

# An introduction to Circular Bioeconomy

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## Midas

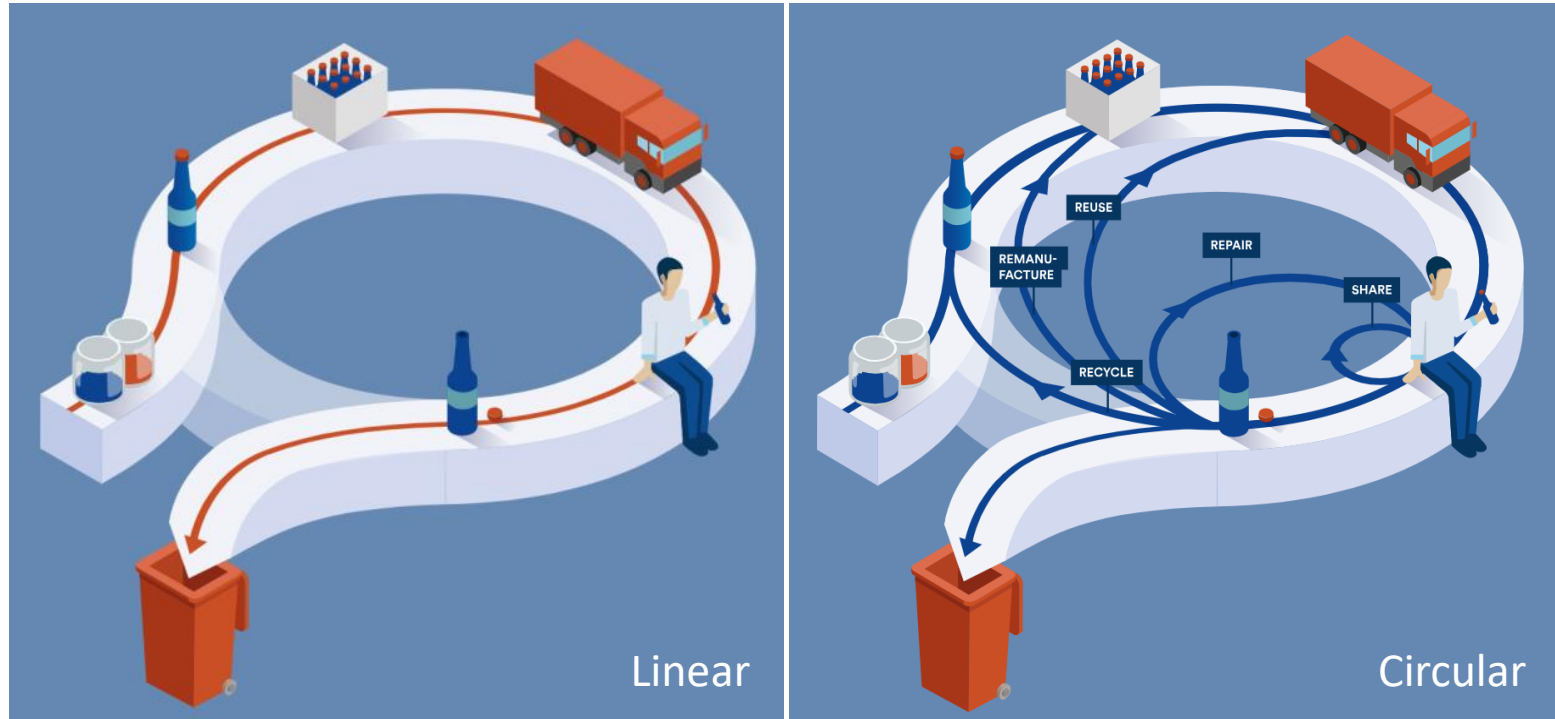
MARGINAL LANDS, INDUSTRIAL CROPS  
AND INNOVATIVE BIO-BASED VALUE CHAINS



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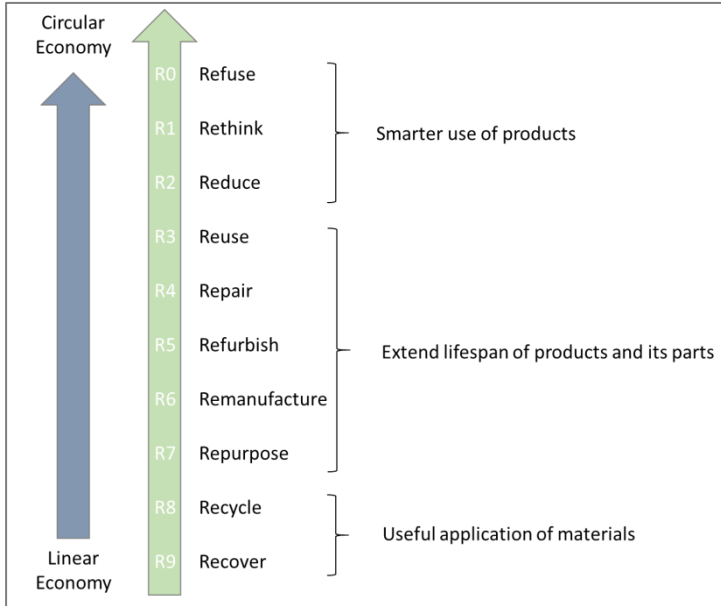


# What is a Circular Economy?



Figures source: European Parliament Research Service (accessed Jan 2024)

# Circular Economy practices



R0	Refuse	Make product redundant by abandoning its function or by offering the same function with a radically different product
R1	Rethink	Make product use more intensive (e.g. through sharing products, or by putting multi-functional products on the market)
R2	Reduce	Increase efficiency in product manufacture or use by consuming fewer natural resources and materials
R3	Re-use	Re-use by another consumer of discarded product which is still in good condition and fulfils its original function
R4	Repair	Repair and maintenance of defective product so it can be used with its original function
R5	Refurbish	Restore an old product and bring it up to date
R6	Remanufacture	Use parts of discarded product in a new product with the same function
R7	Repurpose	Use discarded product or its parts in a new product with a different function
R8	Recycle	Process materials to obtain the same (high grade) or lower (low grade) quality
R9	Recover	Incineration of materials with energy recovery

Figures source: Modified from Potting et al. (2017)

# Examples of the Circular Economy

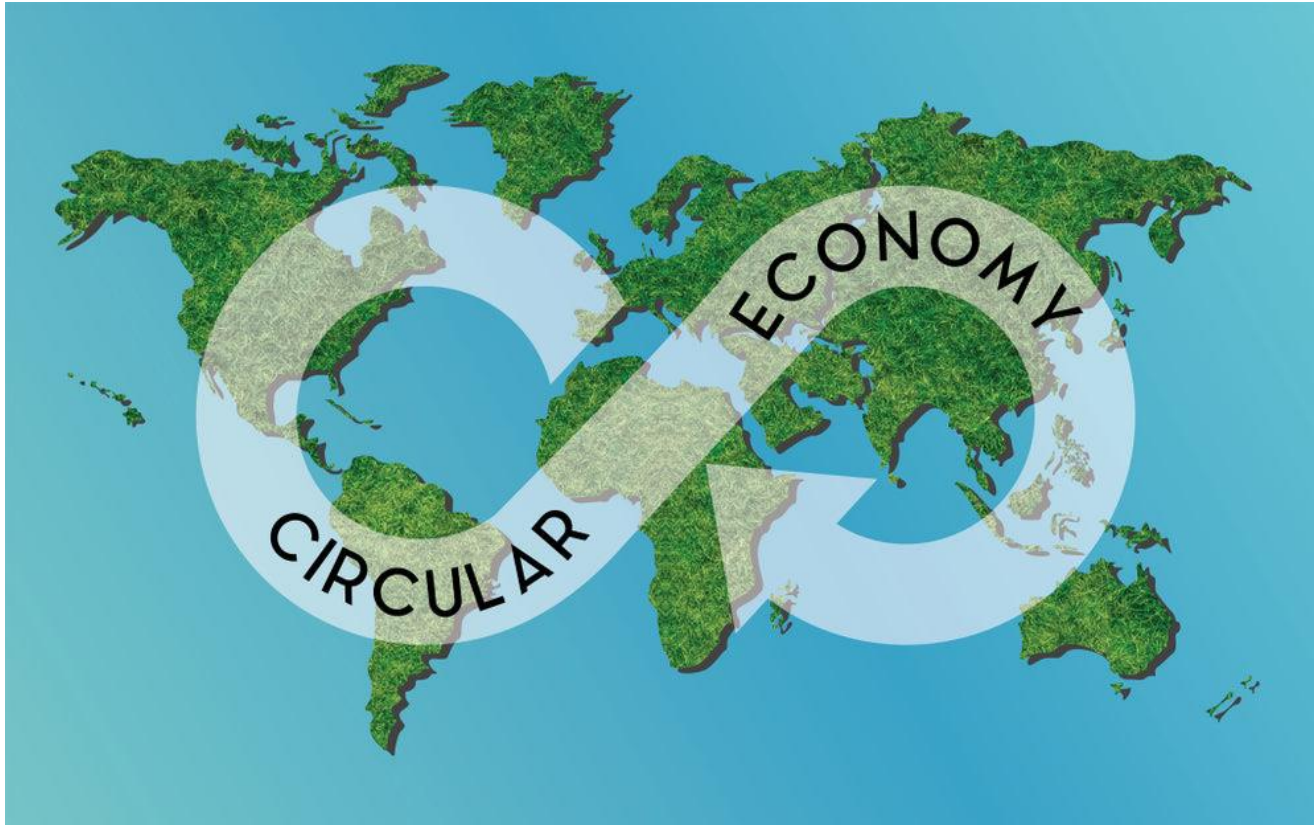


Figure source: R5 Living (2022)

# Benefits of the Circular Economy

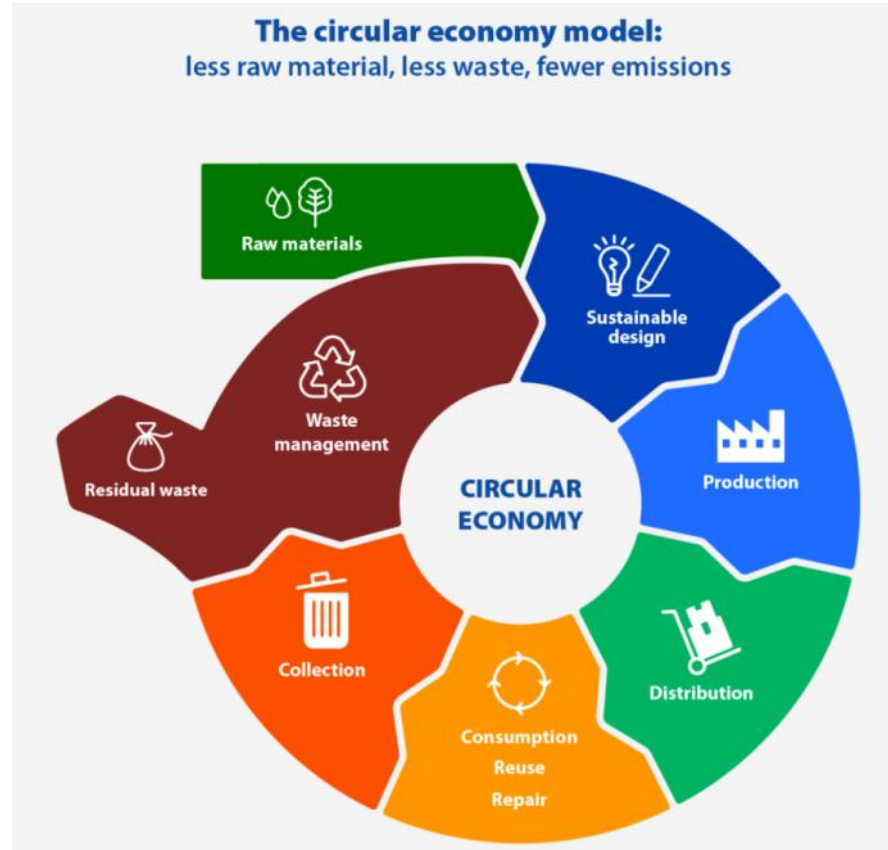


Figure source: European Parliament (2023)

# What is a bioeconomy?

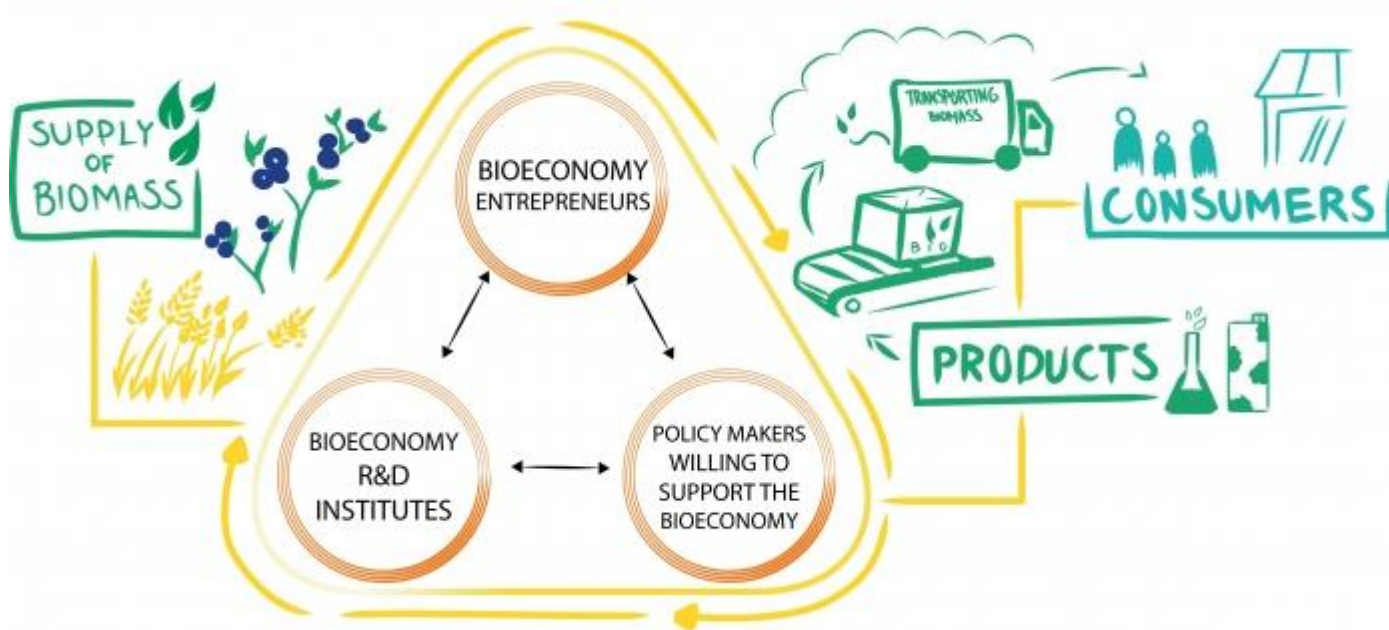


Figure source: EU Strategy for the Baltic Sea Region (2019)

# Benefits of the bioeconomy

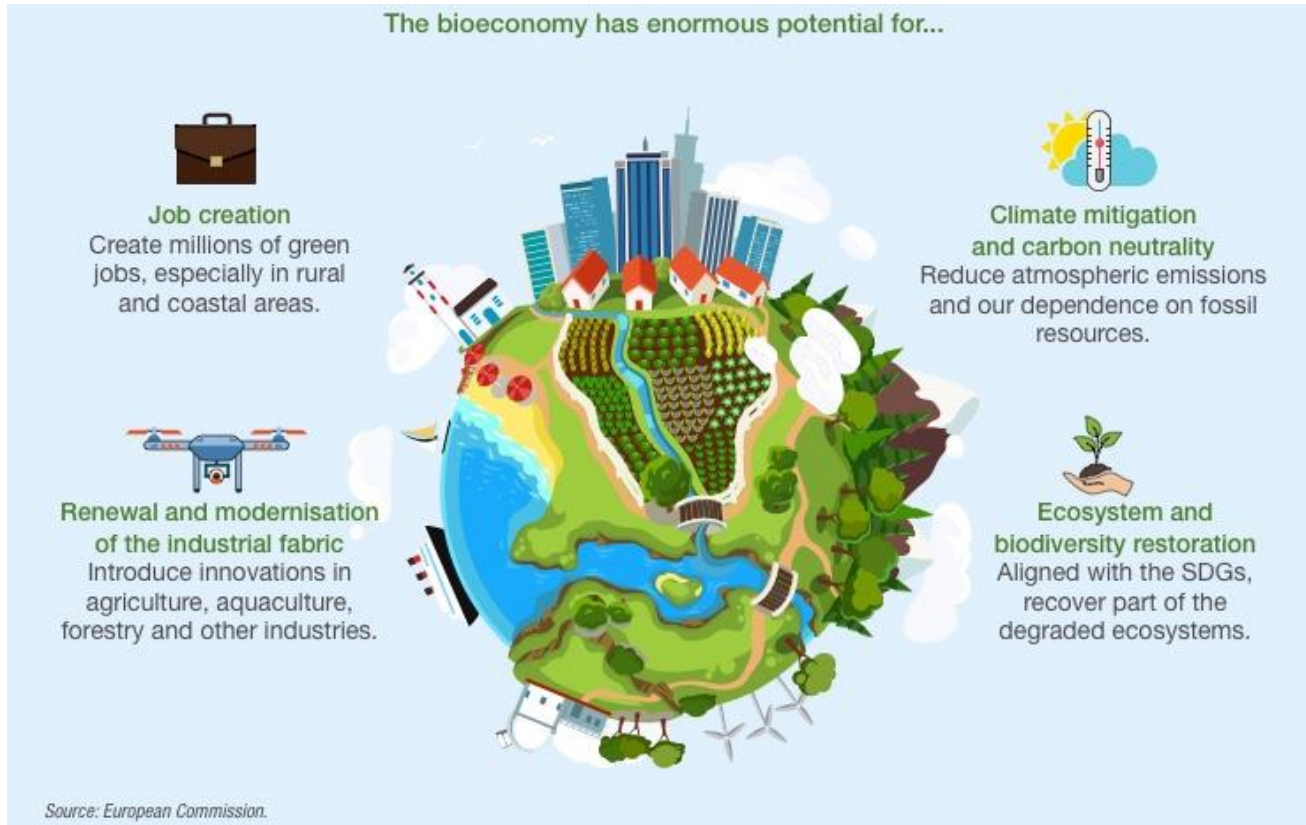


Figure source: Iberdrola (n.a.)



# Processes and technologies in the bioeconomy

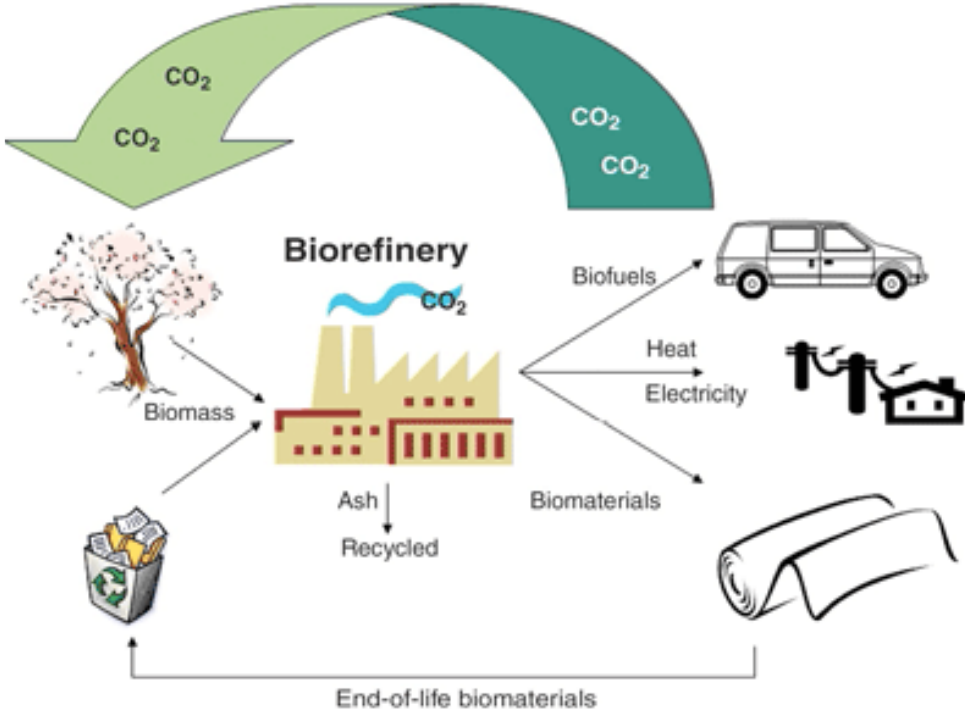


Figure source: EcoMENA (2023)



# Bio-based products

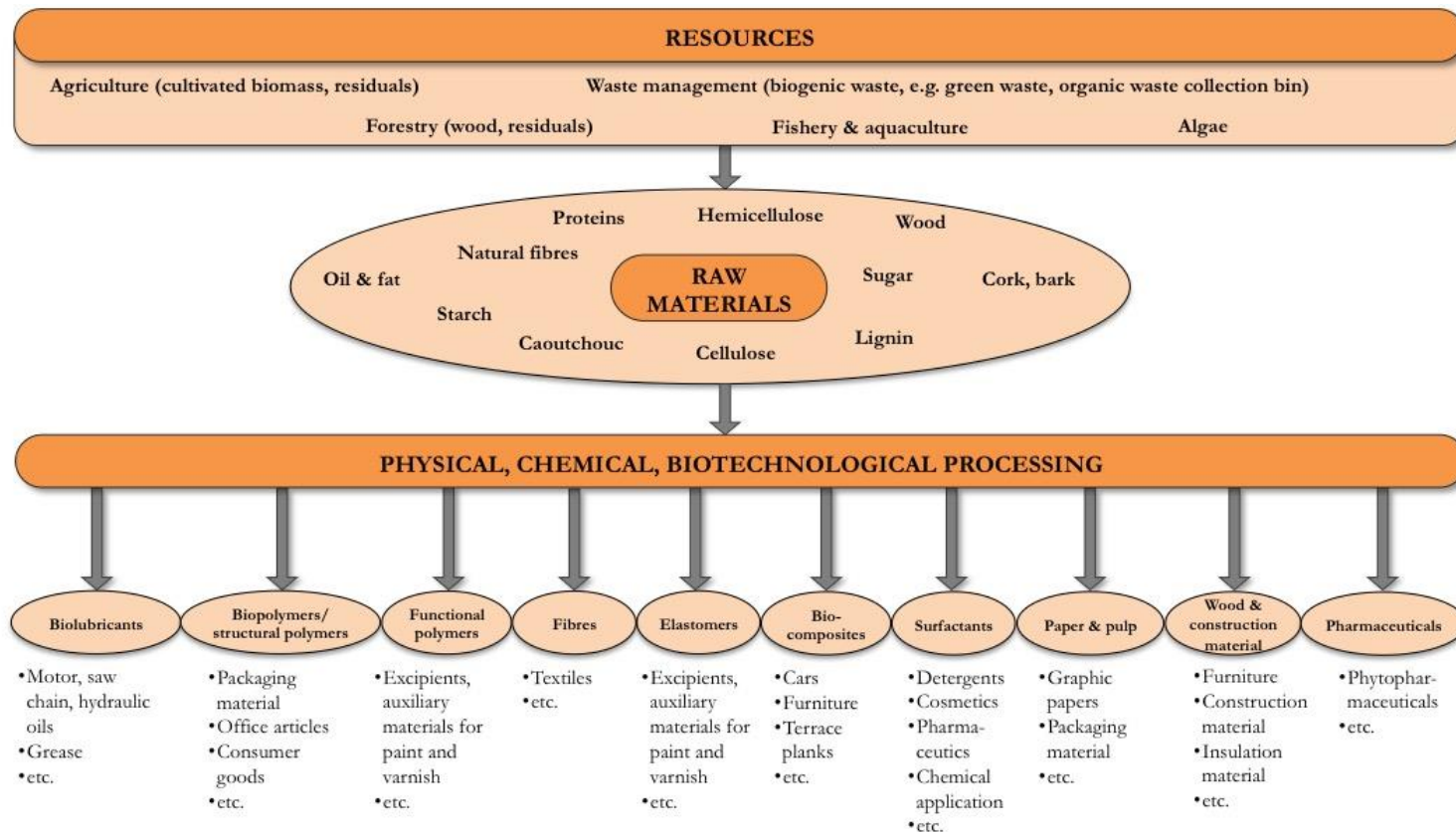


Figure source: BIOPRO Baden-Württemberg GmbH (n.a.; a)

# Bioeconomy vs bio-based economy

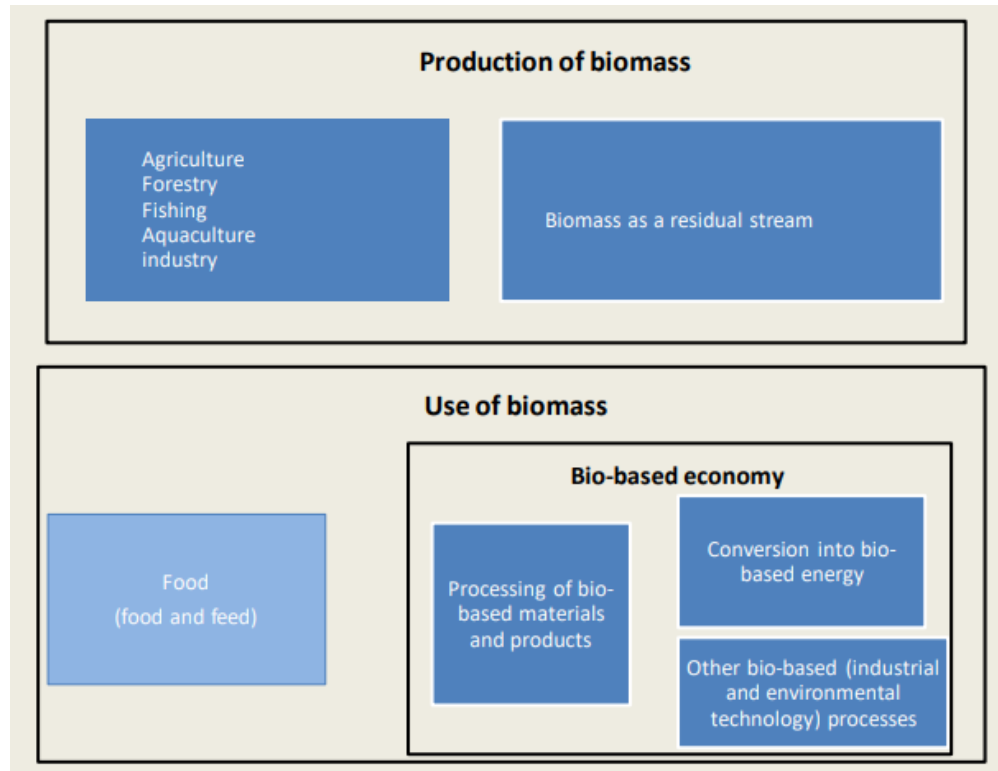


Figure source: Diakosavvas & Frezal (2019)

# Sustainable bioeconomy

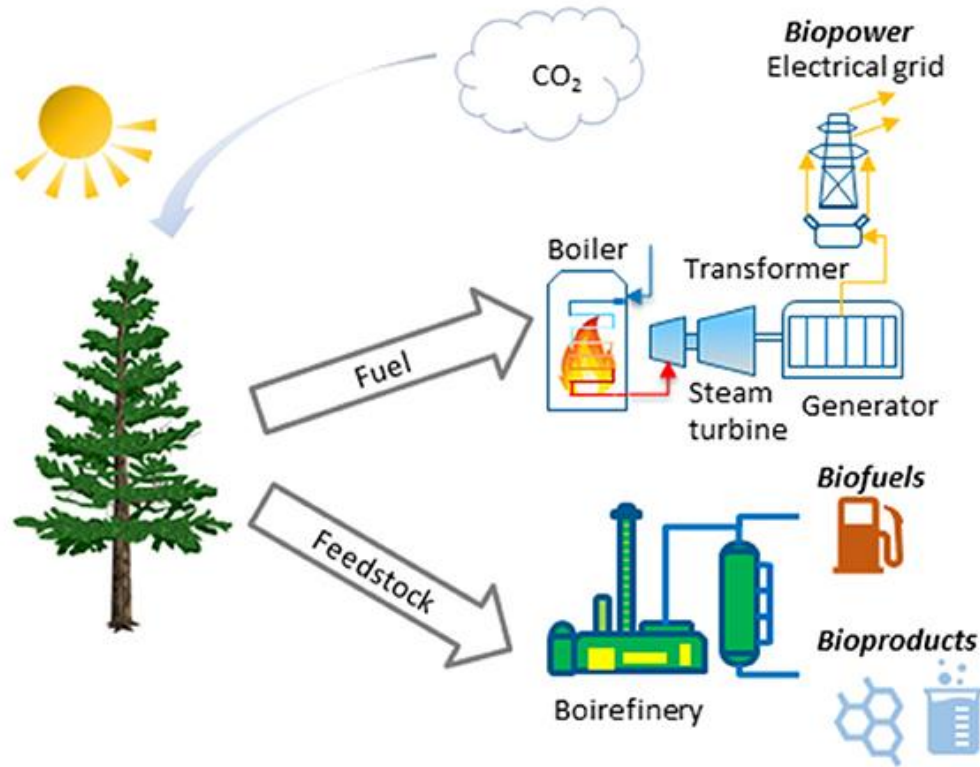


Figure source: Tan & Lamers (2021)

# Circular bioeconomy

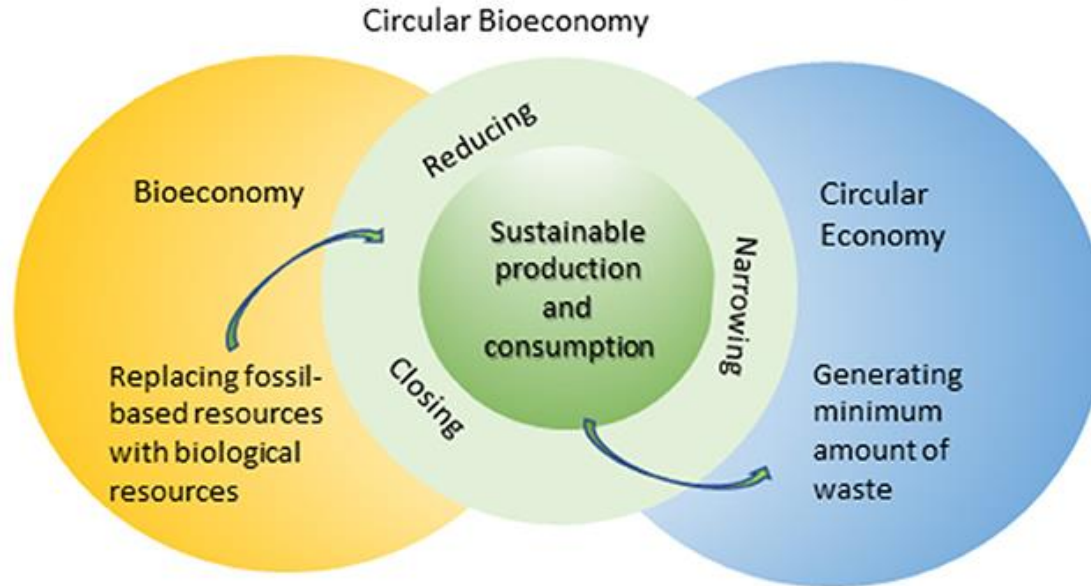


Figure source: Tan & Lamers (2021)

# Bio-based circular carbon economy

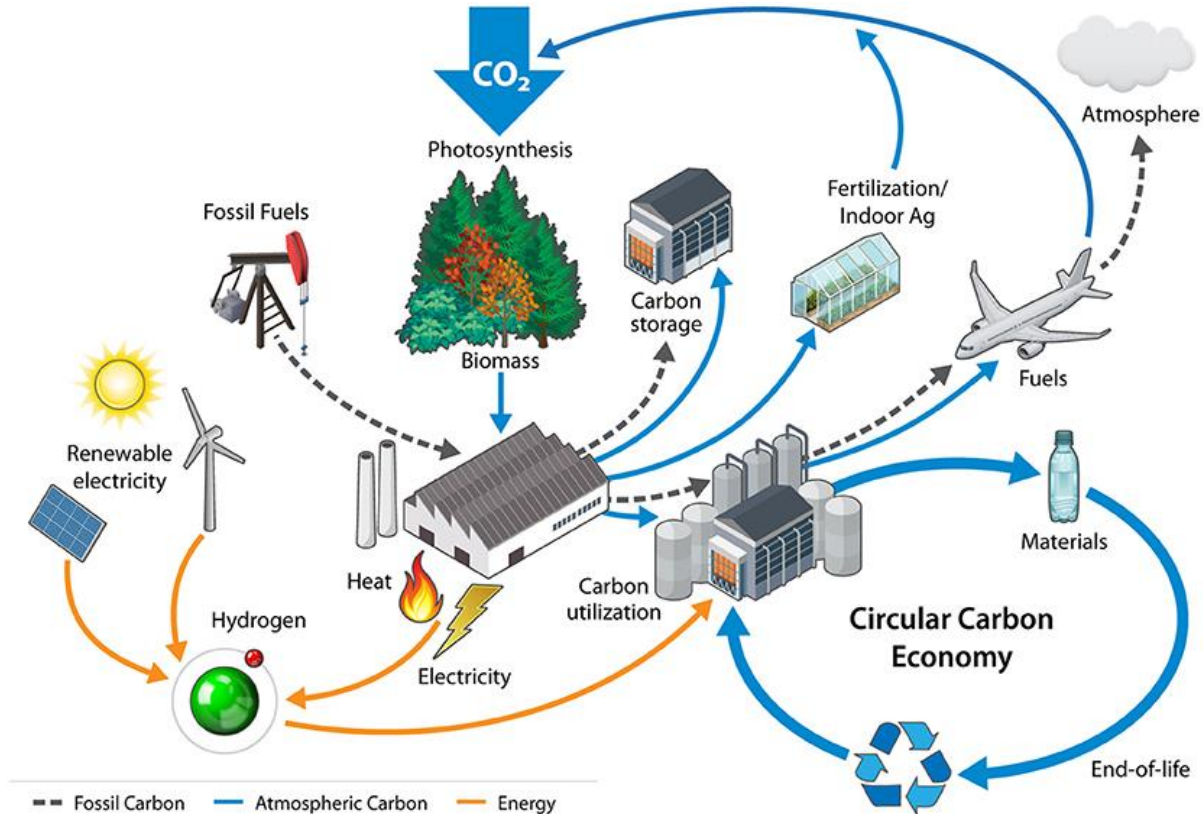


Figure source: Tan & Lamers (2021)





Figure source: Ministère de l'Agriculture et de la Souveraineté alimentaire (2018)



Figure source: Science Business (2021)



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# Thank you



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