### Glossary of NACE sectors quoted in the manuscript

| NACE revision 2 code | Label                                                                 |
|---------------------|-----------------------------------------------------------------------|
| A01                 | Agriculture and hunting                                               |
| A02                 | Forestry                                                              |
| A03                 | Fishing                                                               |
| G45                 | Trade and repair of motor vehicles, etc.                             |
| G46                 | Wholesale trade (excl. motor vehicles, etc.)                         |
| G47                 | Retail trade (excl. motor vehicles, etc.)                            |
| H49                 | Land transport                                                       |
| H50                 | Water transport                                                      |
| H51                 | Air transport                                                        |
| H52                 | Warehousing and support activities for transportation                |
| H53                 | Postal and courier activities                                        |
| I55                 | Accommodation                                                        |
| I551                | Hotels and similar accommodation                                     |
| I552                | Holiday and other short-stay accommodation                           |
| I553                | Camping grounds, recreational vehicle parks and trailer parks        |
| I56                 | Food and beverage service activities                                 |
| J58                 | Publishing activities                                                |
| J5811               | Book publishing                                                      |
| J5812               | Publishing of directories and mailing lists                          |
| J5813               | Publishing of newspapers                                             |
| J5814               | Publishing of journals and periodicals                               |
| J5819               | Other publishing activities                                          |
| J59                 | Motion picture, video and television programme production, sound recording and music publishing activities |
| J60                 | Programming and broadcasting activities                              |
| J61                 | Telecommunications                                                    |
| J62                 | Computer programming, consultancy and related activities             |
| J63                 | Information service activities                                       |
| K64                 | Financial activities                                                 |
| K65                 | Insurance activities                                                 |
| K66                 | Activities auxiliary to financial and insurance activities           |
| L68                 | Real estate activities                                               |
| M69                 | Legal and accounting activities                                      |
| M70                 | Activities of head offices; management consultancy activities        |
| M71                 | Architectural and engineering activities, etc.                       |
| M711                | Architectural and engineering activities and related technical consultancy |
| M72                 | Scientific research and development                                  |
| M7211               | Research and experimental development on biotechnology               |
| M7219               | Other research and experimental development on natural sciences and engineering |
M722 Research and experimental development on social sciences and humanities
M73 Advertising and market research
M732 Market research and public opinion polling
M74 Other professional, scientific and technical activities
M741 Specialised design activities
M749 Other professional, scientific and technical activities n.e.c.
M75 Veterinary activities
N77 Rental and leasing activities
N7721 Renting and leasing of recreational and sports goods
N7729 Renting and leasing of other personal and household goods
N7739 Renting and leasing of other machinery, equipment and tangible goods n.e.c.
N774 Leasing of intellectual property and similar products, except copyrighted works
N78 Employment activities
N813 Landscape service activities
N79 Travel agencies, etc.
N80 Security and investigation activities
N81 Services to buildings and landscape activities
N82 Office administrative, office support and other business support activities
O84 Public administration and social security
P85 Education
Q86 Human health activities
Q87_88 Social work activities
R90_92 Cultural activities and gambling
R93 Sport, amusement and recreation activities
S94 Activities of membership organisations
S95 Repair of household goods
S9523 Repair of footwear and leather goods
S9524 Repair of furniture and home furnishings
S9525 Repair of watches, clocks and jewellery
S9529 Repair of other personal and household goods
S96 Other personal service activities
T97_98 Household service activities
S2 – List of 0% bio-based COFOGS used for the quantification of $b_{n,c,y}$ for $n= O84$

- COFOG99
- GF0106 General public services n.e.c.
- GF0107 Public debt transactions
  - Transfers of a general character between different levels of government
- GF0108
- GF0201 Military defence
- GF0202 Civil defence
- GF0205 Defence n.e.c.
- GF0301 Police services
- GF0302 Fire - protection services
- GF0303 Law courts
- GF0304 Prisons
- GF0306 Public order and safety n.e.c.
- GF0602 Community development
- GF0606 Housing and community amenities n.e.c.
- GF0701 Medical products, appliances and equipment
- GF0706 Health n.e.c.
- GF1009 Social protection n.e.c.

S3 –Quantification of the maximum $b_{n,c,y}$ for $n= O84$, calculated on value added data

In the European System of Accounts (ESA), "The output of government (...) is equal to the sum of its costs of production [of which the compensation of employees]" (Eurostat 2013, paragraph 20.107). Therefore, the value added of NACE O84 can be reduced by the compensation of employees in the same non bio-based related COFOGS as reported at the supplementary section S4  for an over-estimation of the maximum $b_{n=O84,c,y}$ of public administration's value added.

More concretely, in the ESA:

- **Output** ($O$) = Compensation of employees ($CE$) + Intermediate consumption ($IC$) + Consumption of fixed capital ($CFC$) + Taxes ($T$) with $T=0$ in governmental sectors

Therefore $O = CE + IC + CFC$

- **Value Added** ($VA$) = $O - IC$

If we substitute $O$ by the former equation: $VA = CE + IC + CFC - IC$

IC cancels and: $VA = CE + CFC$

In conclusion, if we deduce the CE from non bio-based related COFOGS (Eurostat (2020e) data) in VA (Eurostat (2020g) data), we have an estimation of the bio-based value added.
## S4.1. Sectoral contribution of the services that qualify to the EU definition to total GDP (minimum-maximum %, 2015-2017)

Cells with a minimum contribution ≥10% are highlighted in light grey, cells with a minimum contribution ≥20% are highlighted in dark grey, cells with a minimum contribution ≥30% are written in red.

| geo  | G46 | G47 | H49 | H50 | H51 | H52 | H53 | I55 | I56 | J58 | N77 | N79 | N81 | R90_92 | R93 | S95 | T97_98 |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|-----|-----|--------|
| AT   | 23-24 | 19-21 | 5-6 | 0-0 | 0-0 | 6-7 | 2-2 | 12-16 | 15-24 | 0-2 | 0-3 | 1-2 | 1-1 | 0-2 | 0-4 | 0-0 | 0-1 |
| BE   | 31-32 | 21-22 | 5-5 | 1-1 | 0-0 | 8-8 | 3-3 | 1-2 | 13-23 | 0-3 | 0-2 | 1-1 | 2-4 | 0-3 | 0-3 | 0-0 | 0-1 |
| BG   | 37-40 | 18-19 | 10-10 | 0-0 | 0-0 | 7-8 | 2-2 | 6-6 | 9-14 | 0-1 | 0-1 | 1-1 | 1-1 | 0-1 | 0-3 | 0-3 | 0-0 | 0-1 |
| CY   | 15-17 | 17-18 | 1-1 | 0-0 | 0-0 | 12-12 | 1-1 | 17-18 | 20-31 | 0-1 | 0-0 | 2-2 | 0-0 | 0-2 | 0-4 | 0-0 | 0-7 |
| CZ   | 18-26 | 20-21 | 7-9 | 0-0 | 0-0 | 4-5 | 2-2 | 7-8 | 17-25 | 0-4 | 0-4 | 3-3 | 1-2 | 0-8 | 0-7 | 0-2 |
| DE   | 25-28 | 21-22 | 4-4 | 1-1 | 0-0 | 8-8 | 3-3 | 4-4 | 12-22 | 0-4 | 0-2 | 2-2 | 3-5 | 0-1 | 0-7 | 0-0 | 0-3 |
| DK   | 35-38 | 11-11 | 4-5 | 5-6 | 0-0 | 7-7 | 2-2 | 2-2 | 4-4 | 11-22 | 0-2 | 0-2 | 1-1 | 1-3 | 0-7 | 0-5 | 0-0 | 0-3 |
| EE   | 25-27 | 16-18 | 8-9 | 0-0 | 0-0 | 14-15 | 1-1 | 4-6 | 10-20 | 0-3 | 0-4 | 1-2 | 1-1 | 0-4 | 0-6 | 0-1 | 0-1 |
| EL   | 27-32 | 15-18 | 3-3 | 2-3 | 0-0 | 11-11 | 2-2 | 18-23 | 5-9 | 0-2 | 0-0 | 2-2 | 0-0 | 0-4 | 0-2 | 0-0 | 0-5 |
| ES   | 22-27 | 19-22 | 5-6 | 0-0 | 0-0 | 8-10 | 1-1 | 5-5 | 15-25 | 0-2 | 0-1 | 1-1 | 1-1 | 0-2 | 0-9 | 0-0 | 0-8 |
| FI   | 19-22 | 20-23 | 7-8 | 1-1 | 0-0 | 5-6 | 2-3 | 2-3 | 15-30 | 0-7 | 0-1 | 1-1 | 1-1 | 0-5 | 0-10 | 0-0 | 0-3 |
| FR   | 22-22 | 23-25 | 5-5 | 0-0 | 0-0 | 7-7 | 3-3 | 3-4 | 18-29 | 0-3 | 1-2 | 1-2 | 1-2 | 0-8 | 0-2 | 0-0 | 0-2 |
| HR   | 18-18 | 20-21 | 4-5 | 1-1 | 0-0 | 6-6 | 2-2 | 18-23 | 15-23 | 0-2 | 0-0 | 2-3 | 1-1 | 0-3 | 0-6 | 0-0 | 0-0 |
| HU   | 28-32 | 22-24 | 9-10 | 0-0 | 0-0 | 11-12 | 3-3 | 4-4 | 8-13 | 0-3 | 0-1 | 1-1 | 1-1 | 0-4 | 0-5 | 0-0 | 0-0 |
| IE   | 30-33 | 24-24 | 0-0 | 0-0 | 0-0 | 5-5 | 3-3 | 6-6 | 19-26 | 0-1 | 0-2 | 1-1 | 1-1 | 0-2 | 0-6 | 0-0 | 0-0 |
| IT   | 21-24 | 20-24 | 5-5 | 1-1 | 0-0 | 8-9 | 2-2 | 5-6 | 15-26 | 0-2 | 0-1 | 1-1 | 1-1 | 0-2 | 0-5 | 0-0 | 0-13 |
| LT   | 33-35 | 17-18 | 19-20 | 1-1 | 0-0 | 9-9 | 1-1 | 2-2 | 7-12 | 0-1 | 0-1 | 1-1 | 0-1 | 0-5 | 0-2 | 0-0 | 0-1 |
| LU   | 37-40 | 16-17 | 5-5 | 0-0 | 0-0 | 3-4 | 2-2 | 3-4 | 21-23 | 0-0 | 0-3 | 2-3 | 0-2 | 0-5 | 0-0 | 0-5 |
| LV   | 26-30 | 19-21 | 9-10 | 0-0 | 0-0 | 15-17 | 1-1 | 2-2 | 9-16 | 0-2 | 0-1 | 1-1 | 0-1 | 0-8 | 0-4 | 0-0 | 0-2 |
| MT   | 20-25 | 21-23 | 2-2 | 0-0 | 0-0 | 15-15 | 17-32 | 0-1 | 0-0 | 3-3 | 0-15 | 0-4 | 0-0 | 0-3 |
| NL   | 36-39 | 17-18 | 6-6 | 1-1 | 0-0 | 8-8 | 2-2 | 2-2 | 14-20 | 0-0 | 0-0 | 3-3 | 2-3 | 0-2 | 0-5 | 0-0 | 0-1 |
| PL   | 33-38 | 26-27 | 10-11 | 0-0 | 0-0 | 6-7 | 2-2 | 2-3 | 6-10 | 0-3 | 0-1 | 1-1 | 1-1 | 0-3 | 0-4 | 0-0 | 0-2 |
| PT   | 23-26 | 21-23 | 5-6 | 0-0 | 0-0 | 8-9 | 2-2 | 6-6 | 17-27 | 0-1 | 0-1 | 1-1 | 1-1 | 0-2 | 0-4 | 0-0 | 0-7 |
| RO   | 35-39 | 23-25 | 9-10 | 0-0 | 0-0 | 6-6 | 2-2 | 3-3 | 8-13 | 0-1 | 0-1 | 1-1 | 1-1 | 0-7 | 0-4 | 0-0 | 0-1 |
| SE   | 28-30 | 20-20 | 6-6 | 0-0 | 0-0 | 5-5 | 2-2 | 3-4 | 15-27 | 0-4 | 0-2 | 1-1 | 1-2 | 0-4 | 0-8 | 0-0 | 0-1 |
| SI   | 21-22 | 20-20 | 10-10 | 0-0 | 0-0 | 9-9 | 2-2 | 9-11 | 14-23 | 0-3 | 0-0 | 2-2 | 0-1 | 0-4 | 0-3 | 0-0 | 0-1 |
| SK   | 23-30 | 25-29 | 9-11 | 0-0 | 0-0 | 5-6 | 2-3 | 3-4 | 8-15 | 0-3 | 0-2 | 1-2 | 1-2 | 0-13 | 0-6 | 0-0 | 0-1 |
| EU27 | 25-28 | 21-22 | 5-5 | 1-1 | 0-0 | 7-8 | 2-2 | 4-5 | 14-24 | 0-3 | 0-2 | 1-2 | 2-3 | 0-3 | 0-7 | 0-0 | 0-5 |
S4.2. Sectoral contribution of the services that qualify to the EU definition to total employment (minimum-maximum %, 2015-2017). Cells with a minimum contribution ≥10% are highlighted in light grey, cells with a minimum contribution ≥20% are highlighted in dark grey, cells with a minimum contribution ≥30% are written in red.

| geo | G46 | G47 | H49 | H50 | H51 | H52 | H53 | I55 | I56 | J58 | N77 | N79 | N81 | R90_92 | R93 | S95 | T97_98 |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|-----|-----|--------|
| AT  | 13-14 | 22-27 | 4-5 | 0-0 | 0-0 | 2-3 | 1-2 | 12-16 | 27-38 | 0-1 | 0-1 | 1-2 | 1-2 | 0-1 | 0-3 | 0-0 | 0-1 |
| BE  | 15-16 | 27-27 | 5-5 | 0-0 | 0-0 | 4-5 | 3-3 | 1-2 | 25-39 | 0-2 | 0-1 | 1-1 | 3-5 | 0-2 | 0-3 | 0-0 | 0-6 |
| BG  | 18-19 | 22-31 | 8-8 | 0-0 | 0-0 | 4-4 | 2-2 | 5-5 | 20-28 | 0-1 | 0-0 | 1-1 | 0-1 | 0-2 | 0-3 | 0-0 | - |
| CY  | 11-14 | 19-21 | 1-1 | 0-0 | - | 6-6 | 1-1 | 13-15 | 23-40 | 0-1 | 0-0 | 1-1 | 0-1 | 0-1 | 0-3 | 0-0 | 0-20 |
| CZ  | 10-14 | 21-22 | 7-8 | 0-0 | - | 2-3 | 2-2 | 6-6 | 31-42 | 0-2 | - | 2-3 | 1-1 | 0-5 | 0-7 | - | 0-2 |
| DE  | 11-11 | 26-26 | 3-3 | 0-0 | 0-0 | 5-5 | 4-4 | 4-5 | 24-40 | 0-2 | 0-1 | 1-1 | 3-4 | 0-1 | 0-4 | 0-0 | 0-12 |
| DK  | 20-20 | 16-16 | 3-3 | 1-1 | 0-0 | 3-3 | 2-3 | 3-5 | 24-45 | 0-4 | 0-1 | 1-2 | 1-3 | 0-5 | 0-8 | 0-0 | 0-7 |
| EE  | 15-16 | 25-25 | 9-9 | 0-0 | - | 6-7 | 2-2 | 5-6 | 19-33 | 0-3 | 0-1 | 1-2 | 1-2 | 0-5 | 0-7 | - | 0-0 |
| EL  | 11-13 | 23-25 | 2-2 | 0-0 | 0-0 | 2-3 | 1-1 | 10-11 | 37-47 | 0-1 | 0-0 | 1-1 | 0-0 | 0-1 | 0-2 | 0-0 | 0-5 |
| ES  | 16-17 | 23-27 | 4-5 | 0-0 | 0-0 | 3-4 | 1-1 | 3-3 | 26-40 | 0-1 | 0-0 | 1-1 | 1-2 | 0-1 | 0-5 | 0-0 | 0-15 |
| FI  | 12-12 | 24-25 | 7-7 | 0-0 | 0-0 | 4-4 | 3-3 | 2-3 | 22-42 | 0-5 | 0-0 | 1-1 | 1-2 | 0-4 | 0-9 | 0-0 | 0-5 |
| FR  | 14-14 | 28-28 | 5-5 | 0-0 | - | 3-4 | 4-4 | 3-3 | 22-36 | 0-2 | 1-1 | 1-1 | 2-4 | 0-2 | 0-9 | 0-0 | 0-5 |
| HR  | 12-13 | 24-26 | 4-5 | 0-0 | 0-0 | 4-4 | 2-2 | 10-12 | 27-39 | 0-2 | 0-0 | 2-2 | 1-1 | 0-2 | 0-4 | 0-0 | 0-1 |
| HU  | 16-17 | 31-32 | 8-8 | 0-0 | 0-0 | 6-6 | 3-3 | 3-3 | 19-28 | 0-2 | 0-1 | 1-1 | 1-2 | 0-4 | 0-4 | 0-1 | 0-1 |
| IE  | 13-14 | 29-30 | 0-0 | 0-0 | 0-0 | 2-2 | 2-2 | 8-8 | 31-42 | - | 0-1 | 1-1 | 1-2 | 0-1 | 0-5 | 0-0 | 0-2 |
| IT  | 11-13 | 21-27 | 3-4 | 0-0 | 0-0 | 4-5 | 2-2 | 3-4 | 21-41 | 0-1 | 0-0 | 1-1 | 1-2 | 0-1 | 0-3 | 0-0 | 0-30 |
| LT  | 17-18 | 29-29 | 16-16 | 0-0 | 0-0 | 5-5 | 2-2 | 2-2 | 15-27 | 0-2 | 0-0 | 1-1 | 1-1 | 0-4 | 0-4 | 0-0 | 0-1 |
| LU  | 15-17 | 20-22 | 6-7 | - | - | - | - | - | 32-50 | 0-0 | 0-0 | - | - | 2-3 | 0-1 | 0-4 | 0-0 | 0-11 |
| LV  | 15-15 | 30-30 | 9-9 | 0-0 | 0-0 | 9-9 | 2-2 | 2-3 | 18-30 | 0-2 | 0-0 | 1-1 | 1-1 | 0-4 | 0-5 | 0-0 | 0-1 |
| MT  | 16-16 | 27-28 | 2-2 | 0-0 | - | 6-6 | 1-1 | 9-11 | 26-37 | 0-1 | 0-0 | 2-2 | - | 0-2 | 0-2 | 0-0 | 0-2 |
| NL  | 16-17 | 29-31 | 4-4 | 1-1 | - | 3-3 | 2-2 | 3-3 | 25-37 | 0-2 | 0-1 | 1-1 | 2-3 | 0-2 | 0-5 | 0-0 | 0-2 |
| PL  | 21-21 | 36-37 | 11-11 | 0-0 | 0-0 | 4-4 | 3-3 | 2-3 | 10-18 | 0-2 | 0-0 | 1-1 | 1-2 | 0-3 | 0-4 | 0-0 | 0-1 |
| PT  | 14-15 | 26-28 | 4-4 | 0-0 | 0-0 | 2-2 | 1-1 | 5-5 | 27-43 | 0-1 | 0-0 | 1-1 | 1-1 | 0-1 | 0-3 | 0-0 | 0-13 |
| RO  | 22-24 | 32-33 | 11-11 | 0-0 | 0-0 | 4-4 | 3-3 | 2-3 | 16-23 | 0-1 | 0-0 | 1-1 | 1-2 | 0-1 | 0-2 | 0-0 | - |
| SE  | 16-17 | 23-24 | 6-6 | 0-0 | 0-0 | 4-4 | 3-3 | 4-5 | 23-41 | 0-3 | 0-1 | 1-1 | 1-2 | 0-3 | 0-9 | 0-0 | 0-1 |
| SI  | 13-15 | 20-21 | 8-9 | 0-0 | 0-0 | 3-3 | 2-2 | 9-11 | 25-38 | 0-2 | 0-0 | 2-2 | 1-1 | 0-4 | 0-4 | 0-0 | 0-2 |
| SK  | 16-16 | 29-30 | 7-8 | 0-0 | 0-0 | 3-3 | 2-2 | 3-4 | 21-34 | 0-3 | 0-1 | 1-1 | 2-2 | 0-3 | 0-4 | 0-0 | 0-2 |
| EU27 | 14-14 | 26-28 | 5-5 | 0-0 | 0-0 | 4-4 | 3-3 | 4-5 | 23-37 | 0-2 | 0-1 | 1-1 | 1-2 | 0-2 | 0-4 | 0-0 | 0-11 |
Notes: $b_{n,c,y}$ are represented with large blue (for minimum) and orange (for maximum) squares for the EU27, and with ‘−’ (minimum $b_{n,c,y}$) and ‘+’ (maximum $b_{n,c,y}$) points for the EU Member States. For example, calculated on value added (VA) data, 27%<$b_{G46,y}$<43% for the EU27 (large blue and orange squares) and 16%<$b_{G46,y}$<51% in Member States (distribution range of ‘−’ and ‘+’ points).