The role of agriculture and forestry in the circular economy

EIP-AGRI Workshop on circular economy
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Outline

- Why are we talking about a circular economy
- The circular economy concept, principles & activities
- Challenges and opportunities for agriculture and forestry
- Relationship to the bio-economy
- How we might get there.
Why a circular economy in agriculture and forestry? (1)

- Our current economy is largely linear
  - We *take, make, use* and *dispose*
- Resources are becoming more difficult and expensive to buy, extract, and access
- Increasing demands for resources (materials, fuels, etc.)
- It is also resulting in pressure on (natural) resources and the environment
Agriculture and forestry in the circular economy

Resources
- Inputs (N, P, K, C), feed
- Natural resources
- Energy

Upstream

Ag & For

Products
- Food and feed
- Fibre
- Wastes and residues
- Energy

Use

Disposal Wastes

Rising Pressure on resources
Costs
Demands

Increased Pressure on environment
Pressure on climate
Loss of resources
Agriculture and forestry in the circular economy

Upstream

Resources

- Inputs (N, P, K, C), feed
- Natural resources
- Energy

Downstream

Products

- Food and feed
- Fibre
- Wastes and residues
- Energy

Disposal

Wastes

↑↑ Rising
Pressure on resources
Costs
Demands

↑↑ Increased
Pressure on environment
Pressure on climate
Loss of resources
Why a circular economy in agriculture and forestry? (2)

- The agriculture and forestry sectors are unique in that they rely on natural resources and cycles as their primary inputs.

- Using / depleting these resources beyond sustainable limits undermines the future of these sectors and the benefits they generate for society.
Why a circular economy in agriculture and forestry? (3)

• We therefore need to be more resource efficient in the way we use and re-use our resources

• This will make our businesses more economic and more sustainable in the long term by:
  – reducing external risks linked to oil and commodity prices;
  – reducing the pressure on (natural) resources;
  – opening up new revenue streams; and
  – fostering innovation and collaboration between sectors and industry.

• Acting now in this way of thinking is important to benefit from the market.
Why a circular economy in agriculture and forestry? (4)

- These risks and opportunities are recognised by the EU institutions.
- There is a clear resource efficiency agenda;
  - Roadmap to a resource efficient Europe;
  - The Circular Economy package;
  - The overarching objectives of the Common Agricultural Policy;
  - New priorities of the Rural Development Regulation;
  - Amendments to renewable energy policy that seek to address resource issues;
The circular economy
The circular economy

- Systems that keep the added value in products for as long as possible and eliminate waste;
- To ensure resources stay within the economy and can be used productively again and again;
- Reduces demands on (natural) resources, improves efficiency, and reduces costs
Circular economy principles in the primary sectors

- **Preserve and enhance natural capital**
  - By controlling finite stocks and balancing renewable resource flows

- **Optimise natural resource yields by circulating products, components and materials**
  - Ensuring the highest utility at all times

- **Foster effectiveness by revealing and designing out wastes and detrimental practices**
  - Encourage interaction, understanding our resources and making the most of our wastes
Agriculture and forestry in the circular economy

Inputs (N, P, K, C), feed
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- Energy

Use
- Food and feed
- Fibre
- Wastes and residues
- Energy

Disposal

Upstream

Downstream

Rising Pressure on resources Costs

Increased Pressure on environment Pressure on climate Loss of resources
Agriculture and forestry in the circular economy

Inputs (N, P, K, C), feed
Natural resources
Energy

Resources

Upstream

Ag & For

Use

Wastes and residues
Fibre
Food and feed
Energy

Products

Downstream

Recovery

Increased
Income streams
Delivery of environment and climate goals

Reduced
Pressure on environment
Pressure on climate
Resources retained
Circular economy actions

- Reducing the quantity of materials required in a system, in particular those that cannot be recycled
- The re-use of materials without processing
- Recycling and reprocessing of materials by closing system loops
- Interaction between waste producers and users
- Technology development, R&D
- Improved consumer choice – fostering demand and new markets
Example – Paper recycling

- Wood as a raw material*
  - 70% paper recycling in the sector (2012)
  - 78% maximum potential in the EU
- FAVINI - agro-industrial waste from lemons, oranges, nuts, apples, corn and olives, used to make paper (IT)
- LUCART – Used beverage cartons to make high quality fibres (IT)
- VanHoutum – Closed loop recycling agreement for hygienic tissue (NL)
- HOLMEN – Using treated municipal waste water – 100% waste water, 100% recovered paper (ES)
The bio-economy
The bio-economy

- The production of renewable biological products and resources
- The conversion of these resources and waste streams into value added products:
  - food, feed, bio-based products and bioenergy.
- Through innovation, technological development, knowledge sharing, and industrial symbiosis.
- Relying on local and tacit knowledge
- Can be both linear and circular
Goals of the bio-economy in Europe

• The Bio-economy Strategy & Action plan
  – more innovative, resource efficient and low-emission economy;
  – reconciling demands for sustainable agriculture and fisheries, food security, and the sustainable use of renewable biological resources, for industrial purposes
  – ensuring biodiversity and environmental protection.
The Circular and Bio-economy concepts

Circular economy
- Intrinsic recycling and feedback loops;
- Applies to the whole economy;
- Adding value to waste materials

Bio-economy
- Can be both linear and circular;
- Only bio-based products and systems;
- Reliant on the primary sectors;
- Emphasis on adding value to raw materials with strong knowledge and technical development.
Agriculture and forestry – A more circular bio-economy

Opportunities
• New income streams
• Future proofing
• Job creation
• Links to new sectors
• More sustainable resource use at lower cost
• Reduced exposure to risk
(Some) examples in practice today

- **Millibeter**
  Organic waste processing, animal feed etc.
  BE(Fl)

- **GREENWOOLF**
  Waste wool to fertiliser
  IT

- **Tomato masters**
  Aquaculture + horticulture
  BE(Fl)

- **AT land and forest owners**
  Wood ash recycling
  AT

- **COOPERL**
  Pigs and AD
  FR

- **CONDENSE project**
  Compost from olive cake
  IT

- **Agro-hub**
  Waste and side streams for energy
  FI (Lapland)

- **Palopuro Agroecological**
  Organic integrated system
  FI

- **Agriculture biogas production**
  CH

- **Metsä Group**
  Bio-products, water purification, heating
  FI

- **Nuestra Señora de los Remedios**
  Organic compost from olive cake
  ES

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Moving to circular bio-economy
Activities to promote a circular bio-economy

• Investment in research, innovation and skills
• Improved stakeholder engagement and policy interaction
• Enhancement of markets in bio-economy and circular economy
• Fostering collaboration within and between sectors
• Educating and improving knowledge
Practical support

- Through EU initiatives, such as
  - the Common Agricultural Policy
  - the European Innovation Partnership – AGRI
  - the European Network for Rural Development (TG green economy)
  - Research and funding through H2020 and others
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