

Minutes for the RISE Workshop on Nutrient Recovery and Reuse (NRR) in Europe: interim findings and next steps 11/11/2015

Venues: Room ASP 3 H 1, European Parliament / RISE Foundation offices

Time: 9:00-10:30 at the EP and 11:00-12:30 at RISE Foundation offices

Session at the European Parliament

Speakers: Giovanni La Via MEP, Reinhard Buescher, Allan Buckwell, Ludwig Hermann, Chris Thornton, Paolo de Castro MEP

Main remarks:

Giovanni La Via MEP (opening)

- While we must recover and recycle, this is not as easy as it sounds
- The economies of recycling are still not clear
- Polluters must be obliged to pay the costs of externalities
- We need to ensure that regulations work in the same direction, and not cross-purpose
- The EP will shift its focus towards resource recovery
- “We already have more resources than we know how to use properly”

Reinhard Buescher (DG Grow, European Commission)

- Signals that new communication by the European Commission on the circular economy will recognize the importance of nutrient recycling.
- Expects new Fertilizer regulation in Q1 2016
- Emphasized the need to create a more favourable legal framework for organic fertilizers.
- The use of organic fertilizers should go up to 20% of total fertilizers. For that we need to create a better market for natural fertilizers with the same scrutiny rules for animal by-products than for compost, room for blending them with mineral fertilizers and development of testing methods for organic fertilizer standards.
- This requires a level-playing field between organic and inorganic fertilizers, applying the same labelling, health, quality, safety and traceability requirements with clear thresholds for contaminants, heavy metals etc. and a list of ingredients and requirements for raw materials for waste streams, and collection systems for organic waste and use of secondary materials.
- The stimulation of new investment in recycling and the circular economy will be difficult as long as linear products are cheaper to produce and externalities are not priced in.
- The decentralised nature of fertilizer production creates issues for distribution
- Explained that the recovery of nutrients from waste would be based on strict end-of-waste criteria, starting with organic waste and later for struvite and ashes.
- Highlighted the importance of separate collection systems for organic waste in order to facilitate nutrient recovery.
- Stressed the growth potential for organic fertilizers, also as a vehicle for rural development.

- Argued against subsidizing phosphate recovery from waste and expressed his preference for creating a level playing field between organic and inorganic fertilizer.

Allan Buckwell (RISE)

- Presented an overview of the RISE Foundation's study on Nutrient Recovery and Reuse in European Agriculture
- Identified six goals/concerns for nutrients: food and nutrition security, production sustainability, pollution, waste, energy efficiency and finite resources. In addition he mentioned that nutrients are irreplaceable, that they are under a high pressure, that our current use is inefficient and wasteful (despite their finiteness) and that it is very difficult to internalise the environmental damage associated to nutrient surpluses.
- Over the last years, detailed studies have quantified nitrogen and phosphorus flows at the EU and global scales for particular years. However, series data on detailed flows are lacking.
- Increasing nutrient use efficiency in the food chain is key to solving many of the current concerns. Suggested actions to be taken: better matching inputs with needs, reducing losses from management and application, recovering nutrients from waste streams and tackling the concentration and density of livestock.
- The new study from the RISE Foundation focuses on the specific contribution of nutrient recovery. Nutrient recovery can increase nutrient use efficiency in the food chain, reduce environmental impacts of current nutrient use and decrease the need for scarce raw materials.
- The study identifies three main waste streams to recover nutrients from: manure, sewage and waste from food production/processing and urban areas. There is scope for NRR to expand and displace a proportion of current mineral fertiliser but this is likely to be an incremental process.
- Finiteness is not the most pressing problem of current nutrient use.
- Integrated action at many points is needed to get better balance in nutrient use.
- Professor Buckwell finished his presentation with some questions regarding the regulation of the use of recovered nutrients and the conditions needed for take-off for nutrient recovery.

Ludwig Hermann (Outotec)

- There are over 36 different regulations that apply to technical nutrient recovery, with a special focus on water usage for the recovery process
- Despite the number of regulations, these pose no real barriers for implementation
- If CE and NRR is to succeed, public procurement is key
- Untreated manure is no ideal fertilizer, not just because of its heavy metal or antibiotics content, but also because of transport costs, which can be reduced through processing (nutrient extraction).
- Nor is sludge an ideal nutrient: it contains metals, pathogens, bad stuff from water treatment plants and even toxic material such as flame retardants.
- Anaerobic digestion is the right way to go.

- CE and NRR are in a way the antithesis of the 'digital economy'; and could therefore provide many hands-on jobs that could be valuable in an age of disappearing physical labour. These jobs could also not easily be outsourced to developing countries.
- While resources and pollution are taxed on average at 6%, labour in Europe is on average taxed at 51%. In order to achieve CE we should reverse these ratios.

Chris Thornton (European Sustainable Phosphorus Platform)

- There are already a number of success stories with regard to NRR in the field, but these all depend on specific local technical or economic conditions
- The first criterion for farmers when applying nutrients is price; mineral fertiliser is currently and will continue to be generally cheaper than recycling, unless the economic/fiscal context is modified. It is therefore essential to find a mechanism for farmers to pass on the additional costs of nutrient recycling (as incidentally water treatment plants do via water costs).
- However, recycling has the advantage of creating new jobs, distributed in rural regions where they are much-needed.
- There are opportunities in the field of Big Data to facilitate NRR and sustainable nutrient use
- One extreme is spreading sludge directly on the field up to its nitrate limit, but that means putting a lot of phosphorous on the land (Germany and Switzerland have banned sludge spreading).

Agnew (UKIP)

- Cautioned that when land is leased, it is particularly difficult to expect lessees to recycle nutrients except by their own cattle.
- Asked explanations about the destination of residual phosphorous unused by plants
- Considered education in nutrient recycling of the essence.

Nicholas Bielenberg (Irish Landowners Organisation)

- Ireland is free from manure deposition or export as it is all recycled on the fields.
- The problem is designing smaller plants for gasification etc. in rural villages and small towns on an economically viable scale (both for output and energy generation)

Paolo de Castro MEP (closing)

- The market is not yet big enough to fully embrace NRR
- The localised nature of production remains problematic but can also be its asset
- Can we price the externalities of (food) production into the food itself?

Discussion back at RISE

Participants: Allan Buckwell (RISE), Corrado Pirzio-Biroli (RISE), Chris Thornton (ESPP), Mathias Bergman (BSAG), Marja Koljonen (BSAG), Eero Jalava (BSAG), Éric Liégeois (EC DG Grow), Koen van Keer (YARA), Laetitia Six (Fertilizers Europe), Nick Bielenberg (Irish Landowners Organisation), Robert de Graeff (ELO), Elisabet Nadeu (RISE).

The meeting started with questions from Allan that set the discussion.

What are the drivers for NRR?

One of them is the opportunity to create jobs, within the circular economy framework. These jobs cannot be quantified (although they can be “reasoned”) but many are likely to be dispersed in rural communities, which is a good support for these areas.

Changing societal views is a key issue to advance in NRR. In relation to this, changing the definition of current waste products into fertilizers or soil conditioners will also play a central role. Currently, sewage is still a waste and its application in soils can be seen as a “disposal solution” rather than a “fertilization” practice. The positive language of the circular economy helps this change of view point too.

On the attention which should be given to the issue of livestock product consumption, and thus livestock and livestock manure:

This has to be mentioned, it is more than a passing issue, but the RISE Foundation’s study should focus on the role of nutrient recovery and reuse. It can use the waste hierarchy to contextualise its focus, but should not go into detail on other issues. If the RISE Foundation thinks that more should be said about livestock, this can be part of a new report. Here, the message should be “recover and reuse beyond manure” (but of course explaining the opportunities for manure processing).

One of the issues surrounding the application of manure in fields is the nutrient availability in manure for crops, another is the presence of antibiotics and other potential soil contaminants in manure.

Ideally, manure should be processed at a very local level. De-concentrating livestock should not be a principal aim – but neither should it be ruled out for some localities (?). Livestock won’t cease to be concentrated in several regions (due to access to feed supplies, and to product markets – some for export, low soil fertility or low land value). Indeed, concentrating livestock in certain regions has several advantages in relation to lower costs in the production chain (all actors within reach). In addition, talking about deconcentration might give the impression that the study intends EU agriculture to “go back in time”.

The reality is that the livestock sector wants to continue growing. Will nutrient recovery and reuse contribute to substitute mineral fertilizers or to encourage the growth of the sector?

On the use of sewage sludge:

The plant availability of nutrients in sludge was discussed. Sewage composition must be tested for plant available nutrients. It is also preferable if there are field by field assessment of the nutrient

status of soils to which sewage sludge is applied, i.e. better alignment of application and crop requirements. Currently, there is strong demand for sludge (or recovered nutrients in sludge?), however, this is partly because it is currently given away free. If farmers had to pay for these resources, we could expect the pressure of demand to slacken. In addition, sewage sludge may contain harmful substances, not all of which are eliminated in the anaerobic digestion treatment. More research and testing is needed to break them down and remove them. Switzerland applies a fourth treatment phase in waste water treatment plants in which pollutants present in sludge are eliminated. Further waste water treatment may well be needed in other countries.

Manure and sludge are currently seen as secondary raw materials (not fertilizers). These can be further processed/treated and be converted to products which could be labelled as fertilizers.

We still don't know much about what happens in soils after sewage application (there is not much evidence).

Actions to be taken: change public perception; push for further waste water treatment; develop management plans for sewage application; increase our knowledge, and especially farmers' knowledge, of both the nutrient content of digestates and manures and of the plant uptake of nutrients in sludge.

On food waste:

Another source of nutrients is the composting of domestic food waste. It relies on the collaboration of society in segregating and collecting this stream. Food waste can also be collected from canteens and other parts of the food industry with a lower degree of "contamination" (less people intervene in the selection).

The agri food sector also has a potential for nutrient recovery (examples of industries: cheese, potato, pizza, chicken).

On subsidies/incentives: some ideas discussed:

Regional development funds (use them to propose and fund projects) especially for the upgrading of WWTPs. Another option is to fix a percentage of structural funds to be allocated to certain sectors.

The Commission will propose a study on circular economy in six selected regions within the EU-28. These case studies should serve as basis to the implementation of circular economy principles in the rest of the EU.

On prices: an option is to price the fertilizer content regardless of the type of product (mineral or organic). Farmers are not ready to pay for carbon, so carbon would have to be introduced for free in organic fertilizers, which would only receive compensation for nutrients.

Mechanisms have to be found for farmers to pass the cost of manure processing onto society.

Reasons why NRR has not gone further: the economics don't stack up // Regulatory hurdles // Not same quality as mineral fertiliser // Consumer perception (economics can make consumer perception change)