

Towards Nitrogen - neutrality

Nitrogen (N) neutrality is a new concept that builds on and extends beyond the concept of Carbon neutrality. It acknowledges the fact that “sustainability” goes beyond just greenhouse gas emissions. The impacts of N are manifold. There are *problems of too much N* - losses into environment contribute to eutrophication, acidification, global warming, and more. But there are also *problems of too little N* - soil resources depleting and endangering the livelihood of farmers, and threatening food security. A lot of effort is needed to better balance N-management.

The concept of N-neutrality recognizes that there are among others institutional and individual responsibilities. A large event like RAMIRAN 2015 causes a considerable N-footprint that needs to be offset. By participating in the N-neutrality program we want to raise awareness of the topic and show possibilities for progression towards N-neutrality.

The basic concept was developed by the European Commission’s Joint Research Centre (JRC) at the Institute for Environment and Sustainability Monitoring of Agricultural Resources. It was first applied at the *7th International Nitrogen Conference 2013 in Kampala, Uganda*, and subsequently at the *European Nitrogen Workshop 2014 in Lisboa, Portugal*.



Snapshots of the project in Indonesia, which is planned to be supported by RAMIRAN 2015

How is N-neutrality defined?

The definition was developed by JRC (Leip et al. 2014). To become N-neutral, the following steps have to be considered:

- 1) **First reduce all possible emissions of reactive nitrogen (Nr) into the environment by**
 - reducing over-consumption of food, reducing food waste and minimizing energy consumption,
 - choosing sustainable sources of energy and food;
- 2) **then, contribute to a measured compensation of the remaining Nr releases by**
 - a measured reduction of reactive N releases elsewhere to balance the remaining emissions,
 - increased sustainability in food production if sustainable land management is not yet achieved.

What constitutes a sustainable food chain?

First of all our food should be provided in the right quantity and good quality in terms of hygiene and ingredients. It should taste well and support healthiness. N-neutrality is one important element of the food chain; others include e.g. Carbon and Water footprints. Moreover, not only the production systems should be considered, but whole chains from production through processing, logistics and consumption to the final destinations of food waste and human sewage.

Preconditions for sustainable food provision are sustainable land management and farming systems, which should:

- minimize the ecological N-, C- and H₂O-footprint of farming products,
- keep the farmed land and its environment in good conditions,
- satisfy human food needs in terms of quantity and quality,
- enable the farm worker(s) and their families a decent living standard.

How should we consume our food?

Have enough to eat - Eat not too much, but well - Increase the proportion of regional food - Mix animal and vegetable based food in proper ratios - Help to reduce food wastage - Prefer providers of quality food with responsible production schemes - Don't buy the cheapest food - Cook well.

What are our plans towards N-neutrality for RAMIRAN 2015?

1. Provision of tasty food with reduced N impact

At RAMIRAN 2015 our first aim regarding food is to provide tasty food and drinks (in sufficient amounts). Elements to reduce the N-footprint include the selection of ingredients in term of type, origin, season and quality. For instance we will provide delicious fresh fruits processed by a local company applying the highest standards. We will include quality regional products, a responsible share of meat and sophisticated recipes for vegetarian components. The lunch meals are for instance marked regarding their ingredients (contains pork, beef, fish, and poultry or is vegetarian, vegan, lactose-free). Food leftovers shall be minimized and sent to the best possible utilization pathways.

2. Calculating of the N-impact of RAMIRAN 2015

The N-impact of food provided at RAMIRAN 2015 will be calculated on the basis of the N-footprint approach (Leach et al., 2012; Leip et al. 2014), in cooperation with the Adrian Leip of the JRC, Institute for Environment and Sustainability Monitoring of Agricultural Resources. For that purpose the organizers will collect data regarding ingredients and waste of the served meals in order to allow calculation of the N-footprint of the conference food. The N-footprint of the food provided at the conference will be compared with baseline scenarios.

3. Compensating of the N-impact

All participants of RAMIRAN 2015 are asked to contribute voluntarily a compensation fee (30 €) to equalize the remaining N-impact caused by the event as much as possible. For that purpose the money will support a sustainable food project in Indonesia which focuses on demonstration of vertical gardening as a special urban farming solution. Growing containers are filled with a soil- compost-mix in which are grown e.g. onion, lettuce and celery. The containers can be placed on any vertical empty wall. They have an aesthetic value, and support human daily consumption needs. The installations have the potential to be widely used in urban areas contributing to the provision of high quality food, helping 'reconnect' people with their food systems, and save land.

The money collected via the compensation fee will be donated from the organizers of RAMIRAN 2015 to BEST (Institute for Integrated Social Economic Development), an Indonesian NGO based in Tangerang Selatan with 5 branches in Indonesia, whose experienced in sanitation for the poor for more than 25 years. BEST will use it to continue supporting quality food production activities in the urban community via vertical gardening in Jakarta and Tangerang Selatan.

More info

N neutrality concept: adrian.leip@jrc.ec.europa.eu; Leip, A., et al. (2014). Nitrogen-neutrality: a step towards sustainability. *Environ. Res. Lett.* 9, 115001. doi:<http://dx.doi.org/10.1088/1748-9326/9/11/115001>; Leach, A. M., Galloway, J. N., Bleeker, A., Erisman, J. W., Kohn, R., & Kitzes, J. (2012). A nitrogen footprint model to help consumers understand their role in nitrogen losses to the environment. *Environmental Development*, 1(1), 40–66. doi:10.1016/j.envdev.2011.12.005

Vertical urban gardening: ova.candra@gmail.com; <http://www.borda-sea.org/news/borda-sea-news/article/indonesia-kiprah-is-greening-the-office.html>

N-neutrality at N2013: Kampala, Uganda, November 2013; http://n2013.org/?page_id=351; *N-neutrality at 18th Nitrogen Workshop (Lisbon, Portugal, 2014):* <http://www.nitrogenworkshop.com/#/nitrogen-neutrality/4582566228>