

## 26.OECD/EUROSTAT N BALANCE ANALYSIS

**FAIRWAY partner: Matjaž Glavan (UL, SI), Case study leader Katarina Kresnik, Andrej Jamšek (KGZ Maribor, SI)**

### Brief description

Joint Eurostat/OECD meetings identify and agree on the most robust and feasible methodology for calculating nitrogen (and phosphate) balance. This handbook sets out the main principles of the method across OECD and EU Member countries. The aim is to consistently produce an indicator based on a single methodology and harmonised definitions for all countries. In Slovenia, results are prepared by the Agricultural Institute of Slovenia for the Ministry of environment and spatial planning. This paper-based tool serves as a basis for reporting to the EU about Nitrate directive implementation and preparing legislation and measures for drinking water protection.

|                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Contaminants covered (e.g. nitrate, pesticides etc.)</b>                        | N, P                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Intended end-users (e.g. farmer, water quality manager, policy maker)</b>       | Policy makers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Level of expertise and/or training required</b>                                 | High level of expertise and training required to understand and use the guidelines.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Geographical resolution (e.g. field, catchment, national)</b>                   | National, Regional, Local, Field-scale.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Temporal resolution (e.g. daily, annual, long-term).</b>                        | Annual                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Real-time component (e.g. live weather data, soil moisture data feeds etc.)</b> | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Number and type of mitigation measures included</b>                             | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Platform (e.g. paper-based tool, phone app, bespoke software).</b>              | Paper-based tool – open source available on the web.<br><a href="http://ec.europa.eu/eurostat/cache/metadata/Annexes/aei_pr_gnb_esms_an1.pdf">http://ec.europa.eu/eurostat/cache/metadata/Annexes/aei_pr_gnb_esms_an1.pdf</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Frequency of updates</b>                                                        | Every few years, with the new development of knowledge.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Cost/availability</b>                                                           | Free.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Number of users or number of copies distributed/downloaded/purchased</b>        | Member states of OECD and EU as well as other interested.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Links to demo material and other relevant information (e.g. user guides).</b>   | Open source – Web available.<br><a href="http://ec.europa.eu/eurostat/cache/metadata/Annexes/aei_pr_gnb_esms_an1.pdf">http://ec.europa.eu/eurostat/cache/metadata/Annexes/aei_pr_gnb_esms_an1.pdf</a><br><a href="http://www.oecd.org/tad/sustainable-agriculture/agri-environmentalindicators.htm">http://www.oecd.org/tad/sustainable-agriculture/agri-environmentalindicators.htm</a><br><a href="http://kazalci.arso.gov.si/sl/content/bilancni-presezek-dusika-v-kmetijstvu-0">http://kazalci.arso.gov.si/sl/content/bilancni-presezek-dusika-v-kmetijstvu-0</a><br><a href="http://kazalci.arso.gov.si/sl/content/bilancni-presezek-fosforja-v-kmetijstvu">http://kazalci.arso.gov.si/sl/content/bilancni-presezek-fosforja-v-kmetijstvu</a> |
| <b>Additional comments</b>                                                         | - pesticides part is in the process of establishing<br>In lack of other tools capable of modelling agri-environmental measures, this is still the preferred way of making conclusions and new decisions. Eurostat/OECD results are most often coupled with state monitoring results, which serve as indicators to accept new measures.                                                                                                                                                                                                                                                                                                                                                                                                             |

| <b>OECD/EUROSTAT N balance analysis based</b><br><b>FAIRWAY partner: Matjaž Glavan (UL, SI), Case study leader Katarina Kresnik, Andrej Jamšek (KGZ Maribor, SI)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  <b>Kmetijski inštitut Slovenije</b><br>Agricultural Institute of Slovenia<br> <b>REPUBLIKA SLOVENIJA</b><br><b>MINISTRSTVO ZA OKOLJE IN PROSTOR</b> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Input data required to run the DST</b>                                                                                                                            | Information needed for getting the tool properly used are: <ul style="list-style-type: none"> <li>- Mineral fertilisers input</li> <li>- Manure production</li> <li>- Net manure import/export, withdrawals, stocks</li> <li>- Other organic fertilisers input</li> <li>- Biological N fixation</li> <li>- Atmospheric N deposition</li> <li>- Seed and planting materials</li> <li>- Crop production</li> <li>- Fodder production</li> <li>- Residues removed /burnt</li> </ul> |                                                                                                                                                                                                                                                                                                                            |
| <b>Outputs (including links to water quality and economic or financial aspects)</b>                                                                                  | <ul style="list-style-type: none"> <li>- Gross nitrogen surplus in agriculture</li> <li>- Gross phosphorus surplus in agriculture</li> </ul>                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                            |
| <b>Age/provenance of supporting data used to develop the DST</b>                                                                                                     | - Professional research and scientific knowledge was used to establish this paper tool – a handbook. <a href="http://ec.europa.eu/eurostat/cache/metadata/Annexes/aei_pr_gnb_esms_an1.pdf">http://ec.europa.eu/eurostat/cache/metadata/Annexes/aei_pr_gnb_esms_an1.pdf</a><br><a href="http://www.oecd.org/tad/sustainable-agriculture/agri-environmentalindicators.htm">http://www.oecd.org/tad/sustainable-agriculture/agri-environmentalindicators.htm</a>                    |                                                                                                                                                                                                                                                                                                                            |
| <b>Country-specific calibration or data requirements (including restrictions on use)</b>                                                                             | No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                            |
| <b>Details of validation and testing</b>                                                                                                                             | No special details. Model results can be validated with other tools/models.                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                            |
| <b>Date developed/released (or planned release date)</b>                                                                                                             | Developed in 2007 and updated in 2013 as the last version prepared by OECD/EUROSTAT                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                            |
| <b>Author/developer names and affiliations</b>                                                                                                                       | European Commission/Eurostat                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                            |
| <b>Member state(s) where developed</b>                                                                                                                               | EU                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                            |
| <b>Member State(s) where currently used</b>                                                                                                                          | EU                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                            |
| <b>Key publication references (including url)</b>                                                                                                                    | <a href="http://ec.europa.eu/eurostat/cache/metadata/Annexes/aei_pr_gnb_esms_an1.pdf">http://ec.europa.eu/eurostat/cache/metadata/Annexes/aei_pr_gnb_esms_an1.pdf</a>                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                            |

# OECD/EUROSTAT N balance analysis

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REPUBLIKA SLOVENIJA  
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Any other useful information (e.g. screenshots of DST input/outputs)



EUROPEAN COMMISSION  
EUROSTAT  
Directorate E: Sectoral and regional statistics  
Unit E-1: Agriculture and fisheries

## Methodology and Handbook Eurostat/OECD

### Nutrient Budgets

EU-27, Norway, Switzerland

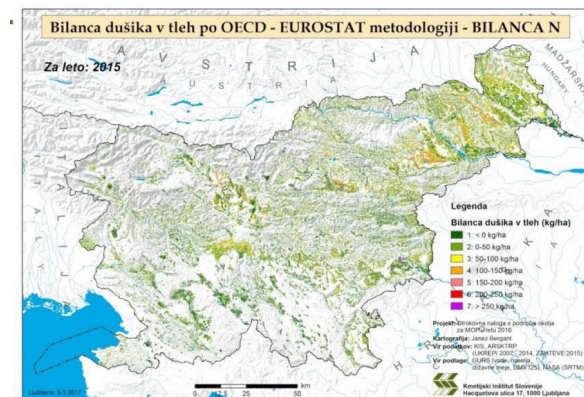
Date: 17/05/2013  
Version: 1.02  
Authors: Anne Miek Kremer  
Revised by:  
Approved by:  
Public:  
Reference Number:

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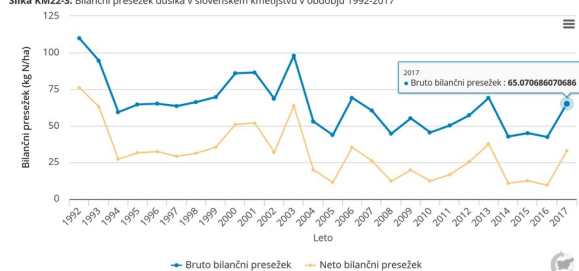
Table 2. Current, ideal and proposed improved Gross Nitrogen Budgets

| Current GNB                                          | Ideal GNB                                                | Practical GNB                                         |
|------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------|
| <b>INPUTS</b>                                        |                                                          |                                                       |
| N1) Mineral fertilizers                              | N1) Mineral fertilizers                                  | N1) Mineral fertilizers                               |
| N2) Manure production                                | N2) Manure production                                    | N2) Manure production                                 |
| N3) Net manure import/export, withdrawals, stocks    | N3) Net manure import/export, withdrawals, stocks        | N3) Net manure import/export, withdrawals             |
| N4) Other organic fertilizers                        | N4) Other organic fertilizers                            | N4) Other organic fertilizers                         |
| N5) Biological N fixation                            | N5) Biological N fixation                                | N5) Biological N fixation                             |
| N6) Atmospheric N deposition                         | N6) Atmospheric N deposition                             | N6) Atmospheric N deposition                          |
| N7) Seed and planting materials                      | N7) Seed and planting materials                          | N7) Seed and planting materials                       |
|                                                      | N8) Crop residues inputs                                 |                                                       |
| N9) <b>Total inputs</b> = sum (N1,N2,N3,N4,N5,N6,N7) | N10) <b>Total inputs</b> = sum (N1,N2,N3,N4,N5,N6,N7,N8) | N11) <b>Total inputs</b> = sum (N1,N2,N3,N4,N5,N6,N7) |
| <b>OUTPUTS</b>                                       |                                                          |                                                       |
| N12) Crop production                                 | N12) Crop production                                     | N12) Crop production                                  |
| N13) Fodder production                               | N13) Fodder production                                   | N13) Fodder production                                |
| N14) Crop residues outputs                           | N14) Crop residues outputs                               | N16) Residues removed /burnt                          |
|                                                      | N15) Stock changes of N in soil                          |                                                       |
| N17) <b>Total outputs</b> = sum (N12, N13, N14)      | N18) <b>Total outputs</b> = sum (N12, N13, N14, N15)     | N19) <b>Total outputs</b> = sum (N12, N13, N16)       |
| <b>SURPLUS</b>                                       |                                                          |                                                       |
| N20) <b>GNS</b> = N9 - N17                           | N21) <b>GNS</b> = N10 - N18                              | N24) <b>GNS</b> = N11 - N19                           |
|                                                      | N22) <b>aGNS</b> = N gas emissions                       | N22) <b>aGNS</b> = N gas emissions                    |
|                                                      | N23) <b>hGNS</b> = N21 - N22                             | N25) <b>hGNS</b> = N24 - N22                          |

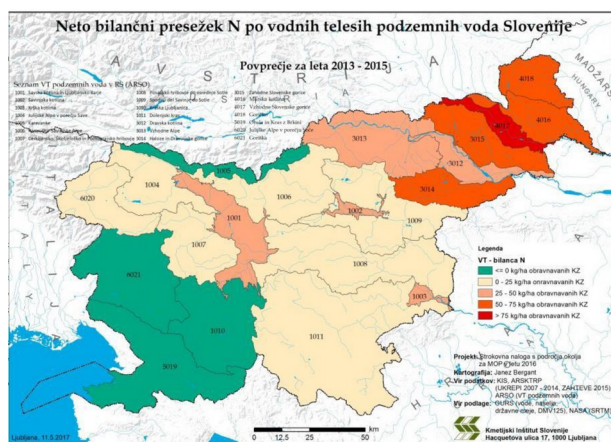
Results for Slovenia prepared by the Agricultural Institute of Slovenia for the Ministry of environment and spatial planning



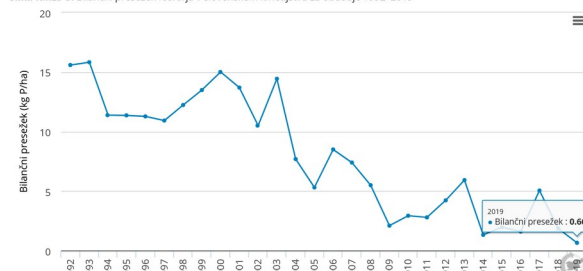
Slika KM22-3: Bilančni presežek dušika v slovenskem kmetijstvu v obdobju 1992-2017



Vir: Kmetijski inštitut Slovenije, 2019



Slika KM25-3: Bilančni presežek fosforja v slovenskem kmetijstvu za obdobje 1992-2019



Vir: Kmetijski inštitut Slovenije (2021)