

# Joint Eurostat/OECD 2019 questionnaire on the methodology underlying capital stocks data in national accounts

**Country: Latvia**

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## *Information regarding Gross Fixed Capital Formation (GFCF) compilation*

This information sheet presents metadata provided by the country for publication by Eurostat. It informs on the methods and sources used to compile GFCF under the [European System of Accounts 2010](#) (ESA 2010). While the questionnaire has a common structure, the level of detail of replies differs from one country to another and, therefore, only available country replies are shown here.

For easier cross-country comparison, users of GFCF data are invited to consult the tabular presentation of metadata on estimation of capital stocks by asset type, industry and institutional sector:

[Capital Stock Metadata in Tabular Format](#)

### **N111. Dwellings**

**Question 1. What is/are the main source/s to estimate GFCF in dwellings in your country, and which are the products or assets included under this asset category? Please specify if sources differ across industries and/or institutional sectors.**

S.11, S.12, S1.4 (producers) - data of investment surveys, S.13 - investment surveys and "Annual Report on the Central and Local Government Budget Implementation", S.15 - administrative data from The State Revenue Service "Balance sheets indicators on assets and liabilities", S.14 (households) - quantity \* price method for newly built dwelling houses (total square metres built in reference year multiplied by average price of square metre) minus investments in new dwelling houses in other institutional sectors. Additional to new buildings are included capital repairs, costs of ownership transfer with existing dwellings between households.

**Question 2. What is the length of the GFCF series for dwellings? If long GFCF series are available (previous to 1995), how do you estimate historical data? Please, describe additional sources and/or methods, and specify if these differ across industries and institutional sectors.**

The availability of GFCF data can be divided in three periods:

- 1) data for period from 2003 till now in split A\*88 (NACE Rev. 2) are available from direct data sources (surveys, calculations);
- 2) data for period from 1995 - 2002 in split A\*88 (NACE Rev. 2) are estimated using simple extrapolation method;

3) data before 1995 - GFCF at constant prices (2010 = 1) for capital stock and consumption of fixed capital calculation purposes (for NIM model) are derived using unit price multiplied with square metres. The data about square metres were derived from the State Land Cadaster (square metres built by years). The time line is built back till the oldest dwelling house registered in the Land Cadaster (the oldest house is built in 1186).

**Question 3. Are costs of ownership transfer included in GFCF? How do you define them and treat them in the estimation of capital stocks of dwellings (e.g. treated equally to GFCF, or specific average service life/depreciation profile for these costs)?**

Yes, costs of ownership transfer are included in GFCF. For capital stock and CFC calculation purposes transfer costs are treated in separate asset group and specific average service life is applied (25 years), the specific price index is also calculated.

**Question 4. What price indices do you use to deflate GFCF in dwellings, and how do you construct these indices? How do you account for quality improvements? Do you use specific price indices for detailed asset categories? Do these price indices differ across industries / institutional sectors? If they are available, please provide links to and/or relevant documents and metadata on their construction.**

GFCF in new dwellings are deflated using house price indices from Consumer price statistics. The price indices do not differ across industries or institutional sectors. Link on metadata on their construction: <https://www.csb.gov.lv/en/statistics/statistics-by-theme/economy/cpi/tables/metadata-house-price-index>. Price index for transfer costs are calculated by cost groups (for example, notary services are deflated with NACE 69 deflator), it is not published.

#### **N1121. Buildings other than dwellings**

**Question 1. Do you have specific GFCF series for detailed asset categories (e.g. office buildings, industrial buildings, public buildings, etc.)? Are your GFCF series broken down by industry and/or institutional sector? If your answer is yes to any of these questions, please describe and provide the link to available data and relevant documents.**

The GFCF data till 1995 have split by institutional sectors and NACE activities (2 digit level).

We have not got GFCF series for detailed asset categories in direct data sources, but asset categories by office buildings, industrial buildings, schools are split using transition matrix. The basis for constructing the transition matrix was the supply table. An assumption was made that if, for example, an agriculture activity produces accommodation services, then it should also have short term accommodation or hotel buildings; manufacturing activity of course is the main user of industrial buildings. The split by building type was done for PIM purposes as old time series before 1995 were constructed by building types (the information from the State Land Cadaster square metres built by years and by type of building).

**Question 2. What is/are the main source/s to estimate GFCF in buildings other than dwellings in your country? Please specify if sources differ across industries and/or institutional sectors.**

The group AN1121 is calculated as residual from the group Other buildings and structures (AN112) minus the groups Other structures (AN1122) and Land improvements (AN1123).

The data sources for the asset group Other buildings and structures (AN112) are as follows: for S.11, S.12, S.14 (producers) investment surveys data; for S.13 - investment surveys and "Annual Report on the Central and Local Government Budget Implementation"; for S.14 NACE activity 01 - information from Economic accounts for agriculture; and for S.15 - administrative data from the State Revenue Service "Balance sheets indicators on assets and liabilities".

**Question 3. What is the length of the GFCF series? If long GFCF series are available (previous to 1995), how do you estimate historical data? Please, describe additional sources and/or methods, and specify if these differs across assets within this asset category, industries and institutional sectors.**

The data availability by industry classification from the surveys for time period from 1995 till now and method used to acquire A\*88 split are the same as described in answer for dwellings.

For capital stock and consumption of fixed capital calculation purposes (for PIM), GFCF at constant prices before 1995 are derived using unit price (2010 = 1) multiplied with square metres. The data about square metres were derived from the State Land Cadaster (square metres built by years), the same approach as for dwellings.

**Question 4. Are costs of ownership transfer of buildings other than dwellings included in this GFCF series? How do you define them and treat them in the estimation of net capital stocks of buildings other than dwellings (e.g. treated equally to GFCF, or specific average service life/depreciation profile for these costs)?**

No, the costs of ownership transfer of buildings other than dwelling are not separately identified and are not treated separately. From our opinion, as GFCF are calculated as acquisitions less disposals, these costs are already included in price of GFCF.

**Question 5. What price indices do you use to deflate GFCF in buildings other than dwellings, and how do you construct these indices? How do you account for quality improvements? Do you use specific price indices for detailed asset categories? Do these price indices differ across industries/institutional sectors? If they are available, please provide links to and/or relevant documents and metadata on their construction.**

For this category construction costs indices for non-residential buildings are used. We have not this index in split by building categories. The price indices do not differ across industries/institutional sectors.

## **N1122. Other structures**

**Question 1. Do you have specific GFCF series for detailed asset categories (e.g. roads, railways, bridges, etc.)? Are your GFCF series broken down by industry and/or institutional sector? If your answer is yes to any of these questions, please describe and provide the link to available data and relevant documents.**

Separate estimations are made for GFCF:

- in railways and forest roads (both are part of the Non-financial corporations sector (S.11));
- for General government (S.13) investments in roads and bridges.

For both of these groups are available direct data on GFCF from statistical surveys.

Separate PIM models are used for civil engineering products such as:

- civil engineering works in activity Electricity, gas, steam air conditioning supply (NACE Rev. 2, Division 35);
- civil engineering works in activity Telecommunication (NACE Rev. 2; Division 61);
- other civil engineering works not distinguished before for sectors S.11, S.12, S.13, S.14 and S.15.

The GFCF for these groups are estimated using assumption, how large part of total investments in other buildings and structures (AN.112) can be attributed to Other structures (AN.1122). The assumptions for percentage are made taking in account information on the construction output by construction from construction statistics.

**Question 2. What is/are the main source/s to estimate GFCF in other structures in your country? Please specify if sources differ across industries and/or institutional sectors.**

The state railway belongs to the state joint stock company "Latvian Railway", which is not transferred unit to S.13 sector. The investments in railway from 1995 are available directly from the company "Latvian railway", while the investments in forest roads are available from the company "Latvian State Forests".

The data about current investments in roads are available from the "Annual Report on the Central and Local Government Budget Implementation" and from the survey "Report on funding for local government streets and roads".

The investments in other structures is estimated based on the percentages (the share from total AN.112).

**Question 3. What is the length of this GFCF series? If long GFCF series are available (previous to 1995), how do you estimate historical data? Please, describe additional sources and/or methods, and specify if these differs across assets within this asset category, industries and institutional sectors.**

The data availability for GFCF from 1995 till now is the same as described previously in groups AN.111 and AN.1121.

As there were no another data sources, the time line before 1995 at constant prices was made using the assumption that investments of other structures developed in the same rate as the rate of investments in industrial buildings.

The time series for state roads and bridges from 1966 till 2000 were constructed using “Latvian State Road museum” information (concerning newly built or capital repaired kilometres and the unit price (2010 = 1)). Before 1966, the time series of newly built or capital repaired kilometres was constructed using volume indices from construction of industrial buildings assuming that building of roads developed in the same rate as rate for investments in industrial buildings.

The time series for investment in infrastructure of railway before 1995 was constructed using information about railway lines built (km) and railways closed from the National Railway museum published at the Latvian railway website. After then quantity\*price method was used to receive time series at constant prices.

**Question 4. Are costs of ownership transfer of other structures included in this GFCF series? How do you define them and treat them in the estimation of net capital stocks of other structures (e.g. treated equally to GFCF, or specific average service life/depreciation profile for these costs)?**

No, the costs of ownership transfer of buildings, other than dwelling, are not separately identified and are not treated separately. In our opinion, as GFCF are calculated as acquisitions less disposals, these costs are already included in price of GFCF.

**Question 5. What price indices do you use to deflate GFCF in other structures, and how do you construct these indices? How do you account for quality improvements? Do you use specific price indices for detailed asset categories? Do these price indices differ across industries / institutional sectors? If they are available, please provide links to and/or relevant documents and metadata on their construction.**

For this group, Construction cost indices by constructions groups are used. The available split of indices: the road construction index (from 2012); other civil engineering objects.

These indices do not differ by institutional sectors/industries. Metadata about indices:

<https://www.csb.gov.lv/en/statistics/statistics-by-theme/economy/producer-prices/tables/metadata-construction-cost-indices>.

### **N1123. Land improvements**

**Question 1. Does GFCF in other buildings and structures (N112) reported in questionnaires 0102 (GDP identity from the expenditure side), 0302 (Capital formation) and 2200 (Cross-classification of gross fixed capital formation (GFCF) by industry and by asset (transactions)) include land improvements (N1123)?**

In this asset group of land improvements (AN.1123), is only the costs of transfer of ownership of land are included at present. The land improvement which can be identified as part of GFCF is left in group AN.1121, as a separate PIM model has not been built for this part, and for Latvia, the investments in this position are always under the materiality threshold (less than 0.1 % from GNI).

**Question 2. What is/are the main source/s to estimate the value of GFCF in land improvements in your country? Please specify if sources differ across industries and/or institutional sectors.**

The GFCF in land improvements, which can be identified, is available from the investment surveys (a separate question exists). The costs of transfer of ownership - separate calculation, taking into account all costs which can occur via transfer.

**Question 3. Are costs of ownership transfer of land included in land improvements (N1123) and hence in the aggregate asset category other buildings and structures (N112) that you report in the national accounts questionnaires 0102, 0302 and 2200?**

Yes, see the comment above.

**Question 4. What price indices do you use to deflate GFCF in land improvements, and how do you construct these indices? Do you use specific price indices for detailed asset categories? Do these price indices differ across industries / institutional sectors? If they are available, please provide links to and/or relevant documents and metadata on their construction.**

For land improvements the same as for the group AN.1121, for transfer costs - the same method as described for transfer costs of used dwellings. The price indices do not differ across industries/institutional sectors.

### **N1131. Transport equipment**

**Question 1. What is/are the main source/s to estimate GFCF in transport equipment in your country?**

The data sources for asset group Transport equipment - S.11, S.12, S.14 (producers) - investment surveys data, S.13 - investment surveys and the "Annual Report on the Central and Local Government Budget Implementation", S.14 NACE activity 01, information from the Economic accounts for agriculture, S.15 - administrative data from the State Revenue Service "Balance sheets indicators on assets and liabilities".

**Question 2. Do you have specific GFCF series for detailed asset categories (e.g. motor vehicles, ships, railway locomotives, aircrafts, etc.)? Are your GFCF series broken down by industry and/or institutional sector? If your answer is yes to any of these questions, please describe and provide the link to available data and relevant documents.**

No, we have not split by more detailed asset categories. Our GFCF series are broken down by industry and institutional sectors. The data availability from direct data sources as for other buildings can be divided in periods (from 2003 - the survey data, before 2002 - split A\*88 are acquired using simple extrapolation method).

**Question 3. What is the length of these GFCF series? If long GFCF series are available (previous to 1995), how do you estimate historical data? Please, describe additional sources and/or methods, and specify if these differ across assets within this category, industries and institutional sectors.**

Historical data before 1995 at constant prices (2010 = 1) was built using assumption that GFCF in Transport equipment developed in the same rate as the rate for investments in industrial buildings. The backward series were made till 1975.

**Question 4. What price indices do you use to deflate GFCF in transport equipment, and how do you construct these indices? How do you account for quality improvements? Do you use specific price indices for detailed asset categories? Do these price indices differ across industries/institutional sectors? If they are available, please provide links to and/or relevant documents and metadata on their construction.**

The deflators for transport equipment is constructed taking into account weights for imported and domestically produced part (deflated using import unit index and producer price indices for CPA 30 and CPA 29). The price indices do not differ across industries/institutional sectors.

#### **ICT equipment (N1132): computer hardware (N11321) + telecommunications equipment (N11322)**

**Question 1. What is/are the main source/s to estimate GFCF in computer hardware (N11321) and telecommunications equipment (N11322) in your country? Do you have specific GFCF series for detailed assets within these categories (e.g. data processing machines, peripheral equipment, storage units, etc.) in different industries and/or institutional sectors?**

The data sources for asset group ICT equipment: for S.11, S.12, S.14 (producers) - investment surveys data; for S.13 - investment surveys and the "Annual Report on the Central and Local Government Budget Implementation", for S.14 Nace activity 01 - information from the Economic accounts for agriculture, for S.15 - administrative data from The State Revenue Service "Balance sheets indicators on assets and liabilities". From the direct data sources split of ICT equipment is available only every third year. Between these periods previous year shares by industries from the total Machinery and equipment minus Transport equipment are used.

**Question 2. What is the length of GFCF in computer hardware and telecommunications equipment? If long GFCF series are available (previous to 1995), how do you estimate historical data? Please, describe additional sources and/or methods, and specify if these differ across detailed assets within these asset categories, industries and/or institutional sectors.**

Our GFCF series are broken down by industry and institutional sectors. The data availability from direct data sources as for other buildings can be divided in periods (from 2003 - the survey data, before 2002 - split A\*64 are acquired using simple extrapolation method). The time series were made back till 1985.

The information technology development in Latvia can be divided in three phases:

- From 1990 till 1995: this stage took place in the general IT in public administration, mainly intra-institutional function (document management, accounting, minimum infrastructure - maintenance documents, e-mail) implementation, the creation of an internal computer network;
- From 1995 till 1999: IT was developed and implemented by all major national information repositories. Accepted practice became a system in which data were available, and changes were made online (web applications), investing significant financial resources in local IT systems development in schools and libraries;
- From 2000 till 2006: intensive IT development of electronic services in the private sector, the bank introduced and developed the online banking services. Also, many public authorities upgraded their solutions with the introduction of higher-speed, Internet-based applications.

To back cast GFCF at constant prices, an assumption was made that GFCF from 1995-1990 decreased by 20 %, so in 1990 AN.11321 at constant prices was only 8% of 1995 volume. The timeline with volume indices was developed till 1985 with very slow development.

**Question 3. What price indices do you use to deflate GFCF in computer hardware and telecommunications equipment, and how do you construct these indices? How do you account for quality improvements? Do you use specific price indices for detailed asset categories? Do these price indices differ across industries / institutional sectors? If they are available, please provide links to and/or relevant documents and metadata on their construction.**

The deflators for ICT equipment are constructed taking into account weights for imported and domestically produced parts (deflated using import unit index and producer price indices for CPA 26). The price indices do not differ across industries/institutional sectors.

**Other machinery and equipment and weapons systems (N110): Other machinery and equipment (N1139) + weapons systems (N114)**

**Question 1. What is/are the main source/s to estimate GFCF in other machinery and equipment and weapons systems in your country? Do you have specific GFCF series for detailed assets within these categories (e.g. electrical equipment, weapons, etc.) in different industries and/or institutional sectors?**

The data sources for asset group Other machinery and structures: for S.11, S.12, S.14 (producers) - investment surveys data; S.13 - investment surveys and "Annual Report on the Central and Local Government Budget Implementation"; S.14 NACE activity 01, information from the Economic accounts for agriculture; and, for S.15 - administrative data from The State Revenue Service "Balance sheets indicators on assets and liabilities". From the direct data sources split other machinery and equipment is available only every third year, between these periods are used previous year share by industries from total Machinery and equipment minus Transport equipment.

The weapons systems are treated in a separate group. These data are available annually from the General Government statistics.

**Question 2. What is the length of GFCF in other machinery and equipment and weapons systems? If long GFCF series are available (previous to 1995), how do you estimate historical data? Please, describe additional sources and/or methods, and specify if these differ across assets within each asset category, industries and/or institutional sectors.**

Our GFCF series are broken down by industry and institutional sectors. The data availability from direct data sources as for other buildings can be divided in periods (from 2003 - the survey data, before 2002 - split A\*64 are acquired using simple extrapolation method). Time series previous to 1995 were extrapolated using assumption that investments of Other machinery and equipment developed in the same rate as the rate of investment in industrial buildings. The time series were made back till 1975.

For weapons systems, the time series of GFCF before 2002 were developed using data extrapolation from intermediate consumption data of the general government. The time series were made back till 1992.

**Question 3. What price indices do you use to deflate GFCF in other machinery and equipment and weapons systems, and how do you construct these indices? How do you account for quality improvements? Do you use specific price indices for detailed asset categories? Do these price indices differ across industries / institutional sectors? If they are available, please provide links to and/or relevant documents and metadata on their construction.**

The deflators for Other machinery and equipment is constructed taking into account weights for imported and domestically produced part (deflated using import unit index and producer price indices for CPA 25, 28, 30 and 31). The price indices do not differ across industries/institutional sectors.

### **Cultivated biological resources (N115)**

**Question 1. What is/are the main source/s to estimate GFCF in cultivated biological resources in your country? Do you have specific GFCF series for detailed assets within these categories (e.g. orchards, crops, dairy cattle, etc.) in different industries and/or institutional sectors?**

The data sources for asset group Cultivated biological resources: for S.11, S.12, S.14 (producers) - investment surveys data; for S.13 - investment surveys and the "Annual Report on the Central and Local Government Budget Implementation"; and, for S.14 NACE activity 01, information from the Economic accounts for agriculture.

**Question 2. What is the length of GFCF in cultivated biological resources? If long GFCF series are available (previous to 1995), how do you estimate historical data? Please, describe additional sources and/or methods, and specify if these differ across products within this asset category, industries and/or institutional sectors.**

The data availability from direct data sources as for other buildings can be divided in periods (from 2003 - the survey data, before 2002 - split A\*88 are acquired using simple extrapolation method). The PIM model was developed for Tree, crop and plant resources yielding repeat products (AN.1152). As no information on how cultivated biological resources developed before 1995 was found, an assumption was made that the AN.115 developed in the same rate as GDP, so volume indices of historical GDP development were applied to acquire data series back till 1985.

**Question 3. What price indices do you use to construct volume measures of cultivated biological resources, and how do you construct these indices? How do you account for quality improvements? Do you use specific price indices for detailed asset categories? Do these price indices differ across industries / institutional sectors? If they are available, please provide links to and/or relevant documents and metadata on their construction.**

The price indices do not differ across industries/institutional sectors; the deflator of output of NACE Rev. 2 industry 01, is used.

### **Research and development (N1171)**

**Question 1. Do you estimate GFCF in R&D by detailed R&D asset type? If yes, please specify the detailed R&D asset breakdown.**

No, we calculate only in one group, there is no breakdown by R&D assets.

**Question 2. What is/are the main source/s to estimate GFCF in research and development (R&D)? Please describe briefly the architecture of your estimation method and specify if these differ across different R&D assets (if a breakdown is available), industries and/or institutional sectors.**

R&D are estimated according to Eurostat recommendations, namely the Manual on measuring research and development in ESA 2010 and the templates developed by Eurostat.

GFCF for R&D is calculated using data from statistical surveys, which are based on the methodology of the Frascati manual. R&D are calculated in A\*88 breakdown, by all institutional sectors.

**Question 3. What is the length of GFCF in R&D in your country? If long GFCF series are available (previous to 1995), how do you estimate historical data? Please, describe additional sources and/or methods, and specify if these differ across assets within this category, industries and institutional sectors.**

Because of the lack of the data, GFCF from year 1980 till 1994 was estimated using the ratio of research and development expenditures to gross domestic product. Information about the ratio of gross domestic product on research and development expenditures is based on government data about resources assigned for research and development. From year 1995 till 1999 research and development was estimated by extrapolating data of the last available years (year 2000-2002) backwards. From year 2000 research and development was estimated using data from statistical surveys, which are based on the methodology of the Frascati manual at division level according to NACE Rev.2.

**Question 4. What price indices do you use to deflate GFCF in R&D and how do you construct these price indices? How do you account for quality improvements? Do you use specific price indices for detailed asset categories? Do these price indices differ across industries / institutional sectors? If they are available, please provide links to and/or relevant documents and metadata on their construction.**

The price indices do not differ across industries/institutional sectors. Price indices are estimated using input method.

#### **Mineral exploration and evaluation (N1172)**

**Question 1. Do you estimate GFCF in mineral exploration and evaluation by detailed asset type? If yes, please specify the detailed asset breakdown.**

Latvia has a negligible GFCF of mineral exploration and evaluation for some recent years.

**Question 2. What is/are the main source/s to estimate GFCF in mineral exploration and evaluation? Please describe briefly the architecture of your estimation method and specify if these differ across detailed assets within this asset category, industries and/or institutional sectors.**

The data are calculated using information directly from the statements of companies which have licenses to do mineral exploration works. These works are only in one industry and in the Non-financial corporations sector (S.11).

**Question 3. What is the length of GFCF in mineral exploration and evaluation? If long GFCF series are available (previous to 1995), how do you estimate historical data? Please, describe additional sources and/or methods, and specify if these differ across assets within this category, industries and institutional sectors.**

Until 1995, there was no mineral exploration in Latvia .

**Question 4. What price indices do you use to deflate GFCF in mineral exploration and evaluation and how do you construct these price indices? How do you account for quality improvements? Do you use specific price indices for detailed asset categories? Do these price indices differ across industries/institutional sectors? If they are available, please provide links to and/or relevant documents and metadata on their construction.**

Producer price index for NACE 08 Other mining and quarrying (production for domestic output).

### **Computer software and databases (N1173)**

**Question 1. Do you produce separate estimates of computer software? Tick all boxes that apply:**

There are two groups:

- purchased software (data from investment surveys);
- own-account software - estimates.

**Question 2. What is/are the main source/s to estimate GFCF in computer software and databases? Please describe briefly the architecture of your estimation method and specify if these differ across types of software (see previous question), industries and/or institutional sectors.**

The data sources for asset group Computer software: for S.11, S.12, S.14 (producers) - investment surveys data; S.13 - investment surveys and the "Annual Report on the Central and Local Government Budget Implementation"; and, for S.15 - administrative data from the State Revenue Service ""Balance sheets indicators on assets and liabilities".

The data for own account software are calculated using labour input method.

**Question 3. What is the length of this GFCF series? If long GFCF series are available (previous to 1995), how do you estimate historical data? Please, describe additional sources and/or methods, and specify if this differ across assets within this category, industries and institutional sectors.**

The data availability from direct data sources as for other buildings can be divided in periods (from 2003 - the survey data, before 2002 - split A\*88 are acquired using simple extrapolation method). The time series before 1995 were extrapolated using assumption that investments of computer software and databases developed in the same rate as the rate of investments in computer hardware (ICT assets). GFCF at constant prices are back casted till 1985.

**Question 4. What price indices do you use to deflate GFCF in computer software and databases and how do you construct these price indices? How do you account for quality improvements? Do you use specific price indices for detailed asset categories? Do these price indices differ across industries / institutional sectors? If they are available, please provide links to and/or relevant documents and metadata on their construction.**

The price indices do not differ across industries/institutional sectors. Producer price indices and changes for services in services sectors (J62 Computer programming, consultancy and related activities). Metadata: <https://www.csb.gov.lv/en/statistics/statistics-by-theme/economy/producer-prices/tables/metadata-services-producer-price-indices>.

### **Entertainment, literary and artistic originals (N1174)**

**Question 1. Do you estimate GFCF in entertainment, literary and artistic by detailed asset type? If yes, please specify the detailed asset breakdown.**

Yes, AN.1174 group contains such assets types:

- Films, TV and radio originals;
- Musical, literary, dramatic, dramatico-musical and choreographic works, visual and audio-visual works.

**Question 2. What is/are the main source/s to estimate GFCF in entertainment, literary and artistic originals? Please describe briefly the architecture of your estimation method and specify if these differ across detailed products within this asset category, industries and institutional sectors.**

The value of state TV and radio (institutional sector S.13) programme originals is calculated using the sum of cost approach. The value of films and the value of TV and radio program originals in non-financial corporations and employers (institutional sector S.14) is calculated based on net turnover concept with adjustments for inventories.

The value of literature, music and photographic/image originals is measured by modelling of royalty flows."

**Question 3. What is the length of GFCF in entertainment, literary and artistic originals? If long GFCF series are available (previous to 1995), how do you estimate historical data? Please, describe additional sources and/or methods, and specify if this differ across assets within this category, industries and institutional sectors.**

As no information on how Entertainment, literary or artistic originals developed before 1995 was found, an assumption was made that the AN.1174 developed in the same rate as GDP, so volume indices of historical GDP development were applied to acquire data series back till 1985. These growth rates were applied to the total AN.1174, without split by groups of originals.

**Question 4. What price indices do you use to deflate GFCF in entertainment, literary and artistic originals and how do you construct these price indices? How do you account for quality improvements? Do you use specific price indices for detailed asset categories? Do these price indices differ across industries / institutional sectors? If they are available, please provide links to and/or relevant documents and metadata on their construction.**

The price indices do not differ across industries/institutional sectors. Price indices are estimated using input method.