

# Electronic Trading Platform as the Catalyst for Biomass Sector Competitive Transformation and Growth: Lithuanian Case Analysis

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# Framework of the conducted research

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## Objective:

- to deconstruct the biomass market digital model implemented in Lithuania, assess the impact of regulatory reform conducted in biomass sector in Lithuania and suggest further regulatory measures to improve the operation of the digital biomass market;

## Subject:

- Lithuanian biomass-for-energy sector reform, enabling competitive transformation and growth of the sector and essentially transforming the very architecture of the sector;

## Academic and practical novelty of the work:

- recent regulatory reform of biomass-for-energy sector is analyzed and impacts of the fresh reform are assessed;

## Practical applicability:

- may be considered in policy discussions to reform energy sectors in Eastern European countries and other countries in transition; to assess potential models of competitive market design to be built for renewable energy sources (RES), to make RES accessible and affordable

## Methods:

- Systemic analysis;
- Statistical analysis.

# Preconditions for reform in Lithuania

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## The scenery in 2010-2012:

- Lithuania's heavy dependency on natural gas as the fuel to ensure energy supply running
- Lithuania's exceptional dependence on the single-source supplier
- Peaking natural gas import prices for Lithuania
- Tendency of rising natural gas prices in Europe

## Biomass sector specific specifics:

- legal framework ensured predictability for biomass role in the balance of primary energy sources
- Intensity of biomass market concentration and well-established practice of long-term contracts
- limited potential for direct regulatory impact on biomass prices

# Design of regulatory framework

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Objective of regulatory model design for biomass sector digitalization:

- to construct a model, which is based exclusively on supply and demand interaction, ensures working competition, produces objective market price for the commodity and is resistant to political captures

Regulatory tasks:

- Aggregation of supply
- Aggregation of demand
- Removing market entry barriers
- Reducing transaction costs
- Ensuring competition-based prices for the commodity

Expected microeconomic impacts:

- increased energy security
- improved affordability of energy services

Expected macroeconomic impacts:

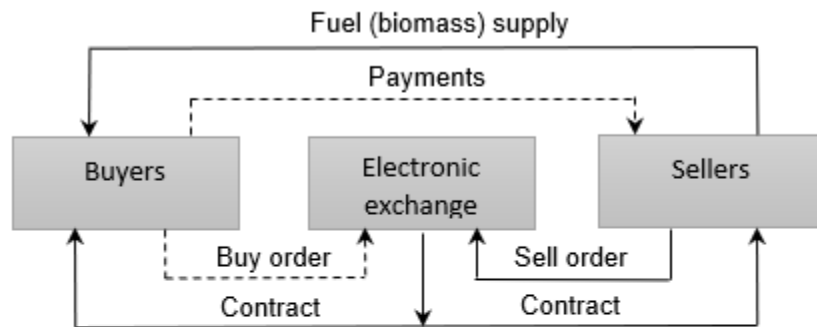
- growth of local jobs
- improved country's balance of payments

SOW or regulatory building blocks for digital sector:

- resemble power exchange model
- encounter the specifics of the commodity
- incorporate additional transactional services
- secure inability to perform political interference
- ensure regulatory interference as the mean of last resort

# Implementation of digital biomass sector model

## BIOMASS TRADING ORGANIZATIONAL SCHEME

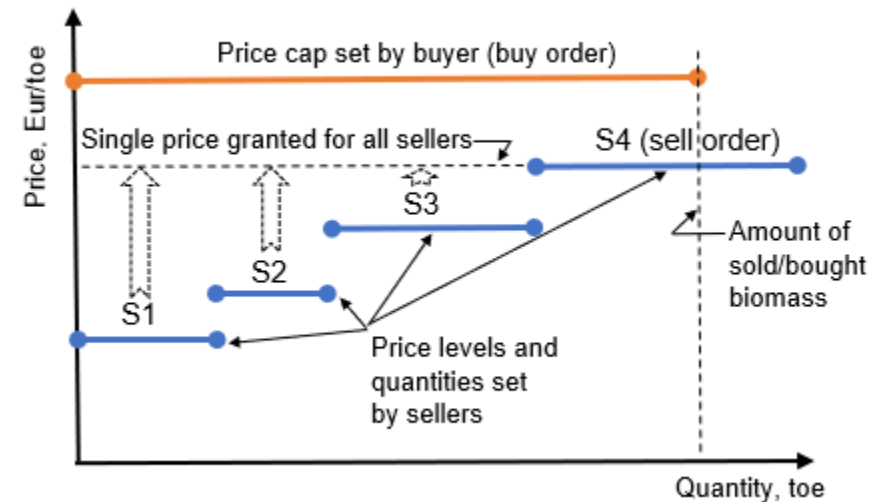


- DH heat producers;
- CHP plant;
- Regulated independent heat producers

- Trading (anonymously);
- Introduction of standards for biomass products;
- Risk management

- Biomass suppliers:**
- min 1 truck supply capacity;
  - min 2 bags supply capacity for pellets;
  - Financial and technical capabilities

## MECHANISM TO ESTABLISH BIOMASS CONTRACT PRICE



# State of play up to date

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## REGULATORY ADJUSTMENTS IN DH SECTOR REGULATORY MODEL

Regulatory task in DH at commissioning BioEx:

- to match outcome of competitive biomass market with restraints of heavily regulated DH

Regulatory measures applied 2013-2014:

- eligible price average to include all regulated TE producers
- all BioEx prices accepted at pass-through mode;
- initial phase safeguard #1 – min 3 contracts on digital platform
- initial phase safeguard #2 – exclusion of extremal values out of average calculation
- direct contracts were still respected to complete the transitory phase

## RESULTS OF BIOMASS SECTOR DIGITALIZATION, 2013-2018, AT THE CONTEXT OF EMERGING MASS-MARKET

- Digital trade:
  - amounts in BioEx reached 90% in 4 years and 96% in 5<sup>th</sup> year;
  - amount of transactions: 5 toe to 429 toe
  - value of transactions: EUR 86 m in 2018 from EUR 1 m in 2013;
- Concentration of supply market:
  - C1 dropped 3 times, HHI reduced from 2443 to 552
- Biomass price dynamics:
  - Fluctuates and demonstrates regional & seasonal divergences
- Uptake of biomass to fuel energy sector:
  - DH: 26% to 68% [ 2.7 TWh to 7,6 TWh]
  - Electricity: 6% to 18% of domestic generation [262 GWh to 2.1 TWh]

# Finalizing digital biomass sector design and moving forward

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## Risk management in mature biomass market:

- By BioEx: expanding to new bordering regions
- By Regulator: initiate discussions on the potential to synchronize regionally regulatory regimes

## Ensuring financial transactions in geographically expanded biomass market:

- By BioEx: introducing centralized clearing and transforming from IT based contract settlement platform to full market exchange
- By Regulator: facilitate the process of clearing mechanism introduction and request commitment by BioEx

## Lifting regulatory restrictions to fully acknowledge biomass market results by the upstream market:

- By Regulator: anticipated regulatory response to biomass market scope and competitiveness shall be abandoning regulatory mechanism of average fuel price capping for eligibility in district heating tariff

# Results and Conclusions

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## RESULTS

- Remarkable speed and scope of biomass market digitalization under transitional regulatory model:
  - enabled to progress significantly the switch from fossils to RES;
  - contributed, at least partially, to DH consumer savings, which accounted to EUR 242 m 2013-2018;
  - resulted in reduction of CO2 emissions – actual reduction in DH is at least 5,8 m tones 2013-2018;
  - did not affected negatively Lithuanian forestry resources.

## CONCLUSIONS

- Digital biomass trading platform – the response to natural gas hegemony in energy sector
- “Window of opportunity” was used to full extent to secure competitive biomass trading model and facilitate fuel conversion in upstream markets
- Transitional regulatory model worked well, however, at this stage of development already requests urgent upgrades:
  - Geographical expansion;
  - Clearing system implementation;
  - Lifting of regulatory restrictions to fully acknowledge biomass market results by the upstream market.



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Thank you !

