**GROSS FIXED CAPITAL FORMATION BY TYPE OF ASSET, PERIOD AND COMPONENTS.**

Technical Note

The following is prepared to serve as statistical metadata necessary for understanding the concepts and the manner in which the accompanying data are compiled.

# Overview

Gross Capital Formation (GCF) consists of expenditures on additions to the fixed assets of the economy plus net changes in the level of inventories. The data are presented in current prices and domestic currency. The assets covered in this release include fixed tangible assets such as dwellings, other buildings, other structures, land improvements, machinery and equipment and weapons systems as well as some estimation of intangible fixed assets such as transfer costs of ownership of non-produced assets and a measure of drilling investments. These estimates are useful to business and research communities, academia, the media and the general public as well as international organisations in determining aggregate capital investment flows by type of assets.

# Previous undertakings for estimates up to 2005

The major source of data used in the compilation of the gross capital formation was the Annual Sample Survey of Establishments. Data were extracted from responding establishments from the capital expenditure and the stocks sections and aggregated to arrive at industry totals. Since a census was done in the petroleum industry, response data equal capital formation for that industry.

In almost all the other industries, response data were used as population estimates. However, before arriving at this decision the following ratio was examined at the subindustry level: Gross output (Response panel of establishments) Gross output (Population). Where this ratio was close to 1, the response data were accepted as the population estimates for capital formation. Where it was significantly lower, the inverse of this ratio was used to `blow up' the data on capital formation from responding firms to arrive at population totals for each subindustry.

This method with minor modifications to suit the needs of unique industries, was used to estimate capital formation. Totals were then disaggregated into various components through the use of ratios derived from the response data. The following industries were the exception to this general rule: (i) Agriculture (ii) Taxi service, car rentals and trucking (iii) Central Bank and Commercial Banks (iv) Finance and acceptance houses (v) Insurance (vi) Real estate and dwelling services (vii) General Government.

# Estimates of Gross Capital Formation for 2006 to 2021.

The data are produced following international guidance, such as the [UN SNA 2008](https://unstats.un.org/unsd/nationalaccount/sna2008.asp), making them as far as possible coherent with capital components in national accounts and are therefore internationally comparable.

# Aggregation Method:

 Gap-filled total

# Valuation

Current prices, not seasonally adjusted

# Source of Data

Data on Imports and Exports of Capital Goods, CSO Merchandise Trade Statistics

CSO Annual Estimates of Construction activities

Estimates of Revenues of Central Government

# Method of Estimation

Production or commodity flow approach

Using this approach the estimates for entire economy is prepared on the basis of commodities flowing into various types of assets of the capital formation namely construction, machinery, software etc.

# Estimation of GFCF by Types of Assets

As per System of National Accounts 2008, Gross Fixed Capital Formation (GFCF) estimates in the new series (i.e. 2000-2021) are compiled for four broad categories of assets, which are:

1. Dwellings, other buildings & structures
2. Machinery & equipment
3. Weapon Systems
4. Cultivated Biological Assets
5. Cost of Ownership Transfer on Non-produced Assets
6. Intellectual Property Products

## **Construction**

The construction industry covers all building processes of housing and non-housing buildings on own account for sale or on fee or contract basis, as well as civil engineering works for new work; repairs; additions; alterations, erection of temporary structures; road construction and pavement; and construction of bridges as well as water and sewerage systems; power plants; refineries; chemical plants and telecommunication utilities.

This industry also covers, over and above; drilling water wells; reclaiming land; irrigation systems; installing air-conditioning devices; alarm systems; street lighting and traffic lights; connecting buildings to a water supply and sewerage network; as well as specialized activities such as pile driving; brick laying; roof covering; installing sanitary ware; elevators and escalators; aside from demolishing buildings and structures; site preparation etc.

The adopted estimation approach for this industry for national accounts variables are estimated according to a commodity flow approach measuring the results of changes in the flow construction inputs. The approach utilizes changes in domestic manufacture of construction materials such as wood and related products; paints and varnishes; finished plastic products; non-metallic mineral products; fabricated metal products and the Quarrying Sand, Gravel, Limestone. The net changes to merchandise trade of construction materials are also incorporated to determine the overall expenditures or material used up in construction. Other aggregated inputs measured included fuel and electricity and other services relative to construction output.

This total current price value of construction activities from the national accounts GDP estimates is then adjusted for maintenance and repairs works carried out by the industry. For the purpose of this account, a fixed percentage of (27%) was determine as an appropriate share of construction activities that form part of the current expenditure/intermediate consumption of residents.

## **Machinery and Equipment**

### Transport equipment

This component included expenditures on motor vehicles for transportation passengers or freight; trailers and semi-trailers; ships, boats and other floating structures for transportation, sport and recreation; aircrafts; military fighting vehicles; motorcycles; mopeds and bicycles. The capital formation value in current prices is determined as the total net traded value of these items. For items clearly used for commercial purpose and therefore form part of the capital expenditure of establishments, (100%) of the total values were included. Other items that include some element of intermediate or final consumption were allocated accordingly.

The following manufacture items of trade classified according to the economic use of the product. i.e. [[1]](#footnote-1)SITC were allocated to capital formation as follows:

| **SITC** | **Description** | **% Capital Investment** |
| --- | --- | --- |
| 781 | MOTOR CARS | 25% |
| 782 | GOODS & SPECIAL PURPOSE MOTOR VEHICLES | 100% |
| 783 | ROAD MOTOR VEHICLES NES | 50% |
| 784 | MOTOR VEHICLE PARTS NES | 0% |
| 785 | MOTORCYCLES & CYCLES | 1% |
| 786 | TRAILERS & CONTAINERS ETC | 100% |
| 791 | RAILWAY VEHICLES | 100% |
| 792 | AIRCRAFT, SPACECRAFT ETC. | 50% |
| 793 | SHIPS AND BOATS (imports only) | 50% |

One assumption made is that traditionally, within the Trinidad and Tobago domestic economy, ships and boats and other floating structures are not usually exported but usually completely used up by the end of its useful life. As such, only additions (imports only) are included in this account.

### ICT Equipment

ICT equipment include any device that can process, store or communicate electronic information. This includes both IT and telecom equipment that formed part of capital for the years reported. Capital Formation on ICT equipment included expenditures on telecom equipment; banking equipment such as ATMs; data related equipment such as data pre-processing equipment, data processing equipment, data storage device, personal computer(PCs), plotter, printer, scanner, text processing equipment, visual display unit, retail equipment for instance cash registers; point of sale equipment; electronic scales; computer and office equipment, mainly; copier, shredder, duplicator, microscopic office equipment, screens, projector, computer, server, electric paper conveyor, paper trimmer (including hole puncher, cutting machine, sorting machine), collating machine, pencil sharpener, stapler, typewriter, e-book, tablet PC, Large data storage equipment and telecom network infrastructure and equipment.

The following manufacture items of trade classified according to the economic use of the product i.e. SITC were allocated to capital formation as follows:

|  |  |  |
| --- | --- | --- |
| **SITC** | **Description** | **% Capital Investment** |
| 751 | OFFICE MACHINES | 50% |
| 752 | DATA PROCESSING MACHINES | 50% |
| 759 | OFFICE MACHINE PARTS | 0% |
| 761 | TELEVISION RECEIVERS | 50% |
| 762 | RADIO APPARATUS FOR BROADCAST BROADCASTING | 100% |
| 763 | SOUND RECORDERS | 50% |
| 764 | TELECOMMUNICATIONS EQUIPMENT | 50% |

### Other Machinery and Equipment

Expenditures on equipment of an industrial or commercial nature that act independently on materials either mechanically or thermally or are used for handling, spraying, weighing or packing were included under this heading. Machinery and Equipment component of the GFCF takes into account capital expenditure on general and special purpose machinery, agricultural and forestry machinery, engines and turbines, machinery for food, beverage and tobacco processing, textile, apparel and leather production and other special purpose machinery. Also included were furniture and related products, electric power machinery, electrical machinery and apparatus paintings and art pieces and jewellery. All expenditures on machine tools, parts and accessories were allocated to intermediate or final consumption.

The following manufacture items of trade classified according to the economic use of the product. i.e. SITC were allocated to capital formation as follows:

| **SITC** | **Description** | **% Capital Investment** |
| --- | --- | --- |
|  |  |  |
| 711 | STEAM-VAPOUR BOILERS | 100% |
| 712 | STEAM-VAPOUR TURBINES | 100% |
| 713 | INTERNAL COMBUSTION ENGINES | 100% |
| 714 | ENGINES & MOTORS NON-ELECTRIC | 50% |
| 716 | ROTATING ELECTRICAL PLANT | 100% |
| 718 | OTHER POWER GENERATING MACHINERY & PARTS | 50% |
| 721 | AGRICULTURAL MACHINERY | 100% |
| 722 | TRACTORS NES | 100% |
| 723 | CONTRACTORS' PLANT & EQUIPMENT | 100% |
| 724 | TEXTILE & LEATHER MACHINERY & PARTS | 50% |
| 725 | PAPER MAKING MACHINERY | 100% |
| 726 | PRINTING & BOOK BINDING MACHINERY | 100% |
| 727 | FOOD PROCESSING MACHINES | 50% |
| 728 | OTHER MACHINERY NES | 100% |
| 731 | TOOLS TO REMOVE MATERIAL | 100% |
| 733 | METAL WORKING TOOLS NES | 0% |
| 735 | PARTS FOR MACHINE TOOLS | 0% |
| 737 | METAL WORKING MACHINERY | 100% |
| 741 | HEATING & COOLING EQUIPMENT NES | 50% |
| 742 | PUMPS FOR LIQUIDS | 50% |
| 743 | OTHER PUMPS | 50% |
| 744 | MECHANICAL HANDLING EQUIPMENT & PARTS | 50% |
| 745 | OTHER NON-ELECTRICAL MACHINERY & TOOLS | 50% |
| 746 | BALL OR ROLLER BEARINGS | 0% |
| 747 | TAPS, COCKS, VALVES ETC. | 0% |
| 748 | TRANSMISSION SHAFTS, GEAR BOXES, FLYWHEELS ETC | 0% |
| 749 | MACHINE PARTS NES | 0% |

## **Weapon Systems**

The 1993 SNA states that destructive military weapon systems designed for combat, such as warships, fighter aircraft, and tanks, should be treated as intermediate consumption by general government rather than as fixed assets. This treatment failed to recognise the role of capital in the production of defence services as well as recognising that weapon systems provide a nation with economic benefits by protecting the liberty and property of its citizens. The 2008 SNA recommended that the classification of military weapon systems as fixed assets be based on the same criteria as other fixed assets—that is, produced assets that are themselves used repeatedly, or continuously, in processes of production for more than one year. Therefore, the estimates in the spreadsheet are of GFCF investment in weapons consistent with the net traded value applied to other components above, total imports less total exports for these goods.

## **Cultivated Biological Assets**

Nil

## **Cost of Ownership Transfer on Non-produced Assets**

To account for some level of ownership transfers within the economy for the periods outline, an estimate of costs associated with transferring, acquiring and disposing non-financial assets were allocated to GFCF. In Trinidad and Tobago, Stamp Duty is a tax that you must pay when carrying out certain transactions that require legal documents.  Deeds of Conveyance, Deeds of Gift, Deeds of Mortgage, Release of Mortgage Loan, Release of Life Insurance Policies, Transfer of Shares, Deeds of Lease, Deed Polls, Bonds, and any other deeds, require “stamping”, which means you must pay duty. Residents transacting business in real estate, acquiring shares, seeking a mortgage, or conducting other financial transactions are required to pay such duties.

This unadjusted tax values reported in revenue collections for the fiscal year (100%) were taken as an estimate of this component of the GFCF.

## **Intellectual Property Products (IPP)**

The key characteristics that, in many ways, differentiate IPP products from other goods and services are that they: are typically one-off (unique) but reproducible are often produced on own-account; are not subject to wear and tear like conventional assets; and can be readily reproduced with minimal physical production costs. The IPP created as a result of mineral exploration and production is a major component of IPP available to the T&T economy.

An E&P Licence confers the exclusive right to prospect for and dispose of petroleum in the licensed area. PSCs give similar exclusive rights in respect of a defined contract area. Neither confer ownership of any petroleum in strata. Exploration licenses give a non-exclusive right to explore within the licensed area and are now infrequently issued. ([Fitzwilliam Stone Furness-Smith & Morgan](https://www.lexology.com/contributors/21926/)).

Wholesale and Retail Trade Margins to derive Purchasers Price

The values extracted from the data on imports and exports are adjusted by adding a trade margin to derive an estimate of purchasers prices of items imported and sold to domestic residents as fixed capital.

The following margin rates were applied to items accordingly:

|  |  |
| --- | --- |
| **Goods** | **Margin Rate** |
| ***Machinery and Equipment*** |  |
|  Transport equipment | 27% |
|  ICT equipment | 25% |
|  Other machinery and equipment | 34% |
| ***Weapons Systems*** | 29% |

# Limitations and exceptions

The data presented on capital formation is estimated based on the commodity flow method using mainly data from, trade and construction activities. Given the challenges faced over the years with coverage of all economic activities and industries this method/approach is favoured to derive an estimate of capital formation for the whole economy.

Information was limited in the national accounts to assist with the allocation of other capital goods such as construction tools and kitchen utensils in for restaurant industry as well as musician instruments acquired by musicians. As such no allocation of traded goods under the SITC headings 695, 696 and 898 is made at this time.

The data is processed and compiled in domestic currency with fixed rates of trade margins applied to the series 2003 to 2021. No microdata about establishments were available during the process.

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1. Standard International Trade Classification (SITC) Revision 3 [↑](#footnote-ref-1)