

2021 liepos 21 d.
Vilnius

Part 3

Biomass market transformation



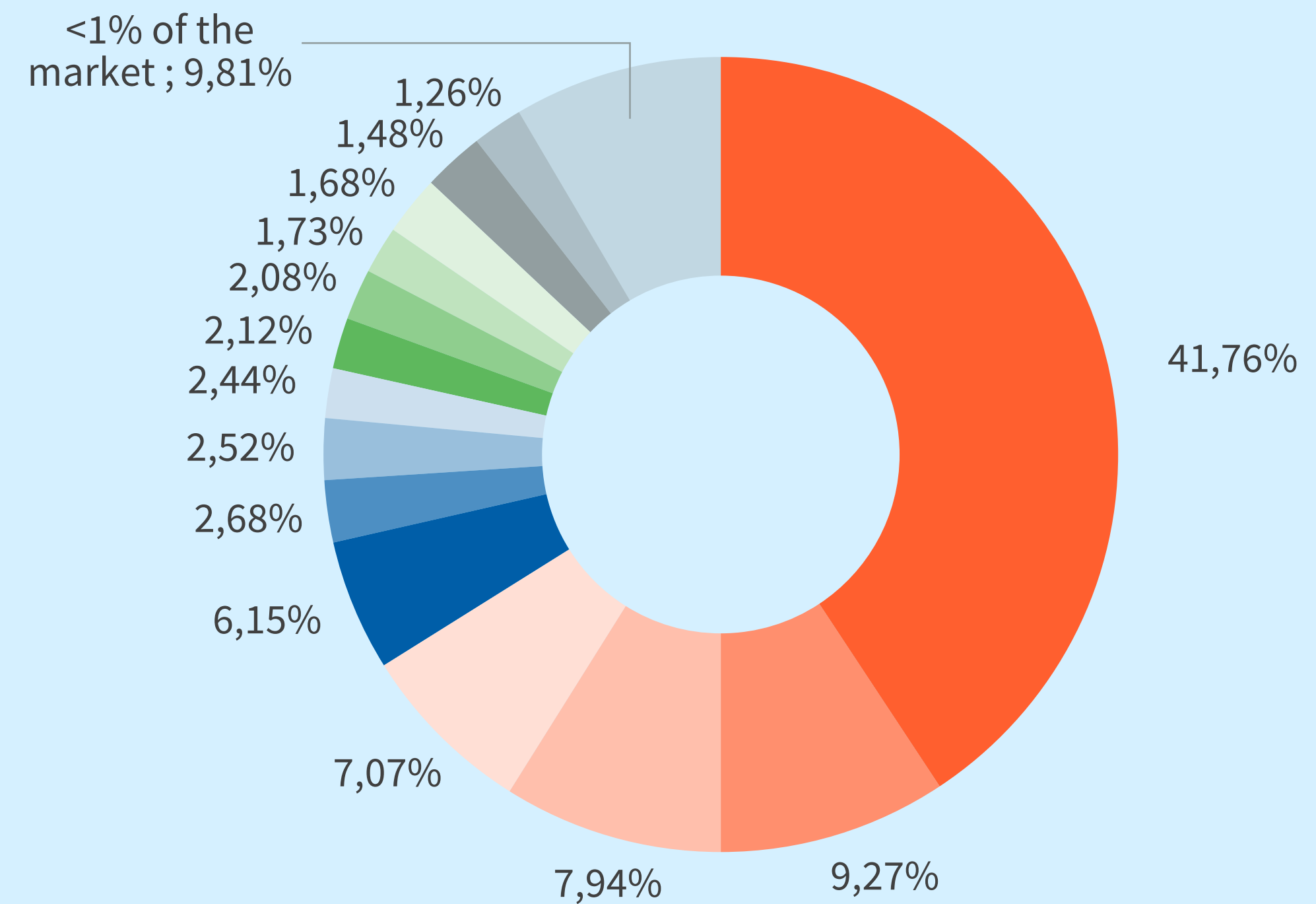
A fundamental market problem

Criteria	Biomass	Natural gas
Number of suppliers	Market dependent on a limited number of suppliers	Only Gazprom
Competition	Oligopoly	Monopoly
Profit margins	Superprofit	Superprofit
Market barriers	Impossible to conclude a contract with buyers	Only one trading hub
Contract duration	Long term (Most longer than 3 years)	Long term (over 5 years)

- By 2012, purchases of biomass, natural gas and oil in Lithuania in the CHP sector were carried out according to the same rules
- The biomass and natural gas sectors had become indistinguishable for consumers
- The market was unable to regulate itself. Result for consumers -> high fuel prices = higher heating prices

Biomass market concentration in 2012

High concentration in biomass supply side in Lithuania (2012-2013)

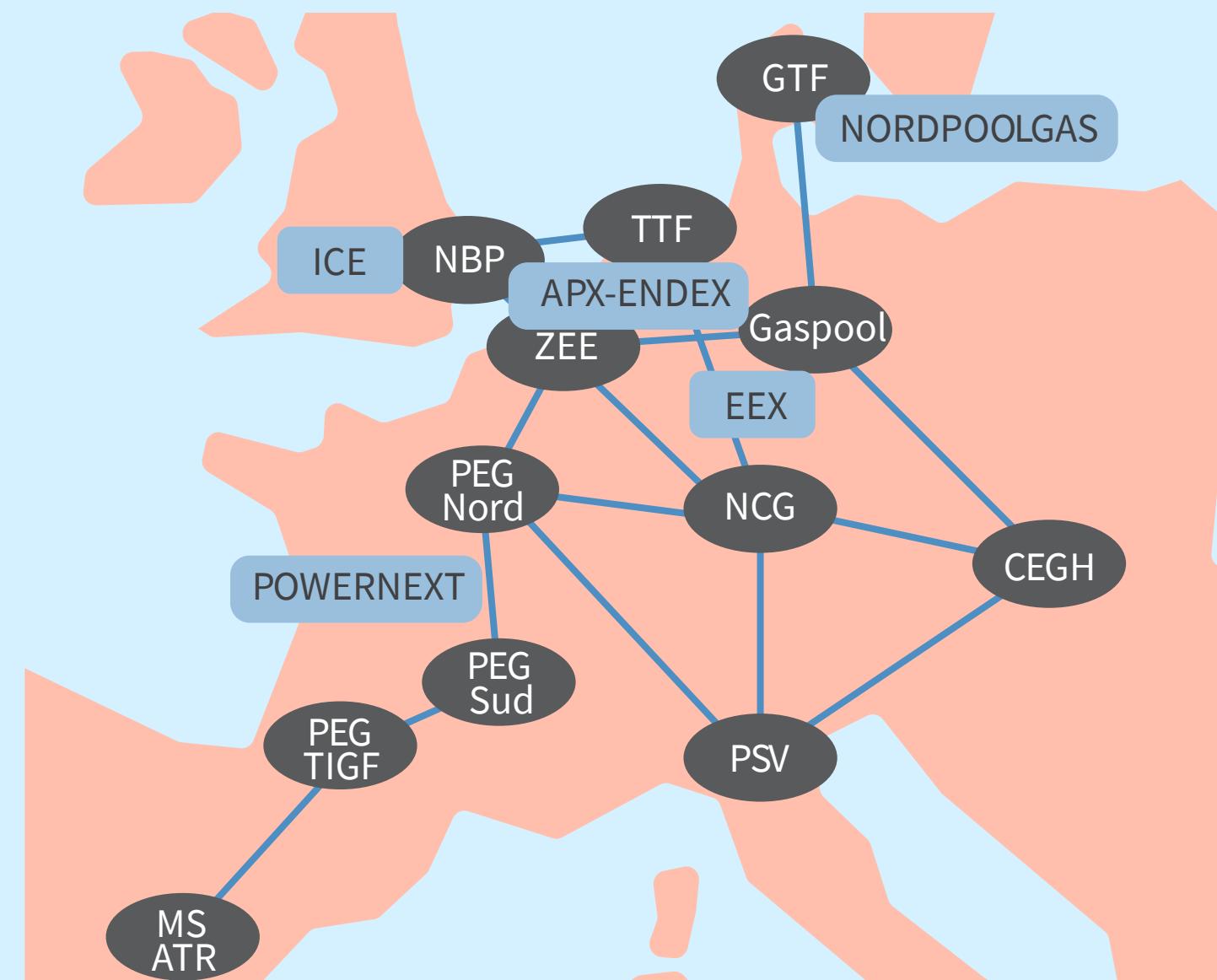


Data:
National Control Commission For Prices And Energy
2012-2013 heating season biomass suppliers' market share
according delivered biomass quantities to regular CHP's

Market situation before the Exchange:

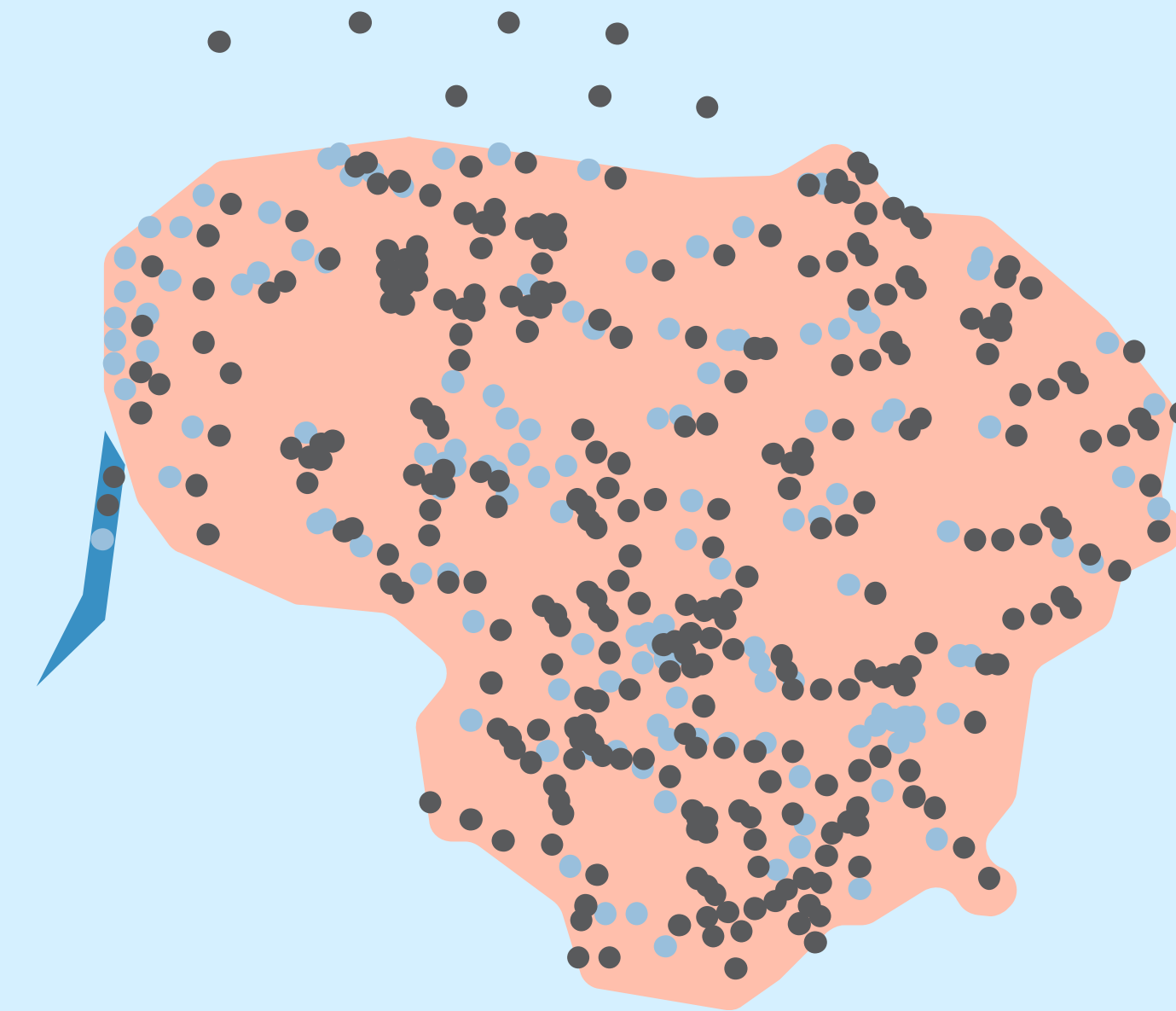
- Non-transparent purchase practice;
- High barriers for new market participants;
- Weak competition between suppliers;
- High market concentration.

Main challenge to creating a biomass exchange



■ Natural gas HUB ■ Natural gas Exchange

- 12 NG trading hubs in Europe;
- TSO and existing grid;
- Supply guaranteed by TSO;
- Regulated transmission tariff.

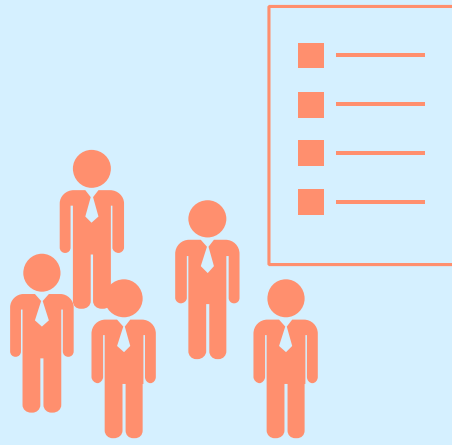


- Unlimited trading hubs;
- Virtual transmission system;
- Supply guarantees market liquidity;
- Different tariffs for every supplier.

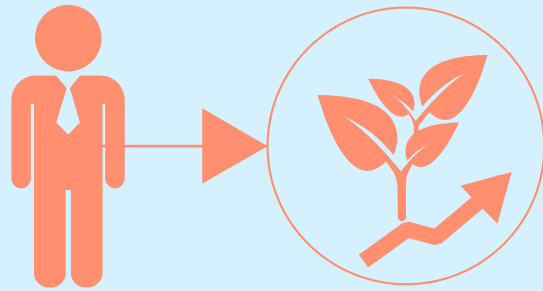
How the exchange changed the market



Standardized biomass products and biomass supply procedures;



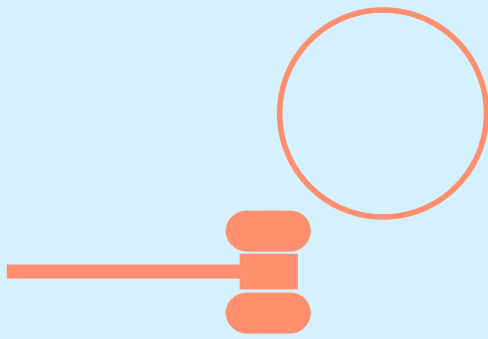
Equal and transparent trading rules for all participants;



Low market barriers for new market participants;



Categorisation of market participants and contract default risk management;



Centralized dispute resolution by market operator;



Liquid spot market.

Additional services

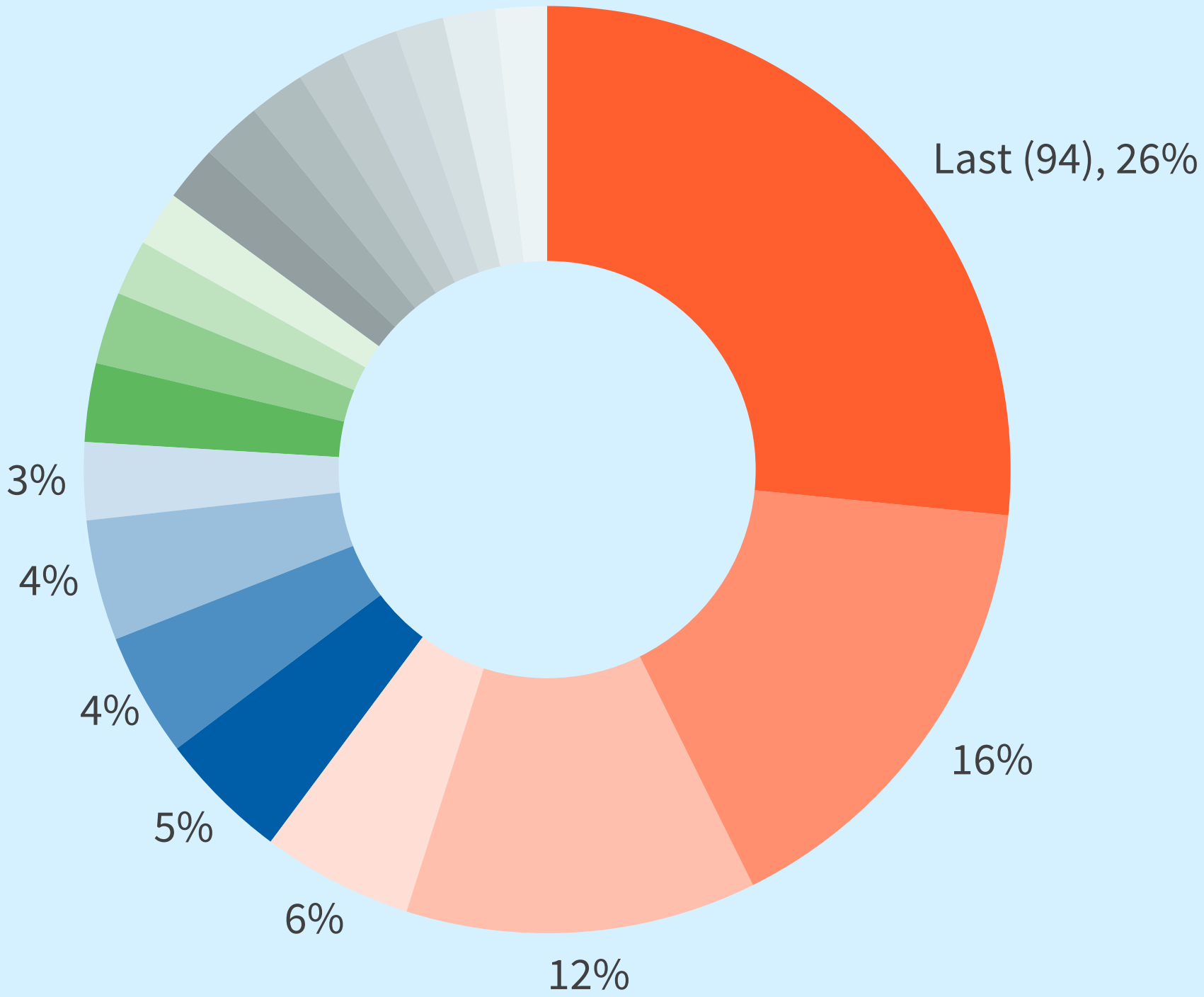
- Auctions system – easier to conclude the contracts;
- Back office (biomass quality reporting, delivery scheduling, invoicing, waybills) – easier to execute the contracts;
- Urgent market messages – higher transparency of the market;
- Integration of independent laboratories in quality establishment;
- Biomass reserve product.



Biomass market concentration in 2020-2021



Low concentration in biomass supply side (2020-2021)

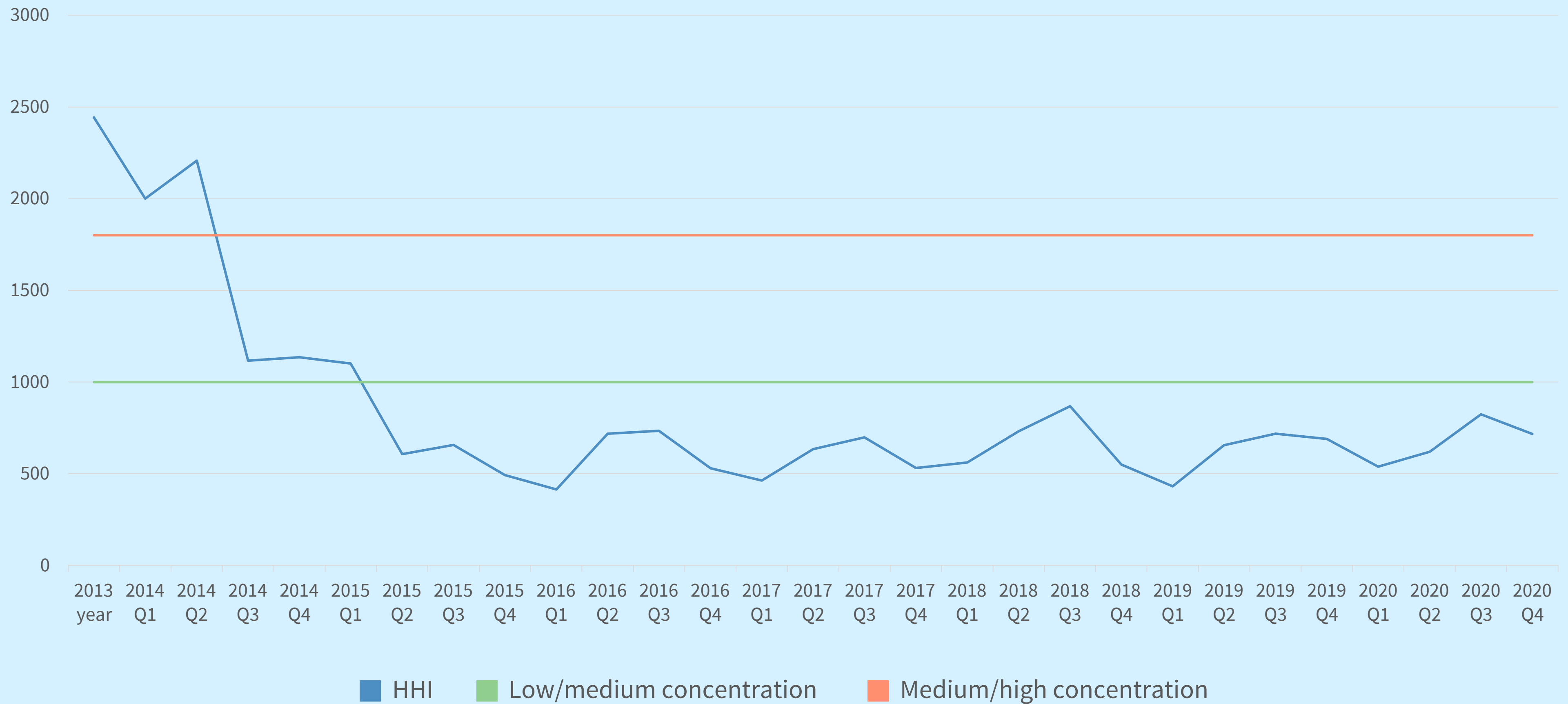


Market situation today:

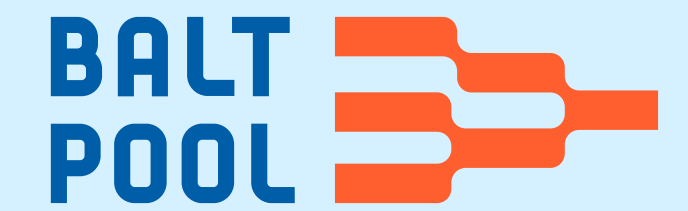
- Biggest supplier has 16 %;
- Active suppliers – more than 120.

Competition index indicates rights decisions

Herfindahl–Hirschman Index 2013 – 2020 m.



All exchange participants are coordinated on one platform

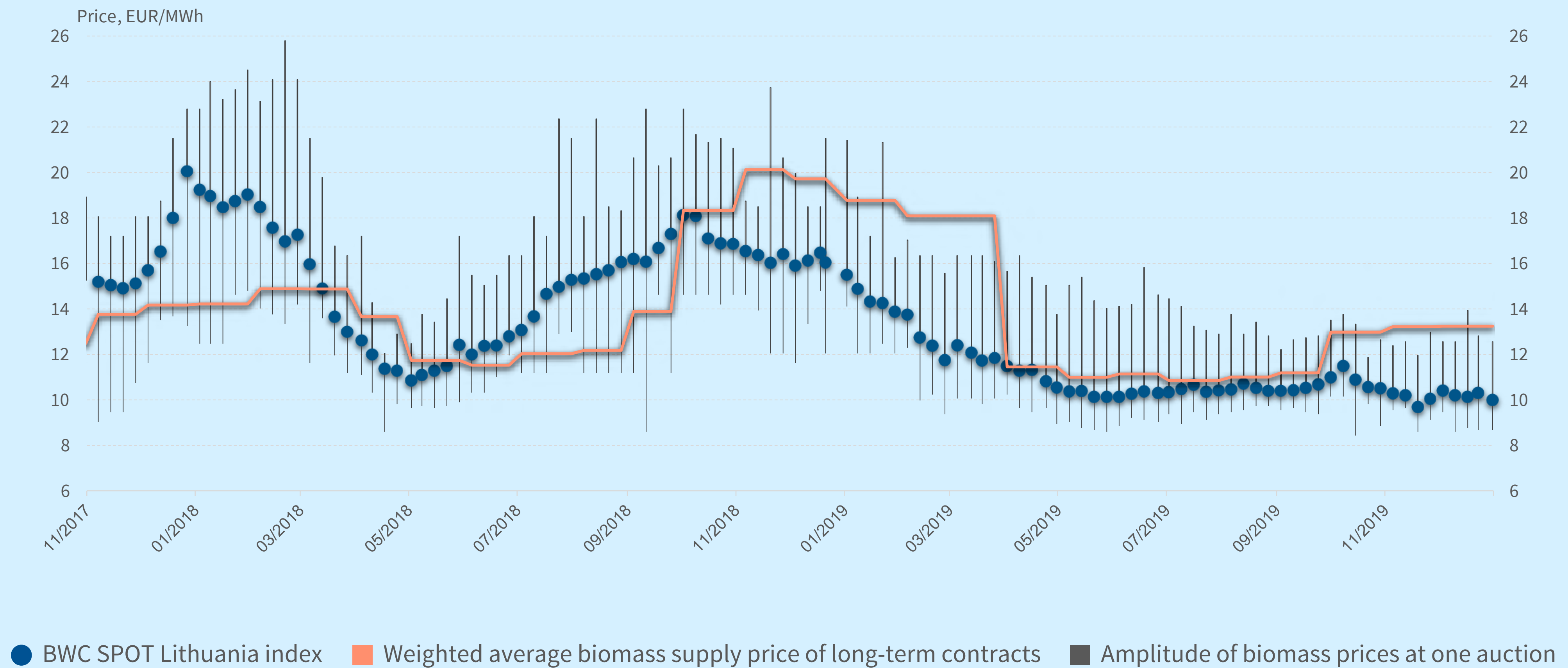


Statistics for 2020:

Executed transactions	> 5,500
Submitted orders	Bids > 9,000, offers > 93,000
Participants	87 buyers, 122 sellers
Max suppliers to one buyer	35 suppliers/year
Delivered trucks of biomass	~ 73,000, >400 trucks/day
Quality arrangement and written invoices	> 11,000

Exchange creates
SPOT market

Long-term and short-term contracts have different price fluctuation



Biomass portfolio management



2018-2019 m. season

Region	Wood chips delivery price, Eur/MWh	Competition index (HHI)	Long term contracts (%)
Tauragės	15,5	1329	53%
Vilniaus	16,0	1065	56%
Marijampolės	16,3	2023	41%
Utenos	16,3	1186	88%
Kauno	17,1	1262	69%
Alytaus	17,2	1091	61%
Telšių	18,1	1500	47%
Klaipėdos	18,7	1512	78%
Panevėžio	19,2	1267	83%
Šiaulių	20,5	1280	91%

2019-2020 m. season

Region	Wood chips delivery price, Eur/MWh	Competition index (HHI)	Long term contracts (%)
Vilniaus	11,2	800.29	46%
Tauragės	11,7	2532.13	62%
Kauno	12,0	986.94	43%
Alytaus	12,0	1105.33	31%
Marijampolės	12,1	1959.57	39%
Panevėžio	12,5	1489.14	55%
Telšių	12,5	2057.66	60%
Utenos	12,7	1633.2	81%
Šiaulių	12,7	1565.07	82%
Klaipėdos	13,6	2134.91	91%

- There is no clear tendency that the price of biomass depends on the level of competitiveness of the county;
- The clearest tendency is that biomass prices last season were driven by the purchasing strategy chosen;
- The element of success plays a big role in choosing the right strategy. It is the most rational to choose a mixed strategy.

Principles of forest statistics

Saw logs		Wood for fuel with bark	Stump above surface	Tree tops	Length overlap	Cutting residues	Over all:
Timber	Bark						
73	8	11	2	1	2	3	100
Industry residues		29					
Dead trees		7					
Branches		15					
Stumps under surface		21					
Over all:		83					

- Waste wood is mainly used for biomass.
- If industrial assortments are exported, biomass partly are also exported.
- Branches and stumps are not significantly used for:

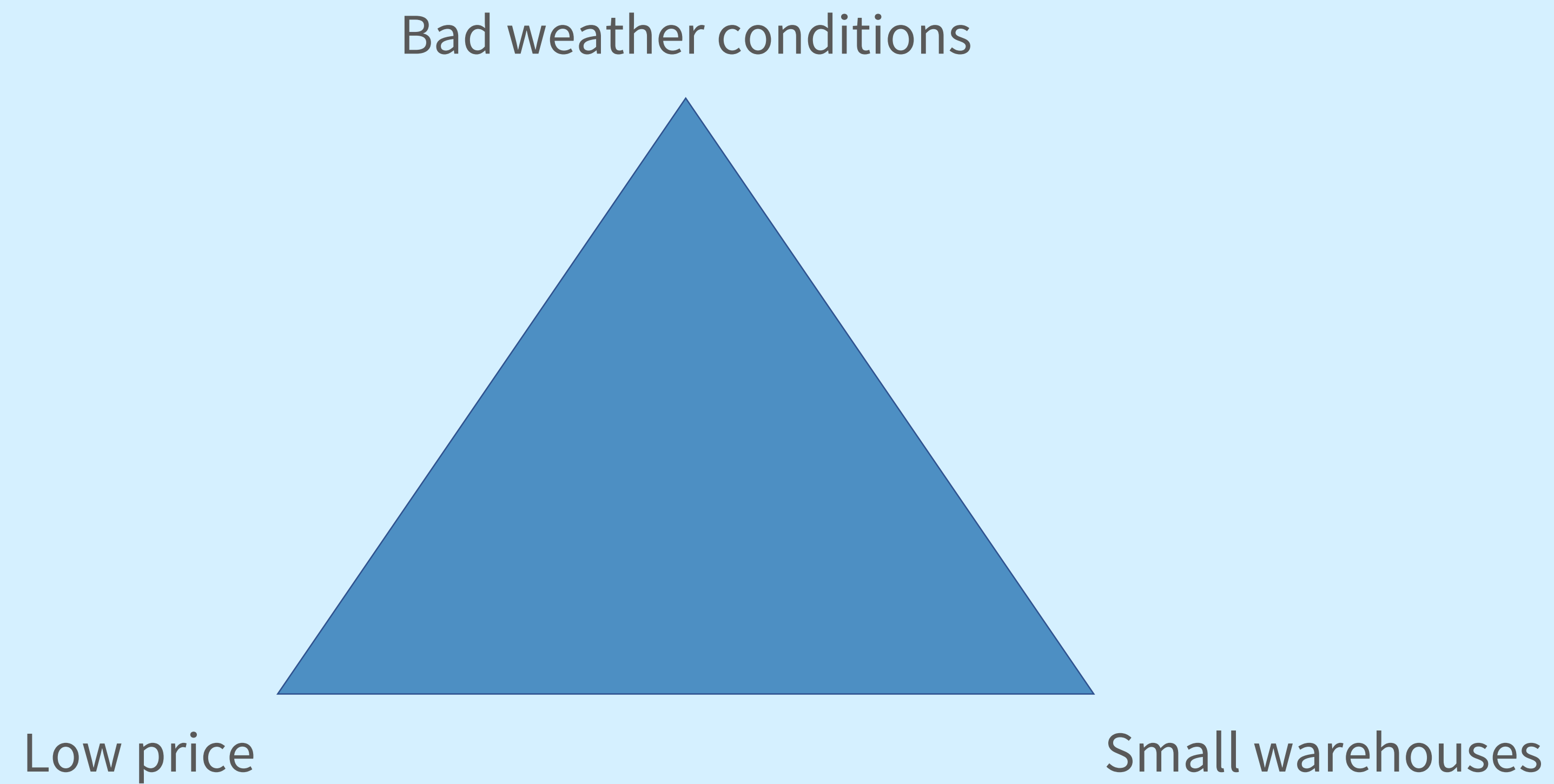
- Branches and stumps are not significantly used for:
 1. Labor costs raise the price to unattractive. Investment in equipment is needed.
 2. Not all boiler houses want to use this fuel.

Transparent market
refine main triggers
for price level

A fundamental market problem

Period	Triger for price level	Market behavior	
August, May	Market participants can't identify price level for next winter	First indications about possible warehouse price level First buyer's bids for winter contracts	
June, July, August, September	Storage accumulation conditions	Long term fixed price contracts	For speculative purpose in SPOT market
		Low risk and limited profit	Unlimited profit, but high risk
October, November,	Weather determine conditions to deliver directly from forest.	Dry season	Wet season
		Surplus in SPOT market, low market prices Warehouse are not needed	Lack of biomass in SPOT market, rising market price Warehouse helps market situation
December, January, February, March	Stock level in warehouses, (Peak of season)	Surplus in warehouses	Lack in warehouses
		Long term contractors realize fixed margin SPOT market in panic	Long term contractors have troubles with contracts execution SPOT market - „sky is a limit“

Wood chips trilemma



Before everything you
need to identify
market potential

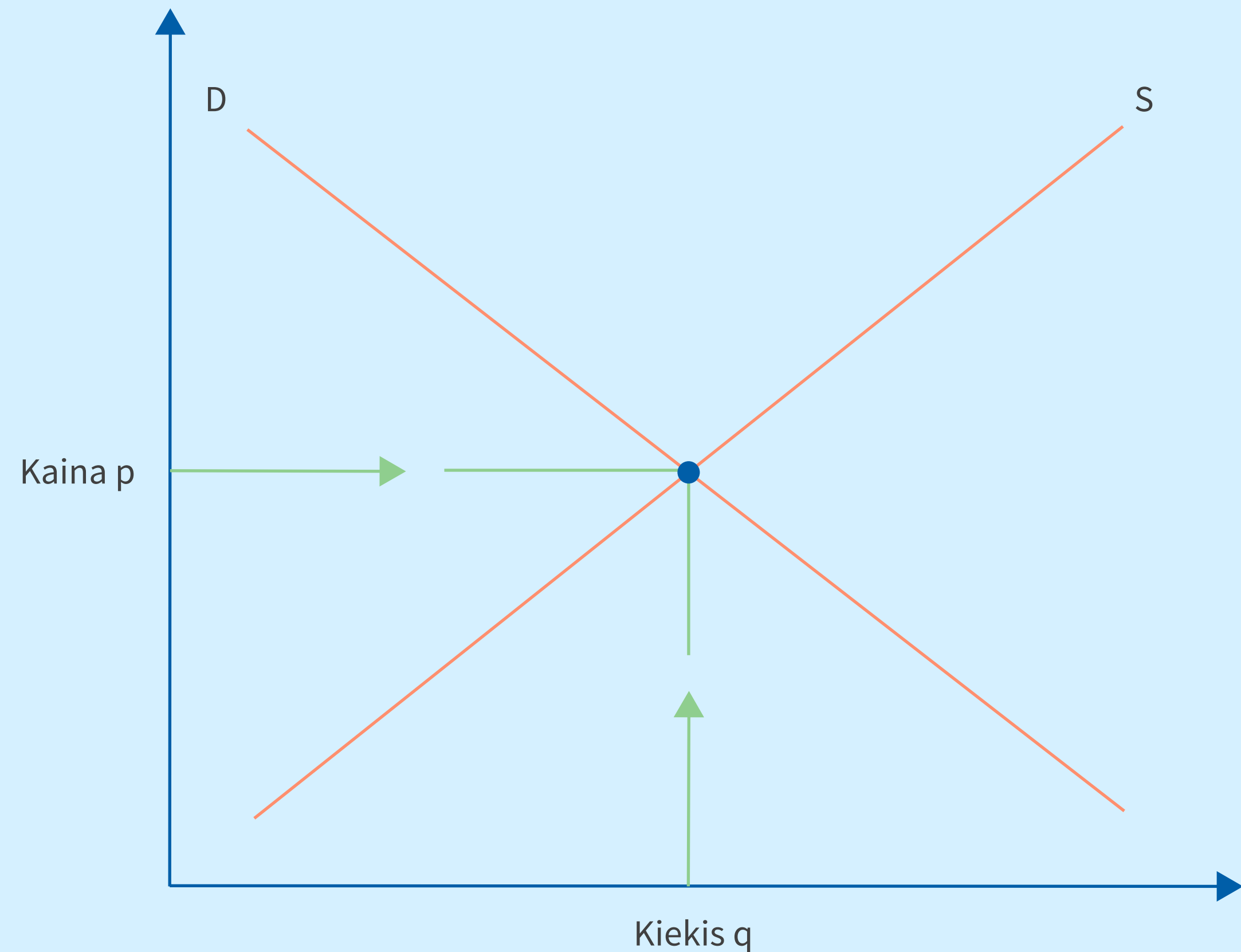
Potential of biomass raw material (Lithuania example)

Raw material	Amount (m3)	Cost (Eur/m3)*	Production process
Industry residues	1,6	0	By-product
Firewood	1,8	10	By-product
Forest residues	0,85	13	Product
Wood not from forest land	1,7	15	Product
Low value forestry	0,6	17	Product
Forest thinning	0,4	18	Product
Energy plantations	0,1	25,5	Product
Stumps	1,1	35	Product

Source: Figers from Lithuanian Confederation Of Renewable Resources

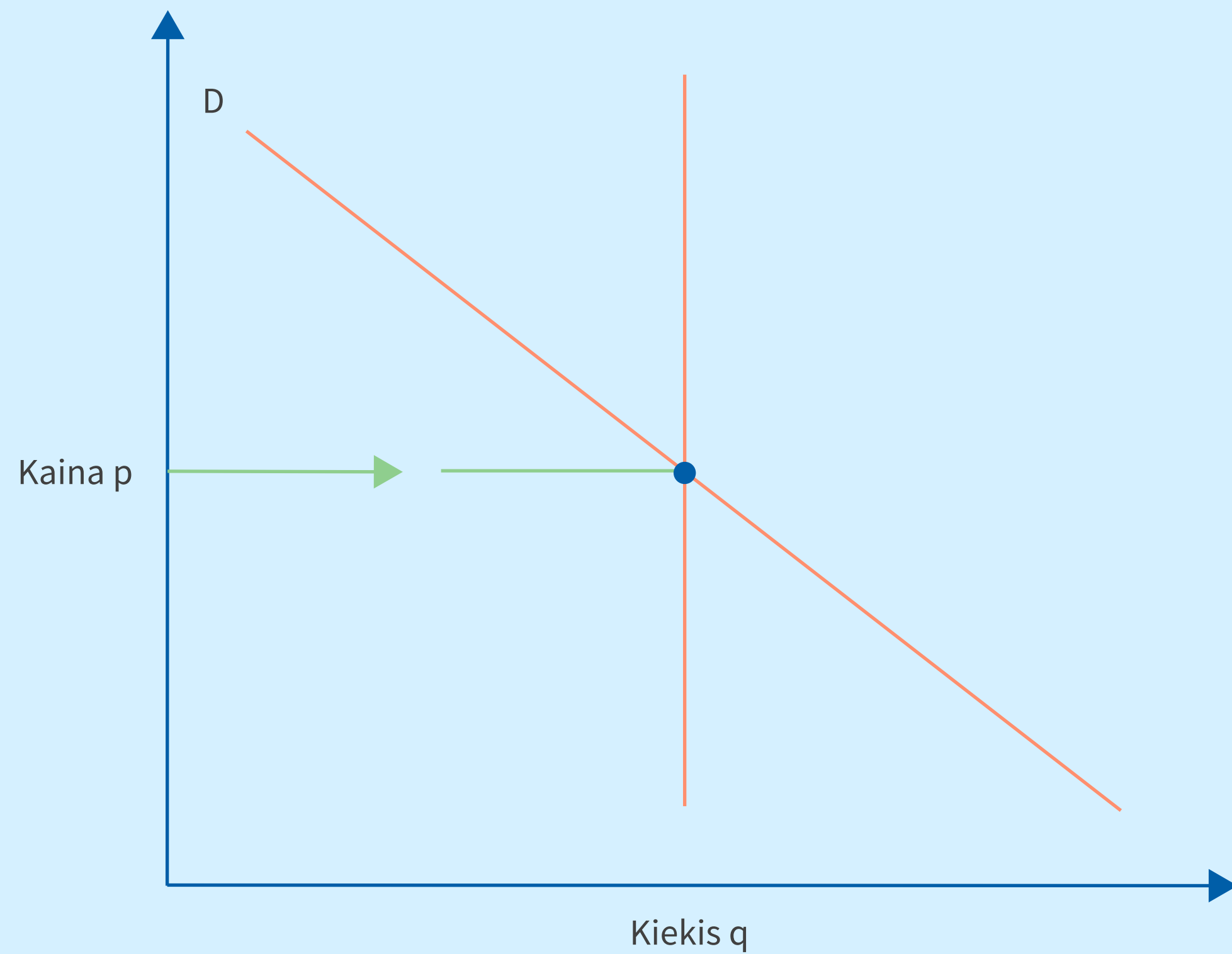
Theory on demand supply curve

- Market equilibrium is the stage where the quantity of goods required on the market corresponds to the quantity placed on the market.
- The price at which the goods are manufactured is the equilibrium price.

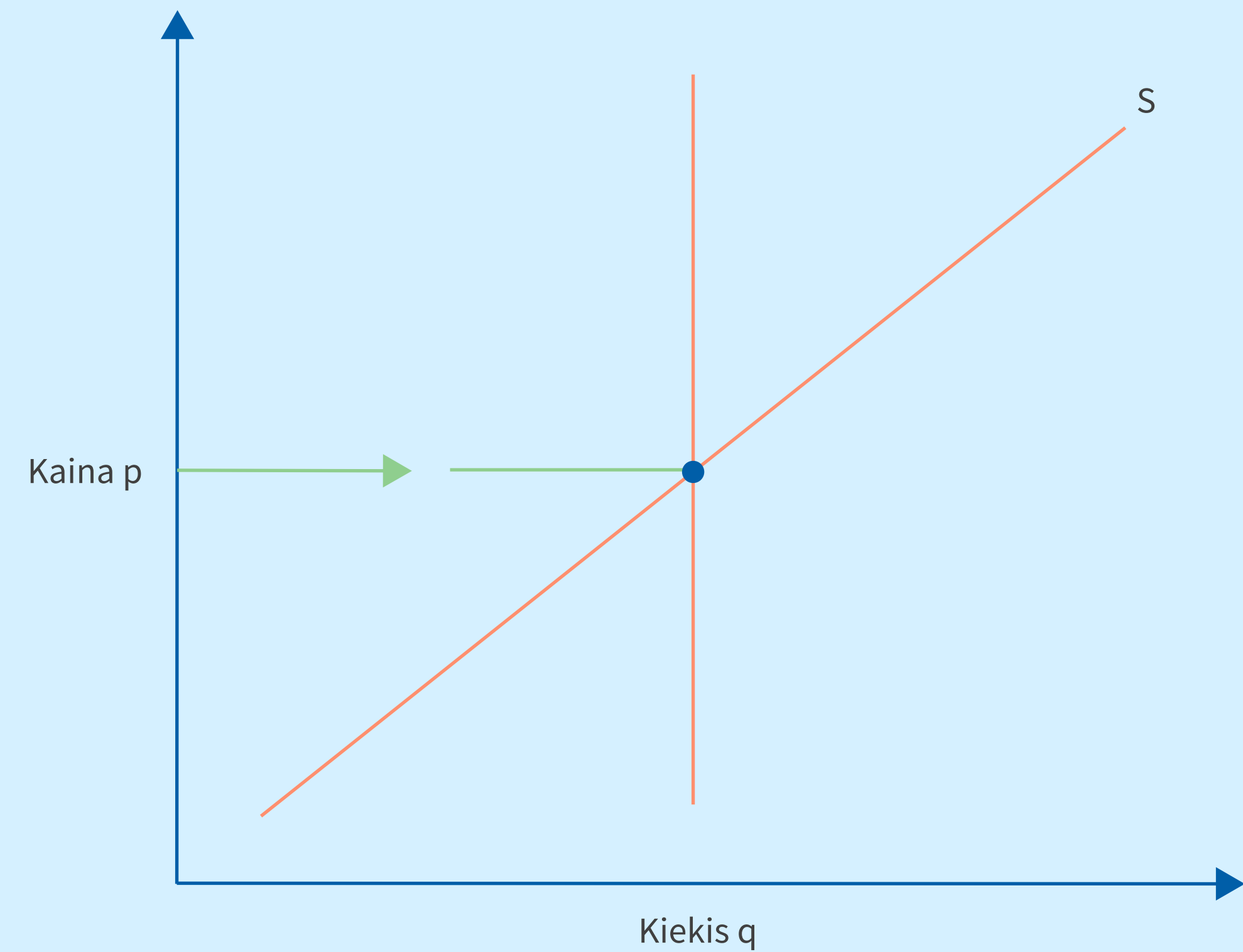


Theory on demand supply curve

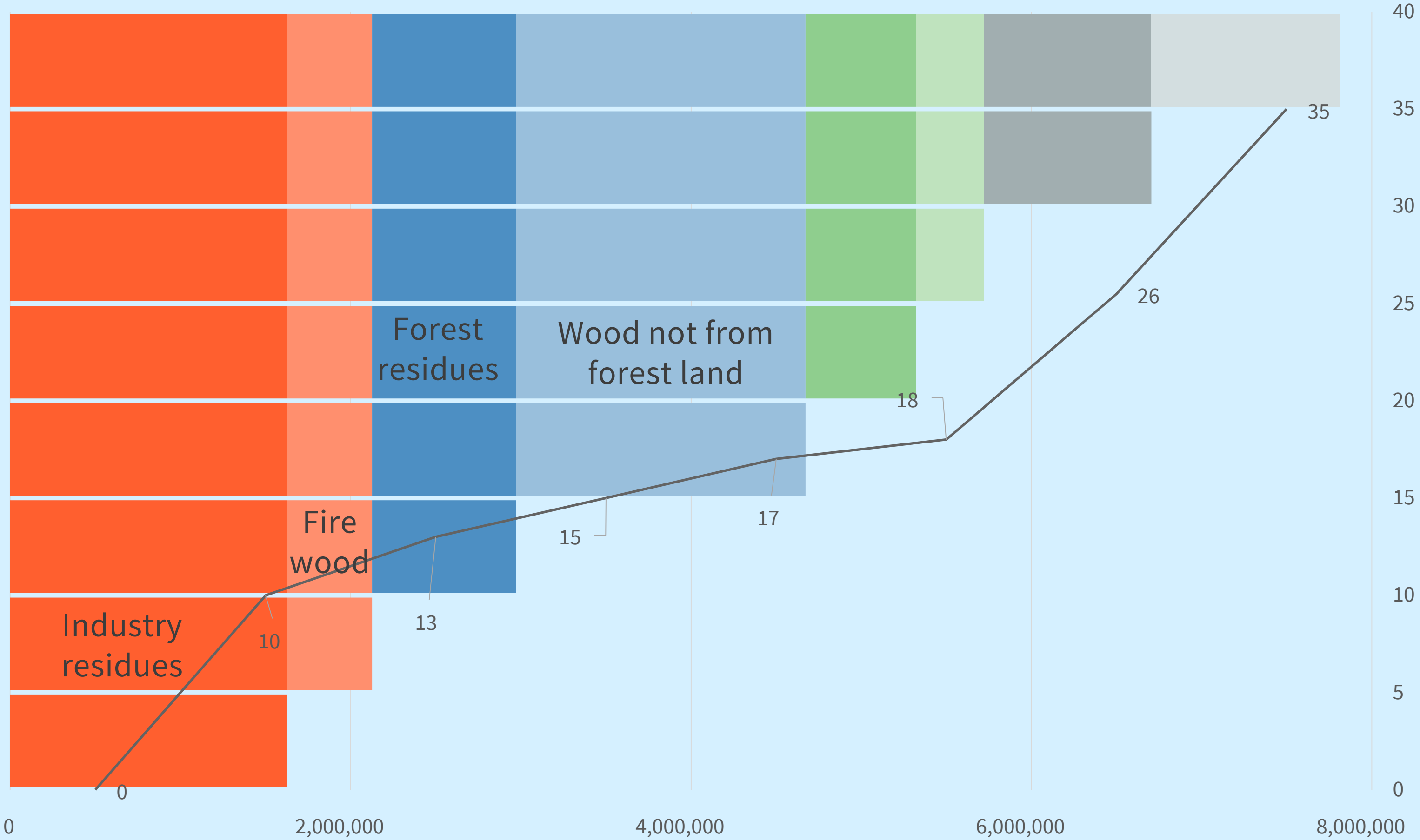
Inelastic supply



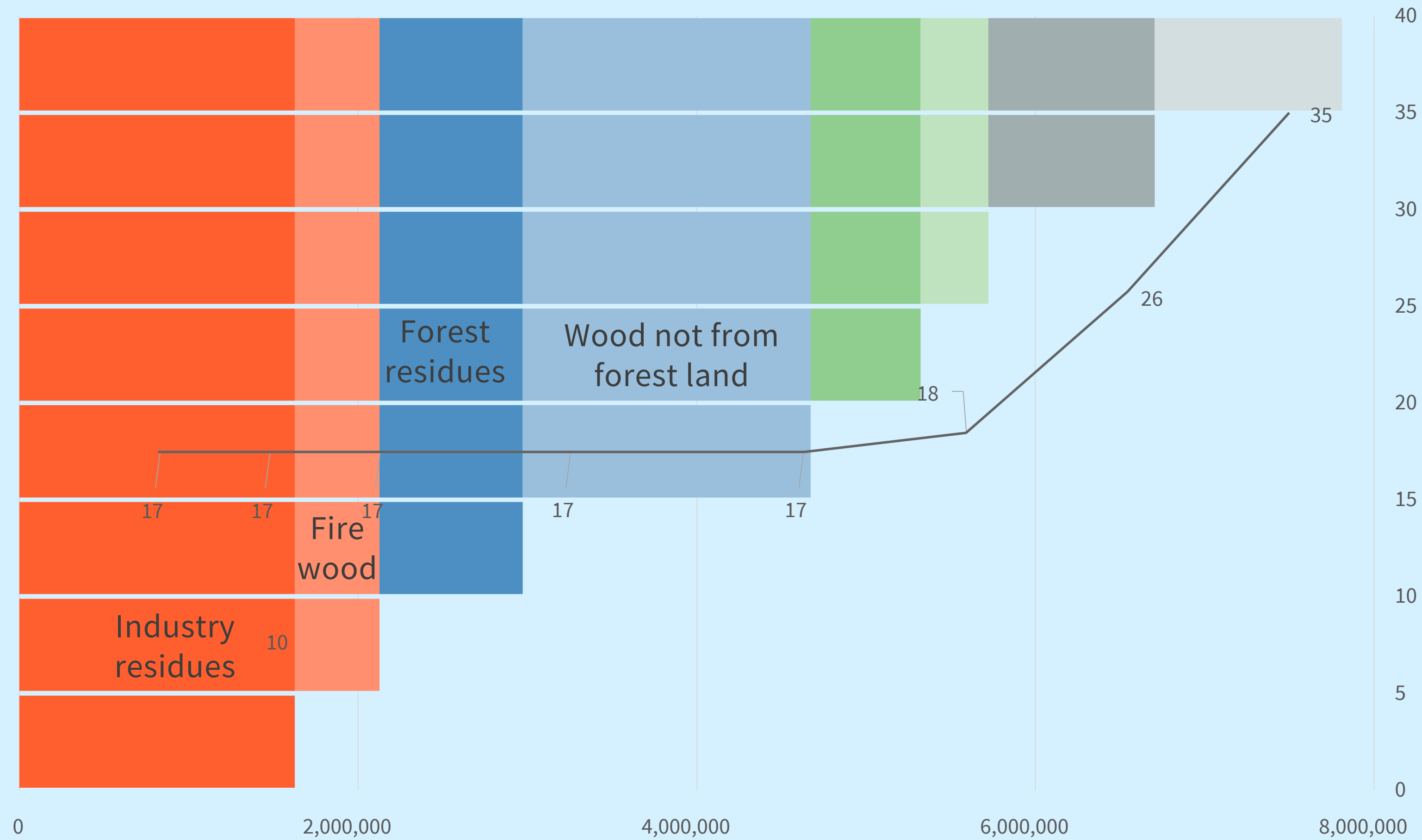
Inelastic demand



Biomass demand curve is inelastic



Biomass demand affects supply curve immediately



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End of part 3

Q&A

