providers

National statistical offices (NSOs) in non-OECD countries, and OECD countries by OECD.

Data compilers

Name:

United Nations Industrial Development Organization (UNIDO)

References

URL:

www.unido.org/statistics

https://stat.unido.org/

References:

UNIDO Publication - The Industrial Competitiveness of Nations 2013

Competitive Industrial Performance (CIP) Report 2016

International Standard Industrial Classification of All Economic Activities 2008

Galindo-Rueda, F. and F. Verger (2016). OECD Taxonomy of Economic Activities Based on R&D Intensity, OECD Science, Technology and Industry Working Papers, 2016/04, OECD Publishing, Paris. Available at: http://dx.doi.org/10.1787/5jlv73sqqp8r-en