

ELECTRONIC PROCUREMENT SYSTEM – INSTRUMENT FOR IMPLEMENTING GREEN PUBLIC PROCUREMENT: ANALYSIS OF THE LATVIA’S EXPERIENCE

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Abstract. Green public procurement (GPP) is a mean of saving up finances for public institutions, especially taking into consideration not only procurement price but also total expenses of the contract lifecycle. In Latvia the first Electronic Procurement System (EPS) was established in 2005 and was the first such procurement system in the Baltic States. Initially, it only acted as an e-Procurement system in which public institutions can purchase standard goods and services. This paper analyzes the success of the implementation methodology for evaluating e-Procurement in public procurement.

The aim of the paper is to explore the proportion of applied GPP of total procurement in EPS in Latvia in the period from 2015 to 2017, and to analyze how the aims of the proportion of GPP are achieved. In order to investigate the share of GPPs in the EPS, data on purchases made by EPS was collected and analyzed. An analysis was made of the percentage of GPP and the most important groups for which GPP was appropriate, and it was assessed whether the objectives set by the GPP have been achieved. GPP proportion in procurement made within the EPS in 2015 was 9%, 2016 - 8%, but in 2017 - 19.10%, which means that GPP a substantial increase. As the calculations made in the study prove a complete transition to e-Procurement will reduce both administrative costs and significant savings for the state budget in the Latvia.

Key words: *Electronic procurement, Electronic procurement system, Green public procurement*

JEL code: Q01, Q58, R11, H57

Introduction

Nowadays, in the 21st Century the very rapid development of information systems are taking place, which also demand developing and moving towards the public administration sector equally. Public procurement is a way for public authorities to buy goods and services and it is very important that funds are used effectively. In the European Union, public procurement averages 14% of gross domestic product per year (EC, 2017). The Organisation for Economic Co-operation and Development (OECD, 2017) emphasizes that effective public procurement is an essential step towards meeting the needs of the population, and therefore gradually becoming one of the pillars of good governance that can restore confidence in public administration. E-Procurement - the purchase and payment of goods and services - can help the government to improve its operations by reducing transaction costs by making better decisions and saving time on procurement (Panayiotou, Gayialis, Tatsiopoulos, 2004).

Global economic output is projected to treble between 2010 and 2050 and resource use may double by 2030 (Reichel, 2016). Public sector spending is an essential part of the economy and it is relevant to use this purchasing power to influence production processes and consumption, so it is essential to apply green public procurement (GPP) to public procurement in order to achieve the desired reduction of the environmental impact (Lundberg et.al., 2015).

This paper analyzes the success of the implementation methodology for evaluating e-Procurement in public procurement. The definition of e-Procurement is also assessed, as well as the success and benefits of the e-Procurement system.

The object of the research: the proportion of GPP in EPS in Latvia, in the period from 2015 to 2017.

The aim of the paper is to explore the proportion of applied GPP of total procurement in EPS in Latvia in the period from 2015 to 2017, and to analyze how the aims of the proportion of GPP are achieved. In order to investigate the share of GPPs in the EPS.

In order to evaluate the proportion of GPP and the factors that affect the development of GPP, the author has **two hypotheses**:

1. If public procurement is carried out in the electronic procurement system, the administrative costs are significantly reduced.
2. When purchasing GPP in the electronic procurement system, goods that can be clearly defined as requirements, such as Information and communications technology (ICT), are purchased the most.

The method of the research are: Analytical, graphic, statistical research methods as well as other qualitative and quantitative research methods have been used in this research. In order to investigate the share of GPPs in the EPS, data on purchases made by EPS was collected and analyzed. An analysis was made of the percentage of GPP and the most important groups for which GPP was appropriate, and it was assessed whether the objectives set by the GPP have been achieved. The regulatory framework for the application of the GPP was analyzed and the directions of the EPS were evaluated.

Information sources: In analyzing the proportion of GPP the data of the Procurement Monitoring Bureau (PMB) and State Regional Development Agency of the Republic of Latvia (SRDA) about public procurement performed in Latvia since 2015 til 2017. The strategical documents in green public procurement of the EU and Latvia were analyzed. The articles in the following journals were analysed: Journal of Public Procurement, Research Policy, R&D Management, etc.

Literature review

In general, ICT widespread support for public administration has been recognized (Yildiz, 2007), as an example, to improve the efficiency of service provision in order to improve the transparency of public processes for network connectivity. As mentioned Panayiotou, Gayialis, Tatsiopoulos (2004) that e-Procurement has become an object of distinctiveness in the private and public sectors and e-Procurement has gained special attention especially in recent years in public sector.

E-procurement definition according to the European Commission (EC) (2010) is “a catch ll term for the replacement of paper based procedures with ICT based communications and precessing throughtout the procurement chain.” According to Concha et.al. (2012) public e-Procurement is evolving rapidly and is included in every country's e-government program. Dubosson - Torbay et.al. (2001) stresses that significant organizational transformations in ICT are taking place in sectors and public administration. Brun et.al. (2007) mentioned that currently, e-Procurement challenges include making the procurement system more efficient in the light of technological developments and solutions offered by them, developing a legal framework and developing and improving good governance practices. According to the World Bank (2016), in order to develop the e-government system successfully, reforms should also be made in non-dogmatic (analogous) sectors where new technologies are widespread. As Hanna (2018) points out, governments would be advised to take into account the comprehensive digital development of the country and the vision of shared use, long-term commitment and institutionalized cooperation in the digital transformation process.

As expected by the EC, the expected benefits from the transition to e-Procurement are significant, as the introduction of this technology can reduce public procurement costs by 5-20% (EC, 2012). What very important is, that e-Procurement as mentioned Alomar, Visscher (2017) makes it possible to increase the dissemination of tenders, improve the transparency of procedures, protect the environment and combat corruption. As pointed out by Cheng et.al. (2018), in

recent years, the introduction of GPP marks a new industry, showing new practices. GPP is defined in the EC's Communication as "a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared that would otherwise be procured" (EC (2008) 400, p.4). Testa et al. (2011) points out that the effectiveness of GPP is closely linked to investment in technological innovation. Cheng, Apolloni et al. (2018) indicates that public procurement, where environmental requirements are applied, can quantify energy consumption and CO₂ reductions.

The new procurement directives - Directive 2014/24/EU and Directive 2014/25/EU - state that one of the most important things to change is that the main criterion for evaluation in purchases will change - the European Union's Member States will have to choose the most economically advantageous tender rather than the lowest price offer. It is true that the Directive allows the choice and, in some cases, the principle of the lowest price. It also includes the assessment of life-cycle cost estimates, which will include both the cost of acquisition, maintenance and utilization.

E-Procurement in this context refers to the use of electronic communications and the processing of transactions by public sector entities through procurement, service and public works contracts (European Commission, 2010).

According to Directive 2014/24/EU and Directive 2014/25/EU, Member States should ensure that all communications and exchanges of information covered by these Directives are carried out by electronic means. This includes publishing notices, access to procurement procedure documents and electronic submission. E-Procurement involves the introduction of electronic processes to support the various stages of the procurement process - notices on publication of procurement, procurement of procedural documents, submission of tenders, evaluation, award of contracts, execution of orders, invoicing and payment. In 2014, the EC estimated that, on average, around 20% of all EU procurement procedures are carried out electronically (EC, 2014).

Cisco, Chevron and Eastman shows very significant improvements in the implementation phase of the e-Procurement system (Andersen Consulting, 2000). The most significant are:

- improved procurement efficiency;
- reduced prices from major suppliers;
- reduced the duration of the order cycle;
- ensured higher level of service.

As Alomar and Visscher (2017) indicate the benefits of switching to e-Procurement are planned to be significant.

As its mentioned in a special report of the European Court of auditors (2015) by using e-Procurement you can:

- (a) promote competition and the efficient use of resources by expanding access to procurement in the single market, including small and medium-sized enterprises;
- (b) improve the efficiency of public procurement management by expanding access to procurement and automating key procedures that could lead to cost savings for both tenderers and contracting authorities; and
- (c) help detect and prevent irregularities, corruption and fraud. According to Panayiotou, Gayialis, Tatsiopoulou (2004), the most significant saving in e-Procurement is due to the fact that procurement has been carried out centrally, which means that prices are significantly lower. According to more elaborate information, e-Procurement is important and has an increasingly important role in public procurement.

Research results and discussion

Development of Electronic procurement in Latvia

First period

The EPS is the first such procurement system in the Baltic States, established in 2005. Initially, it acted only as an e-Procurement system in which public institutions can purchase standard goods and services. In order to secure the operation of the SRDA as a central purchasing body, within the meaning of the Public Procurement Law, holds centralized public procurement procedures under its EPS portal (www.eis.gov.lv) for the conclusion of general agreements between one or more direct administrations and one or more suppliers on conducting transactions in the process of e-Procurement. In accordance with the results of centralized procurement procedures, the EPS provides suppliers with a possibility to offer products in one or several delivery regions of the Republic of Latvia for registered EPS buyers at prices not exceeding the number indicated in the relevant centralized tendering bids. The EPS also provides for a number of mechanisms aimed at ensuring the ability of narrow profile companies to offer their goods and services successfully, such as the possibility of the EPS offering goods only in a single part of the procurement or only one item in one part of the procurement subject. The EPS maintainer, the SRDA currently ensures that the system includes the widest possible range of products at the lowest possible price. The EPS is the electronic point of purchase of goods and services for public institutions, which can be used by unrestricted number of registered buyers (purchasers) of the system - the number of public institutions. The EPS registered customers have an opportunity to order goods orders free of charge on the Internet by choosing goods from the cheapest published offer at the moment in the electronic orders (e-orders). In an e-Procurement process between the supplier and the buyer, an electronic transaction is concluded that defines the basic terms of the particular delivery of the goods (quantity of goods, prices, place of delivery, etc.) in addition to the standard delivery terms (delivery terms, rights and obligations of the parties, penalties, etc.) determined by the SRDA's agreements with the winners (suppliers) of the respective open competitions. Taking into account that customers have the opportunity to purchase only one product - the cheapest product corresponding to each specification - suppliers compete with each other after concluding agreements, thus the prices of goods and services offered by the EPS decrease and are lower compared to the results of simple open tenders (SRDA, 2017)

EPS users can buy, for example, computer hardware at the lowest price in the market. In addition, the administrative costs of the procedure are greatly reduced as the customer needs to join the system, choose the goods and the supplier starts ordering or manufacturing the product and delivery to the customer. Such a client avoids both the organization of the procedure and the convening of meetings of procurement commissions and complaints to the Procurement Monitoring Bureau of the Republic of Latvia.

Second period

In 2011, an international Open Government Partnership initiative was launched and Latvia joined this initiative. One of the commitments made by Open Government Partnership is "Publicity and efficiency in public procurement". Public procurement in the OECD's Member states accounts for an average of 12% of gross domestic product or 29% of general government (state budget) expenditure. The OECD states: "Since public procurement accounts for a significant proportion of the use of taxpayers' money, countries are expected to be effective in complying with stringent standards of conduct in order to ensure a high level of service quality and compliance with public interest" (OECD, 2015).

By joining the Open Government Partnership, Latvia signed the Open Government Declaration, committing to implement the principles mentioned therein, including to promote the use of ICTs to ensure openness, accountability and participation.

The Report on Latvia - 2017 by the European Commission (2017) states that one of the problems in Latvia is that the use of the e-platform is not compulsory, which would both increase transparency and reduce costs.

Basic information on all purchases that are subject to the requirements of the law is available on the PMB website, but on the Latvian Open Data Portal www.data.gov.lv - information on transactions performed using the e-Procurement functionality. Procurement publications as announcements of public procurements, as well as notices of award (including information on the winner, the contract price offered by them, or the involvement of subcontractors, participation in small and medium-sized enterprises in procurement, etc.) are available on the PMB website. The PMB website publishes also information on complaints received regarding breaches of procurement, as well as decisions of the Commission for the Examination of Proceedings, thus, everyone has an opportunity to obtain information about procurement violations and the results of their examination.

In accordance with the Cabinet of Ministers Regulations No. 108 "Regulations for Public Procurement" of 2017, state institutions, local governments and their institutions have an opportunity to use the EPA for purchasing standard goods and services. In accordance with the Cabinet Regulations No. 108 Items 11 (technical equipment, office paper and stationery, printing and copying equipment, furniture, household goods, food items, etc.) should be purchased through the mandatory use of the EPS system.

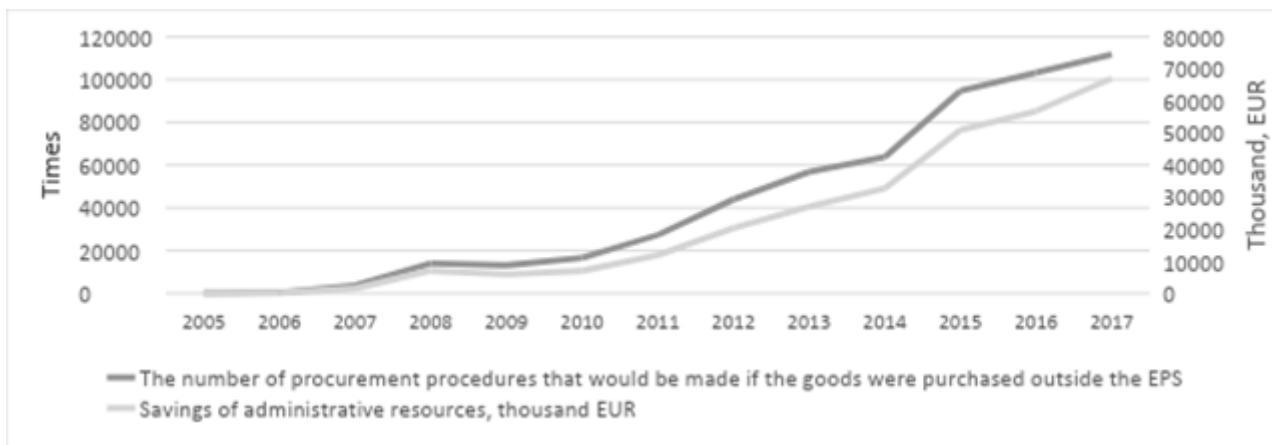
At present, the EPS consists of four different subsystems:

1. E - orders: a system that acts as an online store for public sector customers to purchase standard products and services offered by suppliers with general agreements as a result of open competitions organized by the National Agency for Regional Development.
2. E - auctions: a subsystem for organizing e-auctions. At present, the subsystem is under construction;
3. E-competitions: a subsystem designed to organize electronic procurement, ensuring procurements, electronic submission and opening of applications or tenders, evaluation of tenders submitted by suppliers, etc. Procurement related activities;
4. E-Inquiries: a subsystem for the receipt of bids for candidates and candidates participating in public procurement, checking the exclusion conditions specified in regulatory enactments (SRDA, 2017).

Third period

In 2017, changes in public procurement laws, which, among other things, are aimed at greater openness, came into force. The Public Procurement Law and Public Service Providers Procurement Law stipulate not only the publication of procurement announcements and procurement plans, but also the gradual transition to the publication of electronic procurement documentation, as well as submission of electronic offers in one place - the EPS of the SRDA.

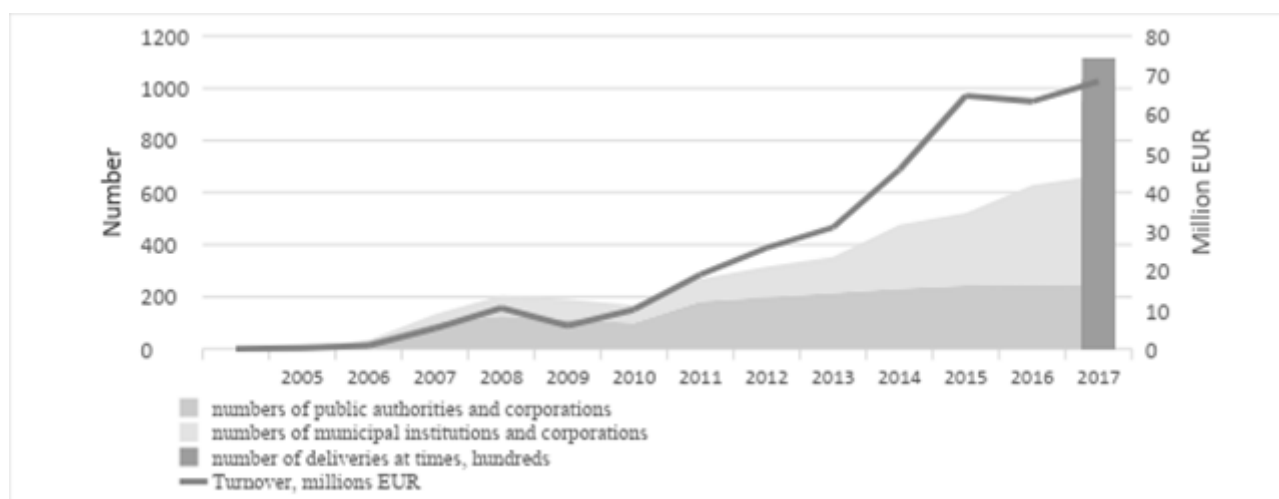
In turn, by January 1, 2019, the submission of electronic bids will be mandatory for all public tenders above € 10,000. Since the amendments to the law that came into force in 2017, it publishes procurement plans for state and local government institutions. The electronic procurement system also publishes information on transactions performed (customer, supplier, volume of transaction, subject matter). For each procurement proclaimed, further information is available on the website of the relevant institution or corporation (on the buyer's profile) - procurement documentation (regulations, technical specifications, responses to candidates and tenderers' questions, including information on amendments to procurement documentation).



Source: The data of the Central Statistical Bureau and the SRDA, the authors' summary have been used

Fig. 1 The financial savings of state, municipal institutions and state and local government capital companies in purchasing Electronic Procurement System 2015-2017, EUR

According to the EC assessment report "EU Public Procurement Legislation delivering results of the summary of assessment report" (2016) it is indicated that the average number of working days consumed by the customer per procurement is 27 working-days; (Procurement procedure in Latvia has the following labor-intensive stages: development of procurement procedure regulation and technical specification; preparation of answers to tenderers; participation of several members of the procurement commission in committee meetings; individual evaluation of tenders made by each member of the commission; proclamation of the results of the procurement procedure and requesting of bids; PMB and court, preparation and conclusion of a contract), purchases on the EPS are consumed on average by 2 man days, therefore the difference or total efficiency of the calculation of the efficiency of the administrative resource saved per product group (catalog) is 25 man-days. Doing the calculations the average daily earnings in the public sector were taken into account, according to data from the Central Statistical Bureau on the average salary in the public sector, which was indexed with 0.5 workload. Indexing was done to calculate the benefits. As Figure 1 shows, the number of purchases made by the EPS generates significant savings in the budget by lowering administrative costs, reaching even 6.9 million EUR in 2017.



Source: the data of the SRDA, the authors' summary have been used

Fig. 2 Electronic procurement system development 2005-2017

In January 2014 the EPS introduced the e-Bulletin subsystem, but since 2016 the EPS has been provided with an e-Competition Subsystem, which is designed as a unified electronic environment for supporting procurement procedures. As shown in Fig. 2, the EPS has evolved significantly, at the end of 2017, 26 catalogs of goods and services were available to customers, 111 652 deliveries were carried out in 2017, 702 active consumer organizations, while the active users of

EPS e-auctions and e-tenders subsystems The number reached 3 628 users, that is 1 474 suppliers and 2 154 subscribers. The turnover of EPS transactions in 2017 reached 68.56 million euro with VAT. In order to ensure that the principle of openness and the availability of information is respected, all procurement information is publicly available on the EPS. Essential for data interoperability - the State Information System Interoperabiser is a set of solutions that provides data exchange between different public information systems and accesses to various sharing components. In the framework of the EPS, the National Information System Interlocutor is used to provide user authentication using features such as authorization for a smart card or internet bank requisites and to sign an offer using the Latvia state radio and television center e-signature.

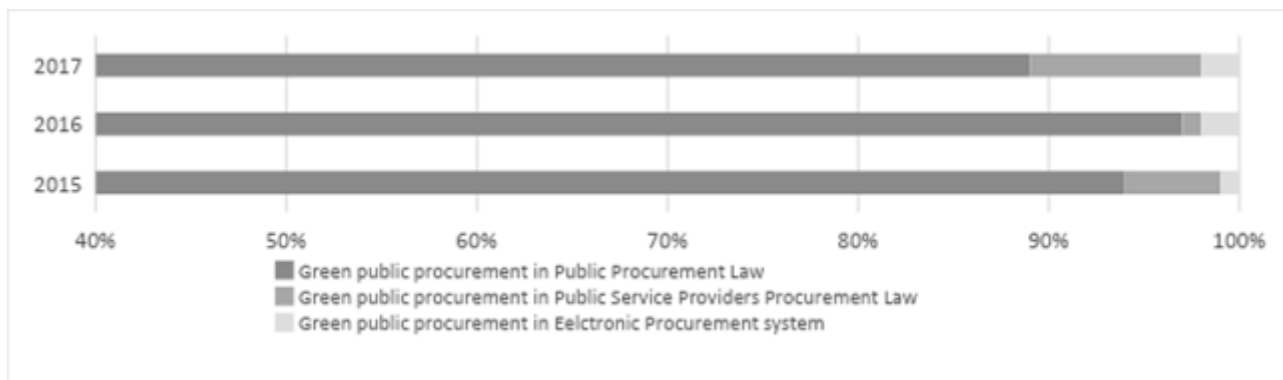
According to the annual report of the SRDA (2017), the EPS will be linked to the e-CERTIS portal that helps to identify and compare the various certificates requested by the EU public procurement tenders, as well as facilitate the participation of merchants in international procurement by providing a re-usable European Single Procurement Document data availability on the EPS platform. It is also planned to make information on electronic procurement and procurement data accessible to the public, as well as to extend the level of electronically accessible data and processes for the implementation of electronically executed e-Procurement processes among public entities.

When purchasing in the EPS, a budget of a customer (state and local governments) is saved, as several orders are combined with centralized procurement, as well as small purchases, to obtain more favorable prices.

Green public procurement in the EPS

In 2010, the SRDA-monitored EPS included green directories, which also contributed to GPP implementation. On 17 February, 2015 the Cabinet of Ministers approved the Green Public Procurement Support Plan 2015-2017 which determined that in 2015 the amount of procurements planned from the state budget and to which green procurement requirements should be applied must be at least 15% of the financial means of the total state and municipal institution procurement volume, in 2016 it had to be 20%, and in 2017 – 30% (CoM, 2015). On 20 June, 2017 the Cabinet of Ministers approved the Regulations No 353 that determine the process of application of GPP, its implementation, supervision, evaluation, as well as control and mandatory groups of goods and services which GPP is applied to. According to the Regulations No 353, seven groups of goods and services to which GPP applied obligatory are: office paper, printing devices, computer hardware and infrastructure of information and communication technologies, food and catering services, cleaning products and services, internal lighting, street lighting and traffic lights (CoM, 2017).

From 2015 to 2017 the total amount of public procurement (Public Procurement Law, Public Service Providers Procurement Law, EPS) has increased from 2 310 million EUR in 2015 up to 2 595 million EUR in 2017. Despite the fact that total amount of procurement in financial expression increased during this period, total GPP amount in financial expression decreased from 375 million EUR in 2015 to 330 million EUR in 2017. Total GPP proportion from 2015 to 2017 there was a downside - 16.23% in 2015, 14.28% in 2016 and the lowest point – 12.71% in 2017 (Pelsa, 2018). According to the EC report (2017), the bulk of public procurement (67%) is awarded on the basis of the lowest price criterion, while the EEA average is 64%.



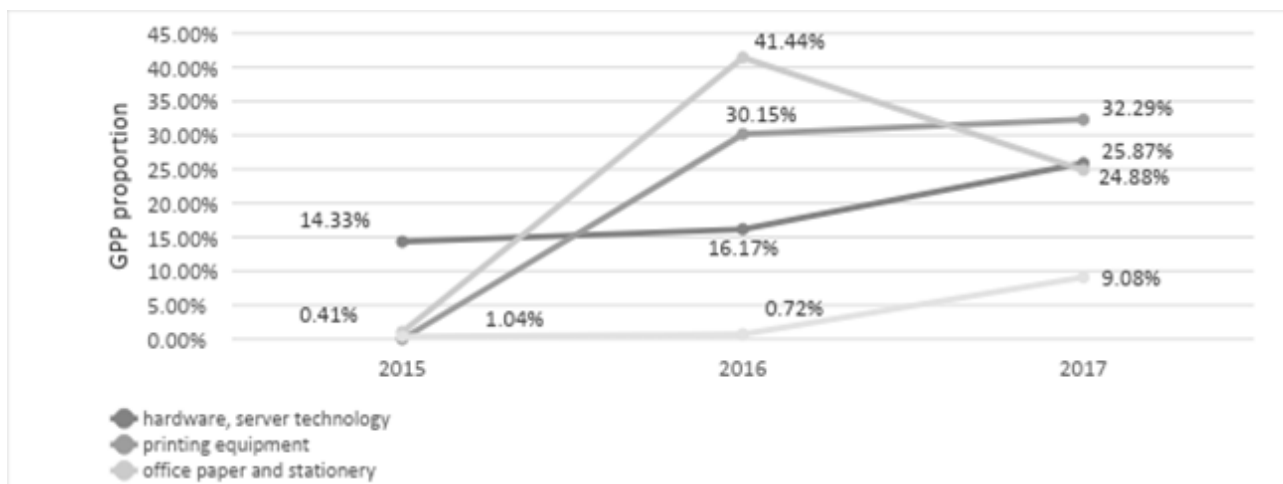
Source: author's construction based on data from PMB and SRDA

Fig.3 Proportion of GPP in procurement performed by PPL, PSPPL and EPS in 2015-2017, %

If we analyse a situation in green public procurement split between Public Procurement Law, Public Service Providers Procurement Law and Electronic Procurement system, it is evident that a convincing leader is Public Procurement Law. Green Public procurements that are made in the Electronic Procurement system is approximately 1%-2% of the total amount in financial terms, approximately 5 million EUR in 2015 and 2016, but 11 million EUR in 2017 from all public procurements. GPP proportion in procurement made within the EPS in 2015 was 9%, in 2016 - 8%, but in 2017 - 19.10%, which means that GPP a substantial increase.

In 2017, labels are created in EPS catalogs to make eco-friendly goods easier to identify- GPP criteria (the catalogue offers goods that fully meet the GPP criteria), partly GPP criteria (specifications for the products in the catalog have environmentally friendly requirements that partly meet the EU's GPP criteria), EPEAT, Green spoon (items available in the catalog complying with the National Food Quality Schemes) and Bordeaux spoon (the catalog offers products that meet high quality requirements and have a full recycling cycle in Latvia). Discussions have been held on the separate allocation of "Green Spoon" and "Bordeaux Spoon", since, given the fact that the "Green Spoon" supports integrated agriculture, there is no evidence that this practice leaves less contamination than the other (Simanovska, 2017).

Comparing the green purchases made by the EPS groups in the different product groups, it should be noted that several product groups take into account the relevant eco-labeled and do not evaluate all the criteria for the GPP compliance, which essentially means that there is no GPP in its entirety. The share of GPP in the EPS product groups is evaluated, which, according to the Cabinet of Ministers Regulation No. 353 are mandatory groups of goods and services to which the GPP should be applied.



Source: author's construction based on data from Electronic procurement system

Fig. 4 Green public procurement proportion in Electronic procurement system 2015-2017, %

The proportion of GPPs in the EPS product and service groups from 2015 to 2017 has increased from 9% in 2015 to 11% in 2017. As shown in Fig. 4, the groups of products that have the most suitable GPP requirements, then the average is higher, from 3.16% in 2015 to 18.49% in 2017. The greatest increase is seen in office paper, reaching 41.44% of all purchased paper in the 2016 by GPP. In the second place in 2017 there are printers with the GPP reaching 32.29%, followed by computer hardware with a GPP share of 25.87% in 2017. A small proportion of GPPs is observed in household goods and cleaning products, 0.76% in 2016, and in 2017 only 9.08%. The smallest share of food products is in 2017, reaching only 0.34%.

In addition to the groups of goods, which according to the Cabinet Regulation No. 353 GPP should be mandatory, green procurement is applied in the electronic procurement system, for example, toilet paper, paper towels, napkins included in the group household goods and cleaning products.

In 2017 compared to 2016, the EPS catalogs do not offer indoor lighting. At the same time, it should be noted that the set of requirements for EPS products in the green catalogs is higher than the environmental protection criteria for procurement in the framework of Public Procurement Law, Public Service Providers Procurement Law. In the procurement process, the EPS significantly accelerates the process of purchasing goods and services in comparison with classical procurement procedures, since it is only necessary to identify needs and order in the relevant catalog of goods or services. The benefits of the EPS are the fact that clients are relieved from organizing their own separate procurement procedures, since transactions are carried out centrally, ensuring the ordering of goods and services through the e-Order Subsystem. Considering that a seller can change a price of a product several times a day and a customer has to choose the cheapest solution, the problem accordingly with the moment of purchase of the goods, while coordinating with the management of the purchase of the item, the price may change.

Conclusions, proposals, recommendations

1. The first hypothesis was confirmed that the calculations made in the study prove a complete transition to e-Procurement will reduce both administrative costs and significant savings for the state budget in the Latvia.
2. The second hypothesis was confirmed - the greatest increase is seen in office paper, reaching 41.44% of all purchased paper in the 2016 by GPP. In the second place in 2017 there are printers with the GPP reaching 32.29%, followed by computer hardware with a GPP share of 25.87% in 2017.
3. Procurement in the EPS makes purchases more transparent and reduces the risks of corruption.
4. At the same time, the winner will be a supplier, as it will have to participate in only a few procurement procedures during the year, and will be able to devote all its strength to providing EPS visitors with the best product at the best price.
5. The requirement to publish EPS contracts in Latvia is mandatory. At the same time, information on public procurement contracts and procurement contracts is not available in one place, but on the websites of institutions and corporations. Therefore, their search is often difficult.
6. In Latvia often procurement decisions are still made on a basis of a purchase price, but costs that may arise in the upkeep and disposal of many products and work can also be very significant, such as energy consumption, aggregation, and the disposal of relevant materials. In order to improve performance in the field of GPP, involvement and motivation for all levels of management in the promotion of sustainable consumption and production of the public sector and society, as well as the development and development of EPS directories, are required.

7. In Latvia a serious obstacle to GPP promotion is the lack of a uniform and well-founded monitoring and reporting system (monitoring). In the EPS system, products are considered environmentally friendly if they are purchased from green directories. The PMBs list the purchases for which the customer has indicated (ticked) the documentation that the environmental criteria have been used as environmentally friendly. In neither case nor in the other, it is not analyzed whether the environmental conditions used were sufficient to result in the actual purchase of the environmentally friendly product from the proposed ones.

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