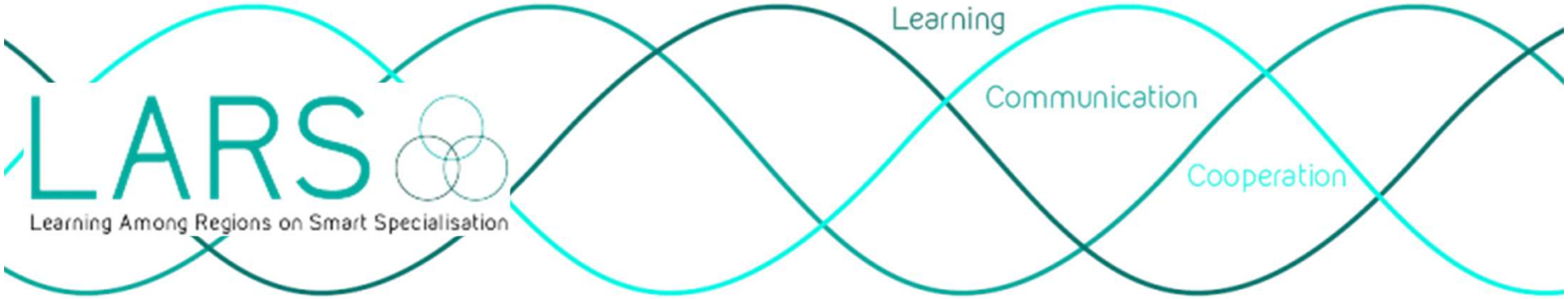

Lithuania:

Agribusiness Driven Innovation for Circular Economy

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Interreg Baltic Sea Region

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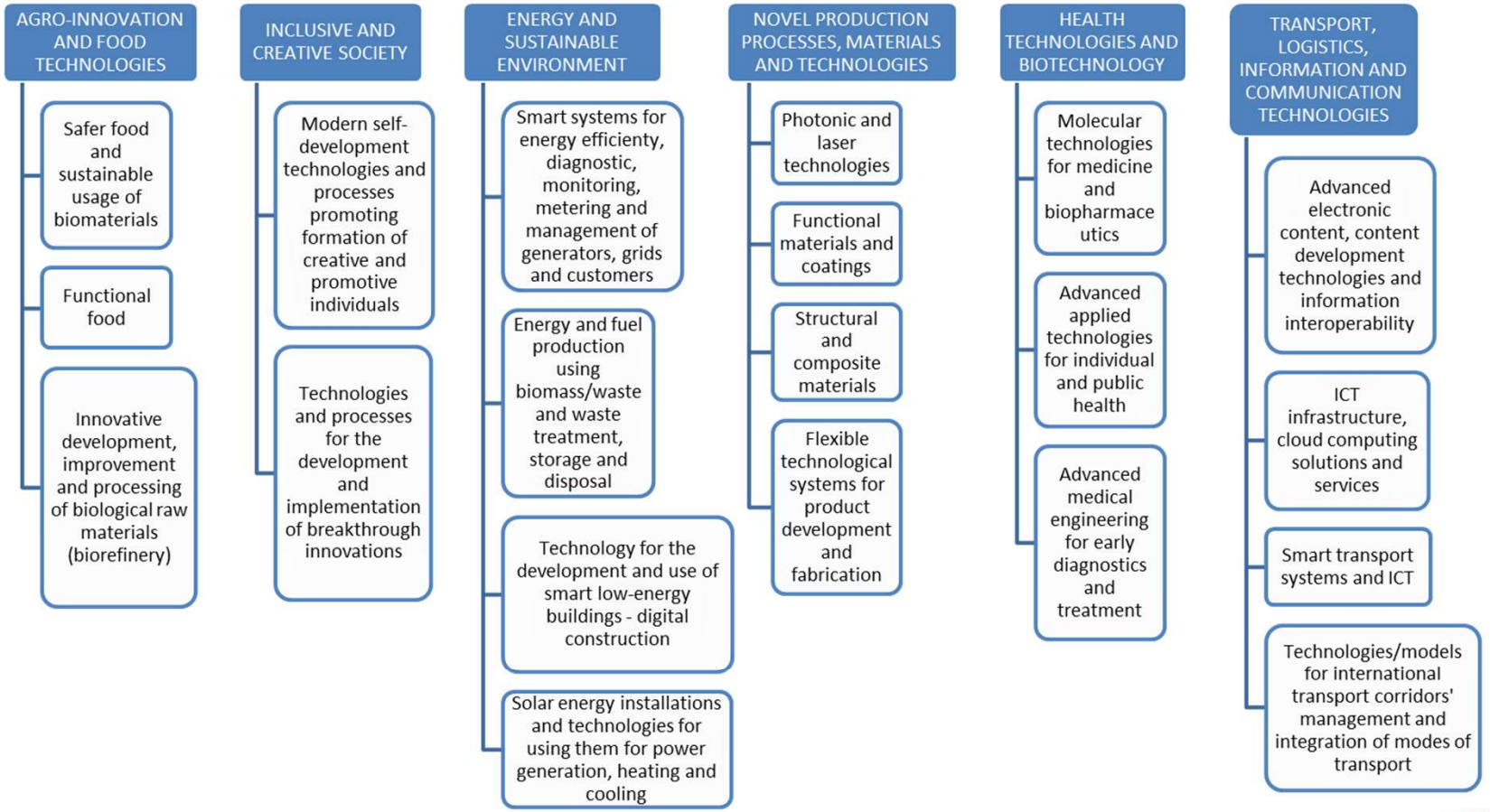
List of 6 broad fields and 20 priorities for RIS3 of Lithuania.



Selected broad RIS3 field:

Energy and sustainable environment

Priority:

Energy and fuel production using biomass/waste and waste treatment, storage and disposal

Investigated area for research:

Circular economy (bio-economy) – biogas production based on manure and crop residues.

Mapping of value chain for biogas production based on manure and crop residues

	End product	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8
Core processes	Biogas consumption effects	Biogas consumption	Distribution and transport	Retail	Biogas production	Anaerobic digestion	Pre-treatment	Generation of the manure and crop residues	Farming
Supporting processes		Governmental policy			Governmental policy			Collection and transport	

Methodology for analysis of biogas sector

1. Stakeholder analysis (Quadruple helix approach);
2. Interview with stakeholders for biogas production (Quadruple helix approach);
3. Gap analysis;
4. Focus group meeting;
5. Good practices/pilots;
6. Continuation with policy recommendations.

Stakeholders of biogas sector in Lithuania:

Companies	• UAB ”Kurana” (from crop residues). • UAB ”Cesta” (from biomass and slaughter residues). • AB ”Rokiskio suris” (from milk residues). • UAB ”Vilniaus degtinė” (from grains).
Public institutions	• Ministry of Environment of the Republic of Lithuania • Ministry of Agriculture of the Republic of Lithuania • Ministry of Energy of the Republic of Lithuania
Universities and research organizations	• Lithuanian Institute of Agrarian Economics • Lithuanian Institute of Energy • Alantos School of Agriculture (the manure and crop residues).
NGO’s	• Association of Rural Communities of Lithuania • Association of Local Authorities in Lithuania • Lithuanian pig producers association

Stakeholders of biogas sector in Lithuania:

Project were looking at their potential role in developing value chains through the following main dimensions (attributes):

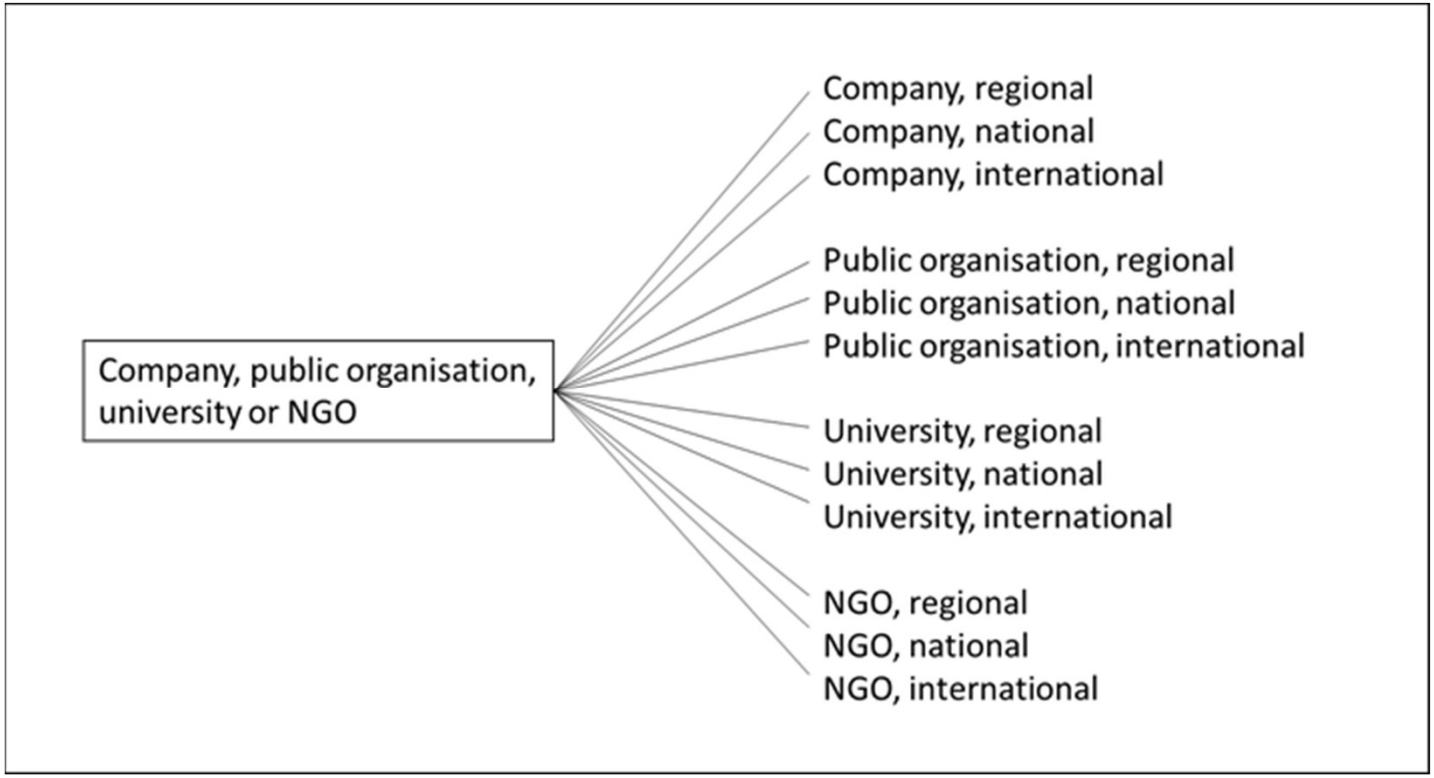
- the stakeholder's ***power*** to influence the development of the value chain. ***Power*** is a relationship among social actors in which one social actor A can get another actor B to do something that B would not have otherwise done. Powerful stakeholders may be companies or institutions which control money, knowledge, rules, decisions, or other crucial resources.
- ***the legitimacy*** of the stakeholder's relationship with the value chain. ***Legitimacy*** is "a generalised perception that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs and definitions."
- ***the urgency*** is the stakeholder's claim on the value chain. ***Urgency*** calls for immediate attention or pressing action. (Mitchell et al., 1997). The dynamics of a value chain is caused by the need to enhance productivity through search for optimal allocation of resources.

Gap analysis of biogas sector in Lithuania:

- Cooperation in the survey refers to activities in which both sides are genuinely interacting with one another.
- **Expectations** = what the cooperation should be in ideal situation/what you want it to be. This was measured with a value/meaning:
  - 10-9 Very high expectations,
  - 8-7 High expectations,
  - 6-5 Average expectations,
  - 4-3 Low expectations,
  - 2-1 Very low expectations,
  - 0 = no expectations

- **Experiences** = the cooperation in practice which was measured with following scale: 10-9 Very good experiences, 8-7 Good experiences, 6-5 Average experiences, 4-3 Bad experiences, 2-1 Very bad experiences, 0 = no experiences

Gap analysis of biogas sector in Lithuania:



Gaps and stakeholders

Table 13a. Distribution of cooperation, expectations among quadruple helix actors at national and international levels

National

5,56			7,67
Companies	9,25	9,11	Universities
9,50	8,25	7,00	9,00
5,56	6,33	6,00	7,67
Public organisations	5,89	9,11	NGOs
0,00			0,00

International

0,00			4,67
Companies	5,92	8,89	Universities
6,92	5,08	8,67	6,89
0,00	0,00	5,44	4,67
Public organisations	0,00	7,67	NGOs
0,00			0,00

Greatest mismach:

- nalional level:

- companies (U2-L1-P1) expect almost twice better collaboration with public organizacions (U2-L2-P2) (9.50) than vice versa (5.56);

- NGOs (U1-L1-P1) expect almost twice better collaboration with public organizations (9.11) than public organizations towards NGOs (5.89);

- international level:

- public organizations (U2-L2-P2) did not mention any expectations regarding collaboration with companies, universities and NGOs,

- all three actors identified quite high expectations towards public organizations (U2-L2-P2) for collaboration: companies (6.92), universities (8.67) and NGOs (7,67)

Gaps and stakeholders

Table 13b. Distribution of cooperation, experiences among quadruple helix actors at national and international levels

National

3,44			0,00
Companies	7,42	7,00	Universities
6,92	6,50	6,00	5,22
3,44	4,56	0,67	0,00
Public organisations	3,44	2,56	NGOs
0,00			0,00

International

0,00			0,00
Companies	4,67	5,56	Universities
6,58	3,58	2,56	3,00
0,00	0,00	0,44	0,00
Public organisations	0,00	2,22	NGOs
0,00			0,00

Greatest mismach:

- nalional level:

- NGOs (U1-L1-P1) are least actually involved in collaboration practices with the rest of actors regarding innovation in biogas; public organizations (U2-L2-P2) are also passive in such practices.

- private companies state better than medium actual collaboration practices regarding innovation in biogas with all three actors. Universities are also at very close situation;

- international level:

- experiences are quite poor,
- cooperation does not exist among public organizations and the rest of actors (0.00!)

Gaps and stakeholders

Table 13c. Distribution of cooperation gaps (expectation-experience) among quadruple helix actors at national and international levels

National

2,11			7,67
Companies	1,83	2,11	Universities
2,58	1,75	1,00	3,78
2,11	1,78	5,33	7,67
Public organisations	2,44	6,56	NGOs
0,00			0,00

International

0,00			4,67
Companies	1,25	3,33	Universities
0,33	1,50	6,11	3,89
0,00	0,00	5,00	4,67
Public organisations	0,00	5,44	NGOs
0,00			0,00

Greatest gaps:

- national level:

- among NGOs (U1-L1-P1) and all three other actors: public organizations and universities (huge gap), companies (medium gap).
- medium gaps among companies (U2) and public organizations (2.58) and universities and NGOs (3.78);

- international level:

- from public organizations towards the rest three actors - expectations meet actual practice: no need and no will (!) to collaborate for innovation in biogas;
- exceptional average collaboration dismach among expectations and experiences was observed by universities towards public organizations (U2-L2-P2).

Conclusions

- Greatest collaboration difficulties for Smart Specialization in biogas because of passive and isolated role of government institutions itself (key legislative bodies related to the biogas sector, U2-L2-P2), as well as civil society representatives (public interest, U1-L1-P1) .
- Actual need to accelerate Lithuanian government institutions (as key players) to be more open for collaboration regarding innovations.
- Isolated position of Lithuanian NGOs - non-existence of appropriate representation of public interest from third parties which primary mission is to do so.
- All these signalize about one of the characteristic features of immature democracy.

LARS
Learning Among Regions on Smart Specialisation

Learning
Communication
Cooperation

Questions / Comments?

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Focus group meetings

Explanations on gaps and good practices

Strengths	**Cooperation** between private companies **is often high**, and cooperation leads to a lot of positive business performance.
	Cooperation can **reduce costs** (administrative, financial, etc.).
Weaknesses	**Regulatory gaps** (for biogas support). Rules for support are very complex and difficult to be adapted in practice.
	Assessment of first stage of value chain for biogas has indicated that farmers are **not prepared to supply raw materials** for biomass production. Farmers do not cooperate. The lack of raw materials for biogas production does not allow achieving big changes in this area.
	NGOs in Lithuania are weak. Rural communities as NGOs are not active, have no experience, are young, and lack of financing.

Focus group meetings

Explanations on gaps and good practices

Weaknesses

The problem is **installation of infrastructure** for the use of biogas production (electricity and heat). Potential investors do not want to risk and invest their money. The necessary infrastructure has to be created before investors decide to invest in these techniques.

Ability of municipalities to initiate and implement most projects is very limited. Recently municipalities are in a crisis situation, they operate in accordance with the strict requirements of the Fiscal Discipline Act, preventing borrowing for the initiation and implementation of projects, and, at the same time, the implementation of innovations.

Currently, companies themselves are responsible for searching and supplying raw materials to biogas plants (for example, manure waste, slurry waste, industrial waste). There is **no supply from farmers.**

Cooperative initiatives in Lithuania are low. Important reason for this is a lot of regulations, thus suppressing cooperation. Small entities have to deal with heavy administrative burdens. Negative experience is very memorable and stops various new initiatives.

Lack of leaders.

Focus group meetings

The following suggestions were provided:

- **Cooperation within the country** demonstrante level/potential of the country **to innovate.**
- **Development of cooperation is also an innovation**. This innovation would allow many additional activities, initiatives to innovate, promote successful activities, etc.
- The state is sceptical about the production and use of biogas in Lithuania. On the other hand, government and responsible ministries in Lithuania are interested to discuss how the biogas sector can be developed (as biogas is one of identified sectors of Smart specialisation strategy for Lithuania). As development of biogas sector is expensive today, it is suggested to **search for solutions how to decrease costs of the implementation of these technologies**, and what kind of electricity purchase mechanism should be created.
- Strategies to **make transport more „green“.** Use of biomethane in transport.

Focus group meetings

The following measures or actions were suggested by participants of the Focus group:

- **Regulation of support** for biogas production: clearly identify main beneficiaries, rules, conditions.
- Today need for biogas innovation is clear but there is a **lack of necessary solutions**. The EU support from RDP is limited to small farmers only who cannot collect enough raw materials for biogas plants. It is not worthwhile to transport raw materials over long distances; also it is difficult for farmers to cooperate with others.
    - How do ensure successful cooperation processes between small farmers who can be part of biogas production?
    - Do we need to focus support only for large farms?
    - It is recommended to carry out an analysis to assess possibilities of developing biogas sector: 1) how many farms can process waste and produce biogas? 2) How many of them are small, how big? 3) Is there a possibility to cooperate? 4) What is their geographical distribution over the territory of Lithuania?
    - In developing construction of biogas plants, it is most important to concentrate their installation where raw materials (manure, slurry, straw, etc.) are concentrated, and small farms could supplement them with the principle of co-operation.

Focus group meetings

The following measures or actions were suggested by participants of the Focus group:

- **Increased role of associations**, as associations are aware of the real needs, capabilities and potential of their members (as Lithuanian Association of Pig Producers). Solid innovations are expensive.
- **Biogas production from dumps, food waste**. Implementation of new technologies.
- A large list of selected areas in Smart specialisation strategy of Lithuania is currently available. **The lack of identification of key specialisation areas** gives some negative implications. Targeted development of key specialisation areas in Lithuania would lead to proper development of infrastructure for selected areas to gain a competitive advantage for the country.
- **Increased cooperation between ministries** and searching for new tools of it – can be seen also as innovation.