Promoting the Circular Economy in agriculture & agricultural machinery: the need for a smart, holistic approach to green products & processes

CEMA's position on the European Commission's consultation on the Circular Economy

18 September 2015

Executive Summary

This paper contains CEMA's response to the Circular Economy survey of the European Commission. Whenever – in the context of a Circular Economy approach – agriculture and agricultural machines are considered, **it is of fundamental importance that the specificities of the agricultural sector and the structural differences between consumer goods and capital goods (such as agricultural machinery) are duly taken into account**. This means that:

- any future Circular Economy measures must follow a sufficiently coherent and comprehensive approach which considers the multiple interdependencies along the agricultural production chain;
- voluntary, sector-specific, market-based standards should be given priority over direct European regulatory interventions, as the former have proven to be the best way forward to achieve future Circular Economy-related objectives and policies related to agricultural machinery.

With regards to **product design & the production phase of agricultural machinery**, CEMA believes that:

- a standards-based approach should be followed which takes the production chain into account;
- any product design measures need to take the wider role of machines in optimizing agricultural crop production into account;
- there is no need for further measures on quality in design in relation to the durability, reliability, long life expectancy of agricultural machinery;
- there is no need to review the rules on legal and commercial guarantees:
- there is little room for improvement regarding reparability, upgradability and residual value at the end of use cycles;
- the 'repair as produced' principle from RoHS should be extended to REACH;
- the added value for end-users (or lack of it) needs to be considered in any cost-benefit analysis.

With regards to the **use of agricultural machinery in farming processes ('consumption phase')**, CEMA believes that:

- the complexity of the 'consumption phase' of agricultural machines in farming processes needs to be considered: it should be assessed under which circumstances (e.g. soil conditions, machine combinations, etc.) agricultural machines can be used in an optimal, resource-efficient way.
- the greatest Circular Economy gains can be expected from a faster uptake of smart, connected agricultural machines in the crop production process;
- structural schemes encouraging the consumption of green products could be a valuable option;
- the sustainability benefits of the digital transformation and Internet of Things (IOT) need to be assessed.

In line with the above considerations, CEMA supports the idea of **devising dedicated EU measures to promote research and innovation on Circular Economy, encouraging cooperation between relevant actors, promote the uptake of smart machinery in the crop production process and promote the uptake of the resulting green products**. The final section of the document lists a number of **guiding principles for a successful Circular Economy approach for agriculture & agricultural machinery**.

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Introduction

The European agricultural machinery industry fully supports the concept of promoting the transition towards a circular economy. We are confident that the EU's circular economy initiative will contribute significantly to reaching wider EU objectives such as the Energy Union, the EU's climate objectives and higher levels of resource efficiency. As such, **the agricultural machinery industry is committed to being an active contributor to this process**.

The specificities of agriculture need to be taken into account

Whenever – in the context of a Circular Economy approach – agriculture, farm machinery and agricultural vehicles are considered, **the specificities of the agricultural sector must be duly taken into account**. A number of fundamental structural differences exist between the agricultural sector and other production processes in the sense that:

- agricultural production processes are complex biological structures involving many different actors, products, and industries;
- agriculture is subject to a range of dedicated EU and national legislative provisions – including a unique subsidy scheme in the form of the Common Agricultural Policy (CAP) – all of which exert a strong impact on the way farming processes are conducted in Europe, including, for instance, the in-field use of agricultural machinery.

In light of the inherent complexity of agricultural production processes and the myriad of regulations governing them, it is of utmost importance that any future Circular Economy approaches with regards to agriculture and agricultural machinery:

- fully respect the principle of subsidiarity;
- **follows a sufficiently coherent and comprehensive approach which duly considers the multiple interdependencies along the agricultural production chain, rather than putting an isolated focus on specific parts of the production process without considering potential spill-over effects.**

The structural differences between consumer goods and capital goods need to be considered

When looking at the measures indicated in the Commission's survey which could be envisaged to promote the circular economy, they appear to be inspired primarily by problems existing in the area of consumer goods. However, in the area of capital goods such as agricultural machinery which is used in a business-to-business (B2B) environment, major product-specific aspects related to circular economy (i.e. the quest for highly durable, reliable, efficient and long-life equipment) are naturally driven by customer needs and expectations and thus already well-covered by market forces.

In terms of Circular Economy initiatives, another fundamental difference exists between consumer goods and capital goods: capital goods (such as agricultural machinery) are produced in comparatively low volumes which imply a relatively high cost of production and concomitantly present a significant investment for the customer. Applying to this kind of products the same legislative approach that is applied to high-volume (and typically low-cost) consumer goods will not work. In fact, applying a consumer-goods approach to capital goods would risk to seriously undermine the competitiveness of manufacturing in the EU, which, in turn, could trigger negative spill-over effects for industry suppliers as well as for customers (in this case, the farming community) due to the non-availability of certain essential products.

Rather than direct European regulatory interventions, voluntary, sector-specific, market-based standards therefore appear to be the best ways forward to achieve future Circular Economy-related objectives and policies related to agricultural machinery (as they already do today).

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1. Product design and the production phase of agricultural machinery: which kind of Circular Economy measures work & which won't?

- Follow **a standards-based approach** which takes the production chain into account: the most appropriate Circular Economy measure for B2B sectors is the encouragement of industry-led initiatives based on self-certification and sector0specific standards on best practices. Such a system would give companies the necessary freedom to innovate and avoid unnecessary administrative burden and costs. Technology neutrality is another important aspect. Sufficient freedom needs to be provided for innovations to be developed according to specific needs and directions. At the same time, such an approach will allow the setting of meaningful targets as well as the definition of procedures on how to assess any progress made.

- **Product design** can be one aspect of a system based on sector-specific standards and self-certification. However, such an approach must not be limited merely to the aspect of machine performance, but also needs to take the wider role of a machine in a production chain into account (e.g. agricultural crop production) to optimise the final outcome (e.g. ton of wheat harvested). In the end, the final Circular Economy balance must always focus on reducing the inputs required to generate a certain final product (producing 'more with less'). In the case of agricultural machinery, the input resources required are the machine (98 % steel), fuel, pesticides, fertiliser, soil, water in order to produce the final product: crops.

- **No need for further measures on quality in design in relation to the durability, reliability, long life expectancy of agricultural machinery:** in relation to product features that are relevant for possible measures, durability already is one of the highest priorities of buyers of agricultural machinery who need machines that last and have a low need for repairs, avoiding unexpected repairs during critical and time-sensitive field operations (such as seeding plants or harvesting crops). As such CEMA does not see any need for further measures on quality in design in relation to the durability, reliability, long life expectancy of agricultural machinery.

- **No review of the rules on legal and commercial guarantees: reviewing the rules on legal and commercial guarantees:** given customer preferences for durability and existing market forces as described in the previous bullet point, such a review would be of no added value for agricultural machines.

- **Little room for improvement regarding reparability, upgradability and residual value at the end of use cycles:** the comparatively high investments needed to purchase agricultural machinery make reparability, upgradability and residual value at the end of use cycles a fundamental prerequisite and a competitive element. As such, in the case of agricultural machinery, these aspects offer very little room for further improvements on the Circular Economy.

- **Extend product lifetime by extending the 'repair as produced' principle from RoHS to REACH:** in relation to the promotion of a longer-life expectancy of products and thus the availability of spare parts, the application of REACH legislation to spare parts, could render the production of these (oftentimes very low-volume) parts non-profitable. Therefore, CEMA is in favour of introducing the RoHS principle of "repair as produced" under REACH to secure the availability of spare parts, thereby extending the useful life of products.

- **The added value for end-users (or lack of it) needs to be considered in any cost-benefit analysis:** market uptake of innovative green products will fail if there is no clear benefit for users (i.e., in the case of agricultural machinery: farmers). Measures related to product design therefore need to be supported by measures to increase user motivation to seek these innovative green products.

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2. Use of agricultural machinery in farming processes ('consumption phase'): which kind of Circular Economy measures work & which won't?

- **The complexity of the 'consumption phase' of agricultural machines in farming processes needs to be considered:** when dealing with professional sectors such as agricultural machinery, any future measure(s) on Circular Economy and/or product design must be understood as being one specific element in the broader quest to improve the sustainable productivity of the wider production process in which the machine is used (i.e. crop production or animal rearing). This process involves a broad range of different inputs and outputs, all of which can have an impact on purchasing behaviour of farmers and, most importantly, on the particular use of a machine.

- **The greatest Circular Economy gains can be expected from a faster uptake of smart, connected agricultural machines:** as regards Circular Economy and agricultural machinery, the greatest added value in the future can probably be achieved by promoting the use of more intelligent, versatile, efficient, and connected agricultural machines. In light of the fact that the average age of tractors in some countries is 30-40 years, a faster change-over to new, more efficient, intelligent machines could support the optimum use of resources over the whole chain of inputs for producing food. For agricultural machinery, a faster uptake of more intelligent machines with greater operational efficiency in the use phase is more important than the long-life expectancy of our vehicles.

- **Encouraging the consumption of green products** could be a valuable factor (e.g. by a standard and in relation to machines that operate in smarter, more flexible and precise ways and communicate with each other). Structural and permanent schemes could be a helpful element. By contrast, the use of sporadic measures with temporary benefits should be avoided.

- **Assess the sustainability benefits of the digital transformation and Internet of Things (IOT):** connectivity and the Internet of Things (IoT) a poised to make a major contribution to the future optimisation of products and services within the production processes, thereby contributing to the Circular Economy.

- **In the agricultural machinery sector, high-quality repair and maintenance services are of fundamental importance:** with regards to repair and maintenance of products, this is a good example where certain consumer goods, particularly non-durable throw-away products could probably benefit from Circular Economy measures that would trigger design changes in ways that would allow repairs to be performed. By contrast, in the case of an investment good with an extremely long lifetime such as agricultural machinery, keeping the product in its original state through regular and high-quality maintenance and repair checks already is of highest importance. To reach a high durability current designs already facilitate the necessary maintenance and repair activities. In addition, spare parts are available to guarantee repairs to be done during the extreme long lifetime of agricultural machinery. As such, in the context of repair and maintenance, the appropriate level of skills and expertise is the crucial factor, not the possibility to repair a product and/or the availability of information. With regards to highly complex agricultural machinery opening up sensitive information to non-skilled operators therefore is of no added value and could be dangerous.

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3. Assessing future measures on Circular Economy: think process optimisation & smart machines!

- **When assessing future Circular Economy measures for agriculture and agricultural machinery,** focus should be laid on process optimisation to ensure that any future gains are sought in the most promising areas and that potential interference(s) with other processes are duly considered.

- Rather than following the direct path of product design legislation (such as the Eco-design Directive) Circular Economy measures should follow the more ambitious route of **assessing under which circumstances (e.g. soil conditions, machine combinations, etc.) agricultural machines can be used in an optimal, resource-efficient way**. In terms of energy efficiency, the expected gains from optimal use are expected to be in the range of 20-30 %. By contrast, further gains on the machine itself are limited (expected range of 5%) and highly expensive, with investment costs outweighing expected benefits.

- **Focus should also be laid on the future contribution of machine innovation and machine intelligence: increasing intelligence** in the field with the help of smart machines is set to make a huge contribution to overall resource efficiency of the agricultural production process in the future.

4. EU measures to promote the Circular Economy: enabling actors and supporting research & innovation

To promote the Circular Economy in agriculture and agricultural machinery, CEMA supports the idea of devising dedicated EU measures to promote research and innovation and encourage cooperation between relevant actors, including:

- The use of Horizon 2020 to finance projects and technologies relevant for the Circular Economy;

- Promoting innovative systemic approaches and cross-sectoral cooperation. For our sector, this would imply a twofold focus:
  - To deliver a healthier crop of higher quality with a minimised input (including all resources that have an impact on the environment as well as any energy resource necessary);
  - To be part of a smart open network of providers/interested parties that can work across sectors and processes to add value from waste, energy recuperation.

- Promotion of innovative business models for the Circular Economy, particularly to overcome the high costs to make the change-over to an agriculture 4.0;

- Specific measures to encourage the uptake of Circular Economy among SME's, more specifically to ensure SME's are included in new developments such as Internet of Things (IoT).

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5. Guiding principles for a successful Circular Economy approach for agriculture & agricultural machinery

- Priority should be given to a **market-driven approach** e.g. by providing incentives and promoting research in market-driven technology development through Horizon 2020, increased SME participation, promote the uptake of smart machinery in the crop production process and promote the uptake of the resulting green products.

- **When focussing on products a holistic, systemic approach needs to be pursued** (product measures are related to the generation of other products, e.g. the production of crops, the construction of a house).

- It should be acknowledged that economic activities of different sectors are interlinked and dependent on each other: material loops are, and have to be, open and interconnected across sectors, borders and applications to achieve the highest degree of resource efficiency. The Circular Economy can therefore not be realised by few sectors alone, but requires a **horizontal approach** and overall **economic standpoint** (measurable economic benefits need to be there, created or promoted).

- The production of agricultural machinery is already overregulated. By contrast, the production processes in which our machines are used (farming) has not been tightly assessed in terms of a future Circular Economy approach. **With regards to the Circular Economy, farming processes should therefore be assessed in greater detail** by gathering reliable information and data regarding the impact of the users of agricultural machinery: their expectations, behaviour and willingness to change; carry out an analysis to identify areas of true potential and possible ways to improve use patterns and enhancement of innovative behaviour in the agricultural production process. Such assessment should always have the economic aspect integrated.

- A crucial element for a horizontal approach is the **creation of open platforms** where different providers/interested parties can **safely exchange information,** can understand each other (standardized methodologies, terminology…), **do business regardless of the traditional economical platform** they work in.

- The opportunities that the increased use of intelligence in manufacturing (”Internet of Things”) is bringing and will bring in such open platforms needs to be considered.

- Existing EU policies should be much better verified. There should be a stricter implementation and enforcement of waste policies. Existing rules should apply for all.

- **Remove the legislative inconsistencies between REACH and the sector-specific RoHS Directive**: in particular, a common substance evaluation methodology should apply for both REACH and RoHS when setting any further new substance restrictions for electrical and electronic equipment. The RoHS principle of **“repair as produced”** should also be introduced under REACH to secure the availability of spare parts, thereby extending the useful life of products.

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