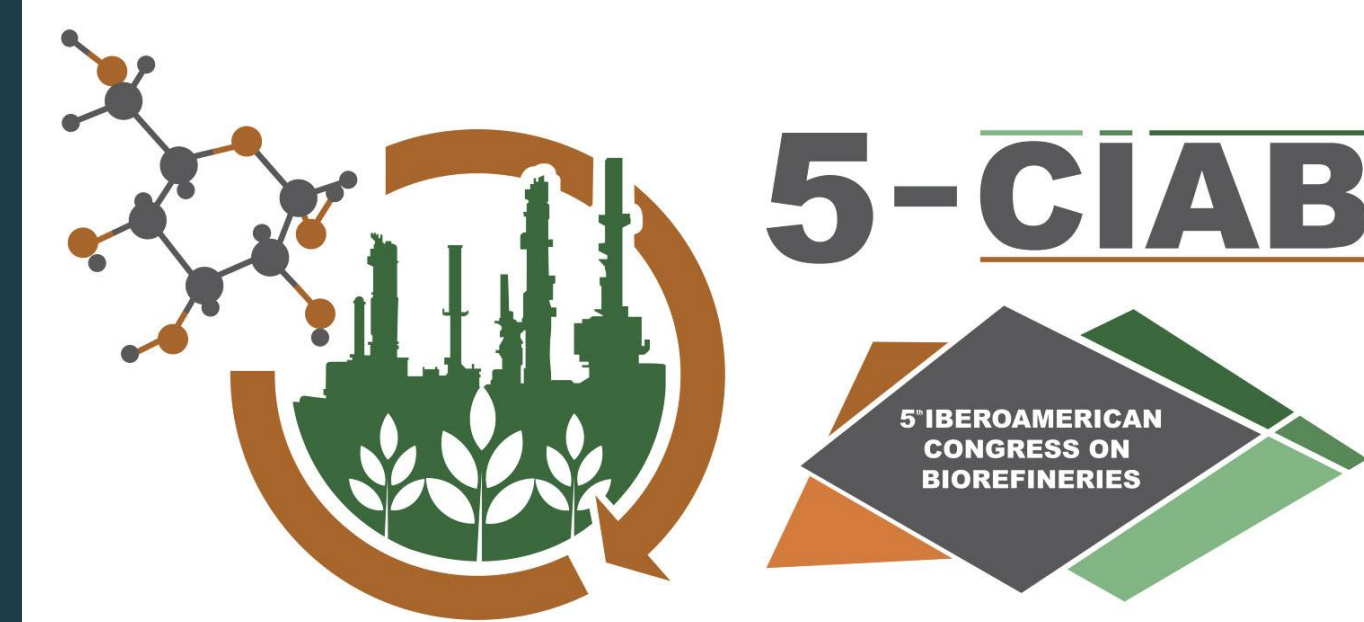
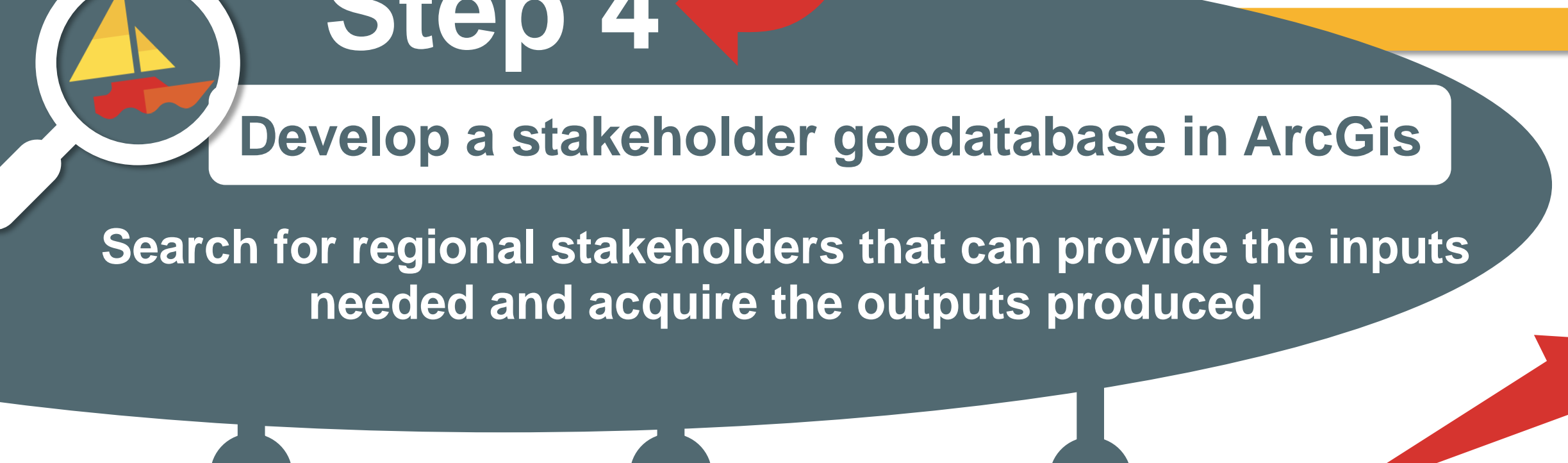
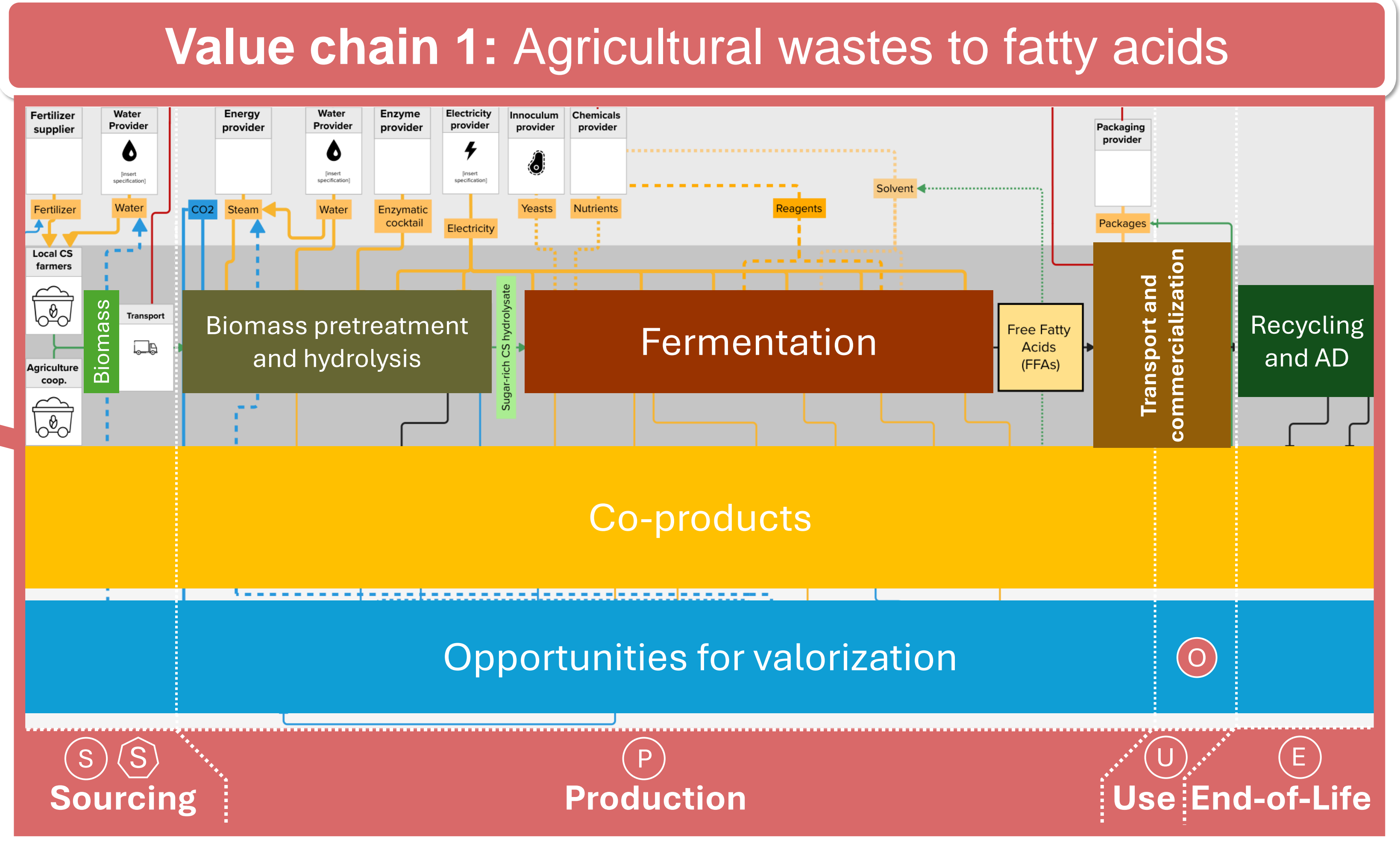
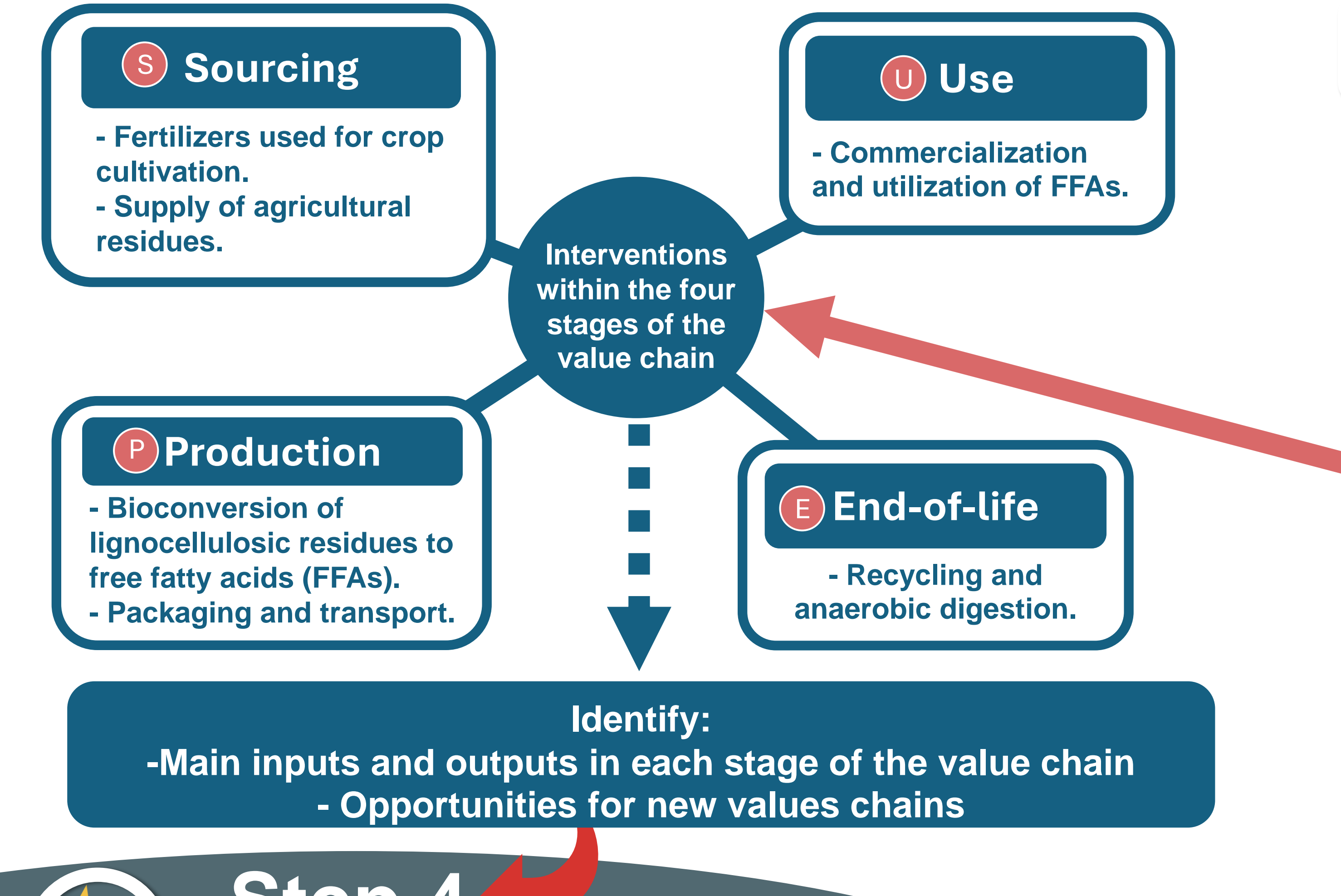
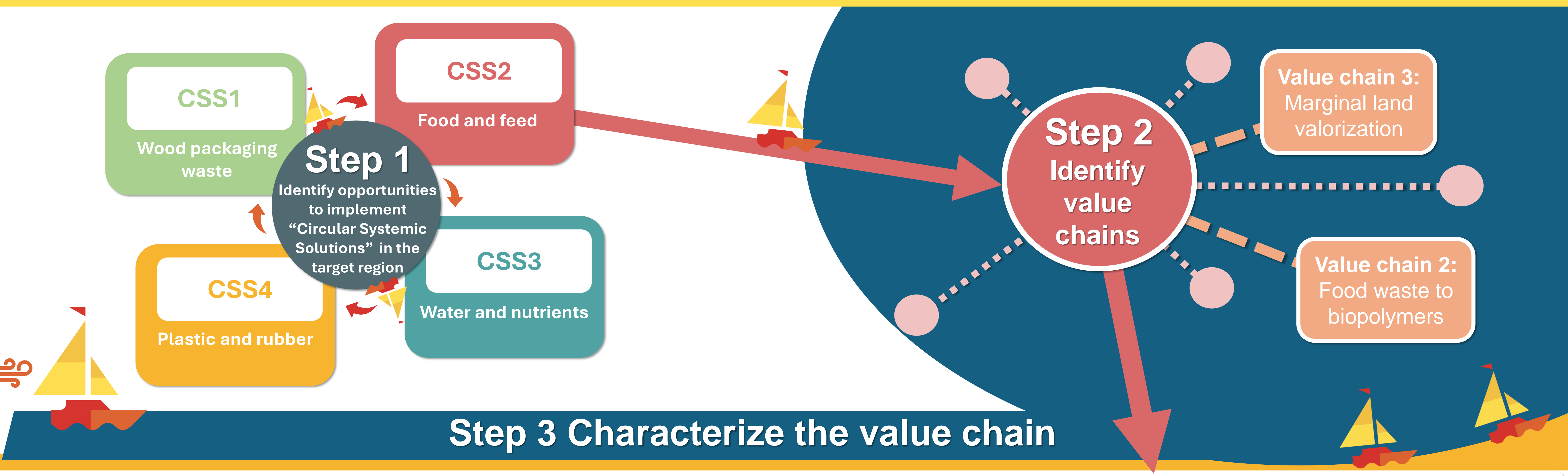


Development of a georeferenced database as a tool to improve circular material flows in lignocellulosic waste valorization

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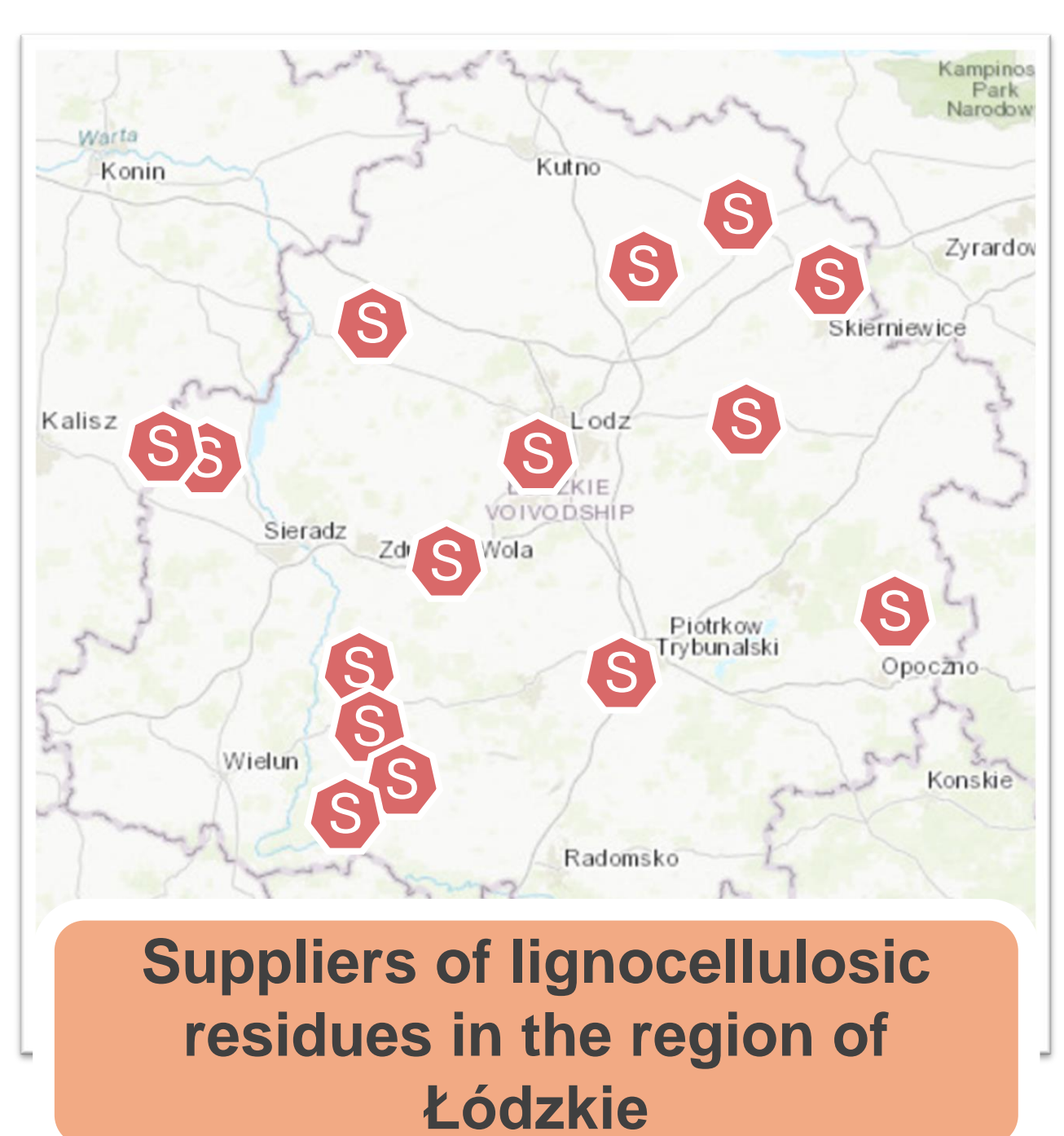
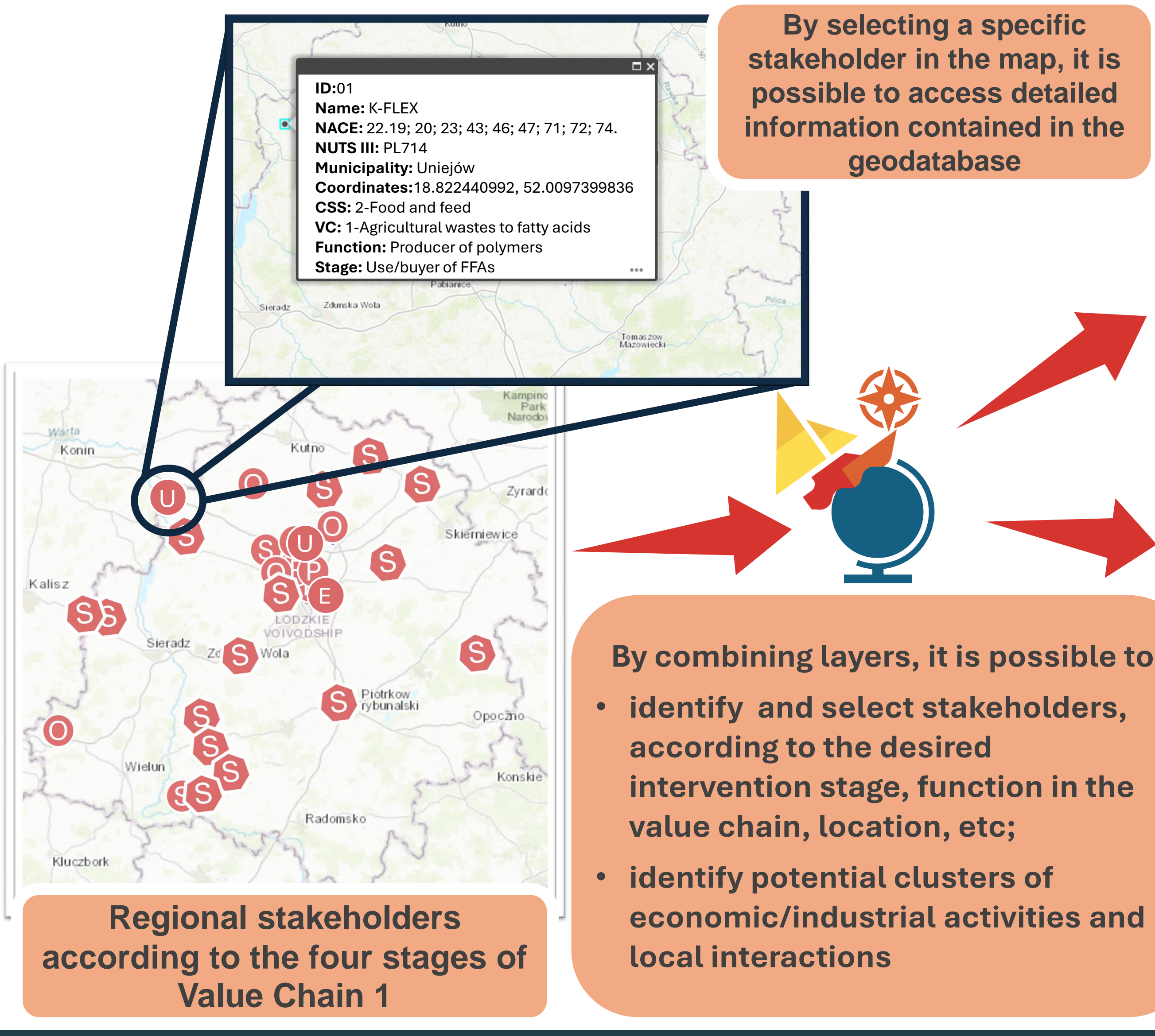
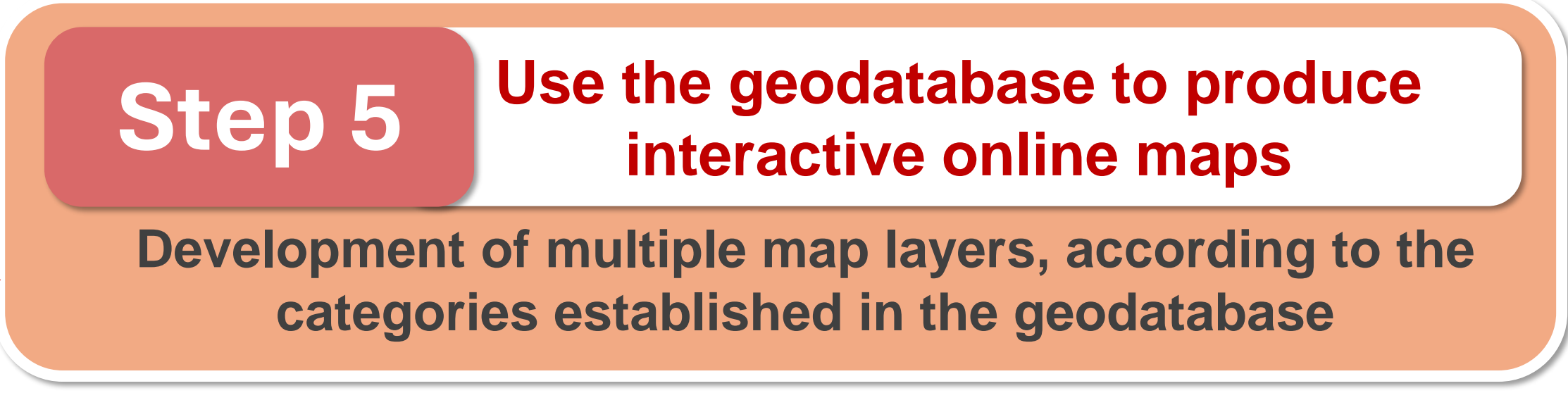
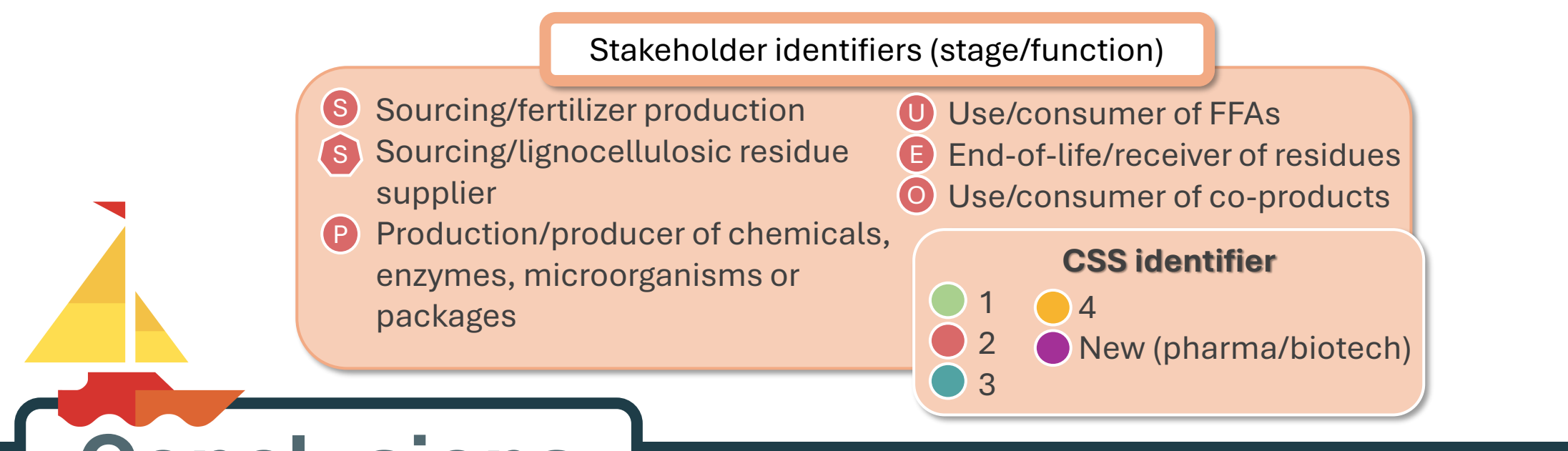


The **Frontsh1p** project aims to accelerate the development and implementation of cross-sector circular value chains through the creation of a multi-level toolkit that includes georeferenced data. This will facilitate the identification of the different stakeholders, their levels of interaction, regional distribution, and communication pathways, as well as the planning of new circular material flows for by-products and waste streams. The region of Łódzkie in Poland was selected for the development of this toolkit to establish guidelines, methodologies and technologies, based on information at the regional economic level, that can be easily replicated in different regions across Europe.



Characterization of the stakeholders in the geodatabase

Stakeholder identifiers	ID	Unique identifier of the stakeholder
	Name	Designation of the stakeholder
	NACE	Classification of the economic activity of the stakeholder
	NUTS III	Subregion according to the Nomenclature of Territorial Units for Statistics
	Municipality	Administrative unit that governs a specific urban area, such as a town or city
	Coordinates	GPS coordinates of the stakeholder
Process identifiers	CSS	Circular systemic solution in which the stakeholder intervenes
	VC	Value chain in which the stakeholder intervenes
	Function	How the stakeholder intervenes in the value chain
Interaction identifiers	Stage	Stage of the value chain in which the stakeholder intervenes
	Multiple stage	Identifies if a stakeholder intervenes in more than one stage in the value chain
	Multiple VC	Identifies if a stakeholder intervenes in more than one value chain
Multiple Function	Identifies if a stakeholder has multiple functions in the value chain	



Conclusions

- ❖ This geodatabase facilitates the development of regional interaction networks for new value chains centered on undervalued waste or by-products.
- ❖ The presentation of the information as an intuitive interface aims to encourage map-driven interactions between citizens and economic actors, and to increase their involvement in regional circular economy practices.
- ❖ It is expected that this geodatabase can be extended to other economic activities and industrial clusters, and replicated in different regions.