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National Development Banks in Europe – A Contribution to Sustainable Finance

Györgyi Nyikos
University of Public Service, Faculty of Public Governance and International Studies, Hungary
nyikos.gyorgyi@uni-nke.hu
https://orcid.org/0000-0001-8934-8131

Zsuzsanna Kondor
University of Public Service, Faculty of Public Governance and International Studies, Hungary
kondor.zsuzsanna@uni-nke.hu
https://orcid.org/0000-0002-9420-2775

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ABSTRACT

Purpose: The paper explains critical changes to investment funding occurred over the past fifteen years in the European Union and explores the added value that National Development Banks create for sustainable finance. The delivery of the European Green Deal and the recovery from the Covid-19 pandemic require an unprecedented scale of resources. The need to adopt a new sustainable investment approach and adjust the operation of the financial system has become inevitable. Existing research has underlined the role national development banks play in counter-cyclical measures and promotion of the government's public policy goals. However, their standing in the sustainable finance landscape has enjoyed less attention so far. The paper, therefore, looks at how the remit of the Banks has evolved and assesses their progress and further development needs in relation to promoting sustainable finance.

Design/Methodology/Approach: The research has followed a two-phase design. The first phase has included the examination of the operational setting of National Development Banks and their impact on overcoming market failures and improving access to finance. The second phase concentrated on drawing a comparison between the new regulatory requirements, in particular the European Green Deal, the EU Taxonomy Regulation and the functioning of the National Development Banks. The methodology has included a detailed literature review, desk research, data collection and re-assessment of earlier surveys, which has been used for prescriptive comparative analysis and cluster analysis.

Findings: The paper concludes that National Development Banks, despite their common goals and mandates, demonstrate important variations in terms of government involvement in strategic direction and decision-making and the Banks' actual contribution to national policy goals. The outcome confirms the hypothesis that recent changes to the EU strategic and regulatory framework only require minor amendments to the direction of NDB investments. Their original setup and objectives are already in accordance with the new expectations and they invest mostly in economic sectors that the new taxonomy system classifies as sustainable.

Practical Implications/ Originality/Value: This is important for the scholarly discourse on the essential conditions for sustainable finance. Meanwhile, the results provide usable guidance for development banks/funding agencies in Europe, too. The paper offers a solid ground for continued explorations of the European financial sector, whereas the recently adopted Digital Finance Package could further widen the agenda of the research direction.

Keywords: development banks, public finance, sustainable finance, EU taxonomy

JEL G18, G28, H54

1 Introduction

Finance supports the economy by providing funding for economic activities, thus promoting economic growth. Typically, investment decisions are based on the assessment of several factors. However, those related to environmental and social considerations are often not sufficiently taken into account, since such risks are likely to materialise over a longer time horizon. It is important to recognise that integrating longer-term sustainability interests in investments makes economic sense and does not necessarily lead to lower returns for the investors[1].

The financial and economic crisis brought inter alia development banks back to the spotlight. Development banks can provide long-term finance, the take-up for which is further facilitated by the lower level of returns these banks pose as a requirement. This is the most challenging, and at the same time, probably also the most valuable role for development banks. As part of the economic policy toolkit devised to overcome cyclical and structural difficulties in economies, these banks complement the financial systems through improving their functioning and bolstering economic resilience. Interest in development banking to promote growth and boost investment has recently increased, particularly in Europe (Nyikos, 2016). National development banks are government-owned financial institutions using public sources that provide financing for economic development; therefore public finance rules and corresponding implementing specificities have to be applied.

1 COM(2018) 97 final, p. 2.

Additionally, the financial system is being reformed to address the lessons of both the financial crisis and the present COVID pandemic. This transformative process can form part of the solution towards a more sustainable economy. There is a general consensus that for achieving meaningful sustainable development the current public funding arrangements have proven insufficient. A more strategic use of these funds is needed to leverage private sector investment. Reorienting public and private capital towards more sustainable investments requires a radical shift in the workings of the financial system. Due to the risks presented by global environmental forces such as climate change, the scope of operations and responsibility of financial institutions have altered significantly.

This paper explores the operation of national development banks in Europe and assesses the effects of the adoption of the European Green Deal and the EU Taxonomy Regulation on their functioning. The paper provides a solid literature review in the area of development banking and building on this background explores and summarises the development banking concept, as well as its public policies promoting sustainable development. Previous studies examined different aspects of the operations of state-owned financial institutions. However, little attention has been given so far to assessing the extent their investments are sustainable, in accordance with the new goals laid down in the EU strategies and regulations. Our paper hypothesizes that the part development banks play in financing sustainable investments on the one hand derives directly from the credit rationing theory and on the other hand from their role to reduce the financing gap for those economic agents/projects which are generally excluded by the mainstream financial institutions. The first research question seeks responses for whether the European NDBs should significantly change their strategic goals in order to harmonise with the recently adopted EU strategic documents on sustainable finance or their original setup and objectives do guarantee accordance with the new expectations. The second research question concerns the impact of the European Taxonomy regime. The paper analyses how the new legal obligations pose challenges and increase complexity to the operational context for NDBs and whether the banks need to significantly change the direction of their investments. Our hypothesis states that for the most part NDBs, by their function, have already been financing sustainable investments. They invest mostly in the economic sectors which the new taxonomy system classifies as sustainable. Nevertheless, we assume that their functioning needs to be further streamlined to better align with the new conditions.

2 Literature review

Sustainability and the transition to a low-carbon, more resource-efficient and circular economy are key factors to ensuring the long-term competitiveness of the EU economy. Sustainability has long been at the heart of the European

Union project and the EU Treaties give recognition to its social and environmental dimensions[2].

Academic literature on state-owned financial institutions has essentially focused on examining their financial performance (e.g., Micco et al., 2007). State-owned financial institutions, a larger category to which national development banks belong, generally have a lackluster track record in order to preserve their financial solvency and good credit ratings, reduce high arrear ratios, as well as to stay adaptable to changing market conditions (Mian, 2003; Berger et al., 2005; Lin and Zhang, 2009). Also direct government ownership of banking institutions is correlated with increased corruption (Barth, Caprio Jr. and Levine, 2004). Studies (e.g., La Porta et al., 2002) have concluded that poorly performing state-owned banks can hinder financial sector development, particularly in low-income countries, mainly as governance problems lead to failure of institutions and misallocation of resources. On the other hand, in high-income economies, as a study of German banks from 1995 to 2007 concluded, state-owned banks are more stable, although less profitable than commercial banks (Beck et al., 2009).

The majority of scholarly publications do not distinguish between the different types of state-owned financial institutions. Only a few studies articulate the consideration that development banks are not for-profit organizations and therefore comparisons with private sector institutions on purely financial terms might not be appropriate (Lazzarini, 2015; Sanderson, 2013; Griffith-Jones, 2016; Acharia et al., 2011). Development banks - which are practically present in all countries - have been an important instrument of governments to promote economic growth by providing credit and a wide range of advisory and capacity building programmes to households, small and medium enterprises, and even large private corporations, whose financial needs are not sufficiently served by private commercial banks or local capital markets. Development banks have successfully adhered to their mandates in a financially sustainable way (Thorne and Toit, 2009). During the crises, development banks appear to be more resilient when the economy slows down (Frigerio and Vandone, 2018) and most have assumed a counter-cyclical role by scaling up their lending operations precisely when private banks experienced temporary difficulties in granting credit to the private sector (De Luna-Martínez and Vicente, 2012; Farkas, 2018). Griffith-Jones et al. (2012) and Ocampo et al. (2012) provide empirical evidence for the counter-cyclical response of regional and multilateral development banks, whilst Luna Martinez and Vicente (2012) and Brei and Schlarek (2013) illustrate evidence for the counter-cyclical role national development banks play. Development banks can serve as focal points for regional and subregional cooperation (Józsa, 2016; Rácz 2019), thus promoting economic integration (Bloch, 1968). Wruuck (2015). It is worth noting that not only there were many European national development banks engaged in counter-cyclical activities, but they also launched financial activities additional to their original scope. In recent years, the valuable function that

2 See, among others, art. 3.3 of the Treaty on the European Union (TEU) and the role of environmental and social issues in international cooperation (art. 21 TEU).

national, regional and multilateral development banks can and indeed frequently satisfy has received a growing recognition (Griffith-Jones and Cozzi, 2015). National promotional banks carry particular weight in peripheral countries (Feil and Feij, 2021). Furthermore, policy-makers have become aware of the increased potential of national promotional banks for providing countercyclical funding in times of financial and economic distress (Boitan, 2016).

The so-called pro-market activism model acknowledges that development banks could play a key role in developing specialized knowledge as well as offering tools to ease access to finance, whereas working closely with the private sector. When professionally managed and independent, development banks are well suited to detect un- or under-served market niches and fill the gaps. Understanding the goals and activities of development banks is the important approach associated to the theory of market failures (Stiglitz and Weiss, 1981; Stiglitz,1990). It argues that market failures in financial markets are likely to be endemic as these markets are particularly information intensive; consequently information imperfections and asymmetries as well as incomplete contracts carry a more important and disruptive impact than in other economic sectors. Several commentators (e.g. Ferraz et al, op cit; Kregel, 1988; Wray, 2009) argue that the preference which both investors and banks give to liquidity occasion the limitations of credit supply in the economy. There may even persist a lack of credit for investments despite the operation of well-developed national and international financial systems. Market failure necessitates government intervention (Culpeper, 2012).

Bank credit could serve as an important driver of economic growth to the extent that banks owned by development banks are involved in the process of providing credit to the private sector. They could pursue multiple economic development activities, with diversified scope and focus, targeting a broad base of customers or specific types of clients, such as SMEs or start-ups (Nyikos et al., 2020a, 2020b). Moreover, they could be engaged with infrastructural projects that are regarded as growth-related (Béres et al., 2019).

Development banks also seek to generate positive development impacts, among others social and environmental benefits. Development banks are perceived to be by definition socially responsible institutions (Kundid Novokmet and Rogošić, 2017.) They have been instrumental in easing access to a range of flexible services and financing options including assistance to capacity building. In 2014, commitments of international development institutions amounted to 33% of the total climate finance flows (Buchner et al., 2015).

However, in the light of the European strategic plans (see especially the European Green Deal, Sustainable Europe Investment Plan, Renewed Strategy on Sustainable Finance) calculations of the European Commission[3] reveal a significant financing gap to materialize in the near future. According to esti-

3 To achieve EU climate and energy targets by 2030, Europe has to close a yearly investment gap of almost EUR 180 billion. The estimate is an annual average investment gap for the period 2021 to 2030, based on PRIMES model projections used by the European Commission in the Impact Assessment of the Proposal of the Energy Efficiency Directive (2016), <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1483696687107&uri=CELEX:52016SC0405>.

mates from the European Investment Bank (EIB), the overall investment gap in transport, energy and resource management infrastructure is even greater, the sum reaches an astounding annual amount of EUR 270 billion[4]. The current regime of development banking in the EU is conditioned by constraints, guidance stemming from the integration process and the specific insertion of Member States in the European political economy (Mertens et al., 2021). However, it rests on a market-supporting, "promotional" understanding of development banking tasks and this approach has important consequences for the contemporary debates over public investment in the European Union, and in particularly the contribution of NDBs to the European Green Deal objectives.

3 Data and methods

Scientific literature underlines the need for applying an integrated approach when undertaking an assessment in the financial sector (Creane et al., 2004; Worrell, 2014), whereas giving adequate attention to institutional factors (Ang, 2008) has received growing recognition, too. This approach is particularly relevant to our assessment bearing in mind the complexity of the remit and operation of European NDBs. Our research questions and hypothesis aimed to evaluate how the practice and operation of the European NDBs are in line with the new sustainable approach and conditions prescribed by the new European Taxonomy law.

The first research question concerns the choice if the European NDBs should significantly change their strategic goals to harmonise with the above mentioned, recently adopted EU strategic documents on sustainable finance or their original setup and objectives do guarantee accordance with the new expectations. Our first hypothesis states that for the most part NDBs, by their function, have already been financing sustainable investments.

With the second question we focus on whether the European Taxonomy regulation implies a major challenge and more complex operational context for NDBs; if they need to significantly change the direction of their investments. Our second hypothesis assumes that NDBs invest mostly in the economic sectors which the new taxonomy system classifies as sustainable. However, their business models will need to be further adapted and refined.

We have confirmed these hypotheses through a combination of different research methodologies including data analysis and clustering.

The information collection and validation processes have relied on the results of two previously employed, comprehensive surveys and a variety of sources offering new data, including European regulations, policy documents, websites of supervisors and financial institutions as well as their annual reports. A strong emphasis has been placed on confirming if the results of the questionnaires are still relevant. Qualitative research tools have been strategically de-

4 See EIB, 'Restoring EU competitiveness', 2016. The estimate, until 2020, includes investments in modernising transportation and logistics, upgrading energy networks, increasing energy savings, renewables, improving resource management, including water and waste.

signed (Mason, 2017). The surveys have employed the standardized questioning approach (Groves et al., 2009) which is particularly useful for cross-country enquiries; research questions have been devised based on a pre-set, solid conceptual framework (Miles and Huberman, 2019). In line with scholarly observations (Bell, 1996) they have also eased generalizations. One survey was based on a questionnaire comprising 138 questions that the World Bank had prepared with input from the World Federation of Development Financing Institutions (WFDFI). This questionnaire was sent to the 230 members of the WFDFI in 2017, and 64 responses were received. The second survey was based on a questionnaire with 46 questions that the author had prepared, embracing scientific literature findings on the importance of question design (Converse, 1986; Fowler, 1995) and was sent to the 18 European Development Banks and Promotional Financial Institutions in 2016. All of them responded (Survey questions see in Appendix). The elaboration of this comprehensive survey originally served a different research project, aimed at mapping European financial instruments managed by NDBs (Nyikos, 2016, 2017). However, this unique, manually collected dataset has proven most useful for examining the extent to which the investment activities of national development banks are in line with EU taxonomy requirements and rules.

The research approach attempts to understand the environment applicable to European NDBs in terms of their objectives, activities, investments, products, and services with a special view to their involvement in sustainable finance. Partially based on the macro-framework[5] for the successful functioning of development banks (Thorne and Toit, 2009) the paper evaluates the strategic goals and key functions of NDBs in order to learn whether there is a need for further initiatives to better harmonisation with the European strategic sustainable objectives and the EU taxonomy regulations.

The latter will have a decisive impact on the EU economy, dictating specific requirements for reaching the six environmental objectives[6], and implying that economic activities are qualified based on the NACE[7] system[8].

As detailed information on the current investments of the NDBs for NACE categorization has not been available, the study analyses the investment-related information which was obtained via the survey with contributions from 18 European NDBs.

5 The framework sets out principles for six dimensions of development banking: enabling environment, mandate, regulation and supervision, governance and management, financial sustainability, and performance assessment.

6 Climate change mitigation, climate change adaptation, sustainable use and protection of water and marine resources, transition to a circular economy, pollution prevention and control, and protection and restoration of biodiversity and ecosystems.

7 Nomenclature des Activités Économiques dans la Communauté Européenne

8 NACE codes were used as a framework to capture all economic sectors, and hence almost all economic activities. In the qualification system the defined Macro-Sectors are as follows: Agriculture, Forestry and Fishing; Mining and Quarrying; Manufacturing; Electricity, Gas, Steam, and Air Conditioning Supply; Water Supply and Waste Management; Construction; Information and Communication. Within each NACE Macro-Sector, 72 economic activities are identified as eligible environmentally. However, certain economic activities are not directly covered by NACE codes although some of these are important for climate change mitigation and adaptation. Therefore, some topics are identified as a cross-cutting activity for both climate change mitigation and adaptation.

Table 1: Summarized research relevant data of European NDBs from the survey

	CMZRB	KFW	BPI France	AWS	ICO	BGK	SZRB	MFB	HBOR
Country	CZ	DE	FR	AT	ES	PL	SK	HU	HR
Real GDP per capita (2015)	16290	34130	31540	36140	23080	10920	14270	11130	10630
SDI	0.390	0.408	0.549	0.258	0.485	0.447	0.238	0.739	0.701
Public share	100%	100%	100%	100%	100%	100%	100%	100%	100%
Balance (Mio EUR 2015)	1150	502973	44600		62173	10188,678	570,38	3428	3345
Specialized legislation / act on financial institution (yes/no)	no	yes	yes	yes	yes	yes	no	yes	yes
Subject of CRR / CRD IV	yes	no	yes		yes	no	yes	no	no
Eurostat classification (government sector - S 13 or financial sector - S 12)	S 13 (government sector)	S 12 (financial sector)	S 12 (financial sector)		S 12 (financial sector)	S 12 (financial sector)	S 12 (financial sector)	S 12 (financial sector)	S 13 (government sector)
Support of entrepreneurship	yes	yes	yes	yes	yes	yes	yes	yes	yes
Support of energy savings and utilization of renewably energy sources	yes	yes	yes	yes	yes	yes	yes	yes	yes
Support of housing	no	yes	no	yes	No	yes	yes		no
Support / Development of transport / energy / municipal and other infrastructure	yes	yes	yes	no	yes	yes	yes	yes	yes
Support of research & development	no	yes	yes	no	yes	yes	no	yes	yes
Support of agriculture and forestry	no	no	yes	yes		no	yes	yes	yes
Support of export	no	yes	yes	yes	yes	yes	yes	no,	yes
Development assistance	no	yes		no	yes	no	no	no	no
Advisory services (yes / no)	no	yes	yes	no	no	no	no	no	no

Source: Nyikos' compilation based on data from websites and Survey on European Development Banks and Promotional Financial Institutions, 2016.

BDB	4SID	KREDEX	ALTUM	FINNVERA	ALMI	BBB	MCC	SBCI
BG	SL	EE	LV	FI	SE	GB	IT	EE
5790	17990	13330	10740	34460	42580	31700	25640	49510
0.757	0.438	0.209	0.567	0.227	0.328	0.399	0.550	0.432
100%	100%	100%	100%	100%	100%	100%	100%	100%
816,382	3199	177	407,1		862,5664	1002,621	2554	350
yes	yes	yes	yes	yes	yes			yes
yes	yes	No	No	no	no	No	yes	Do not hold bank license
S 12 (financial sector)	S 12 (financial sector)	S 13 (government sector)				S 13 (government sector)	S 12 (financial sector)	S 13 (government sector)
yes	yes	yes	yes	yes	yes	yes	yes	yes
yes	yes	yes	yes	yes	no	no	yes	No
no	no	yes	yes	no	no	no	no	No
yes	yes	yes	No	no	no	no	no	Not currently
no	yes	yes	yes	no	no	no	no	no
yes	no	no	yes	no	yes	no	yes	yes
yes	yes	yes	yes	yes	yes	No	no	no
no	no	no			no	No	no	No
no	yes	no	yes	yes	yes	No	yes	yes

These have been complemented by data, essentially gathered from the annual reports on activities of the NDBs (balance sheet, annual volume of loan, guarantee and equity) as well as relevant country-specific data (real GDP per capita, SDI collected for the research.

In addition to the prescriptive comparative analysis, the data were analyzed in an SPSS database, employing a cluster analysis that included the use of the method of K-means cluster. Different combinations of variables were tested with a set number of at least three clusters. Cluster analysis aids the capturing the associations with the dataset (Macia, 2015) and betters the understanding of the qualitative data set (Guest and McLellan, 2003). K means clustering is a widely employed data clustering tool and is entrenched in major statistical analysis software platforms (Mirkin, 2015).

Finally, the combination of SDI, GDP and the annual volume of loan variables allowed the drawing up of three well-separable clusters. This analysis had two iterations and Table 2 shows the final cluster centres.

Thus, this paper pursues a two-step analysis. First, it surveys governance and activities of European national development banks to establish their decisions/functions models and conducts a cluster analysis to examine how EU NDBs fulfill their role in addressing a market failure and improving access to finance. Second, it presents the broader regulatory shift towards sustainability in the EU and analyses whether the EU NDBs activities are in line with the EU taxonomy conditions.

Table 2: Final Cluster Centers

	Cluster		
	1	2	3
Total_volume_loans_SMEs_2015_euros	800987	245,48	305,33
SDI_index	,478	,498	,311
Real_GDP_per_capita_2015	29218,00	12343,33	40672,50

Source: Nyikos' compilation

3 Results and discussion

3.1 Organizational and functional specialities of national development banks

A salient feature rests with the fundamental focus of NDBs on long-term financing to projects that promote development. National development banks can be defined as "financial institutions set up to foster economic development, often considering objectives of social development and regional integration, mainly by providing long-term financing to, or facilitating the financing of, projects generating positive externalities"[9]. Development banks constitute a prominent example of public financial institutions with promotional missions. The definition of the NDB mandate, namely to deliver sustainable development outcomes, prevents any vague or dual mandates. They target regions, sectors or clients that are most in need, or offer the highest development payout; and NDBs take the responsibility for the social and environmental outcomes of all their supported activities (Tab.3.).

Table 3: Rationales for public financial institutions

Promotional missions		**General-interest missions**		**Geographically-focused missions**	
Mitigate negative externalities	Overcome information asymmetries	Maximise positive externalities	Compensate for the private sector's short-sightedness	Avoid capital drain from poorer to richer regions	Jump-start financial development and avoid dis-intermediation
• Promote exports to overcome export-related risks • Control the level of risk by incentivising low risk investments	• Invest in projects plagued by uncertainties due to large information asymmetries • Centralise the financing needs of multiple, small, unknown public entities	• Invest in socially valuable but financially unprofitable projects • Act as the ultimate provider of liquidity and transmitter of monetary policy	• Invest in highly illiquid, very long-term projects	• Establish public banks bound by a territoriality principle • Invest in poorer regions	• Diffuse trust in the banking system and encourage savings by the population • Provide financial services to the under-privileged and the rural population

Source: Mathias et al., 2011.

European development banks are public entities, i.e. (a substantial proportion of) their equity is owned by the state. Accordingly, NDBs align their activities with democratically determined national plans, to ensure that besides economic growth they help to improve the financial sector as a whole, as well. These banks should ensure that development outcomes take precedence over profitability, and they should reinvest any profits in reinforcing the development focus of the institution. Strong public accountability must be in place as in addition to initial capital injections, mandated operations of NDBs are frequently subsidised/paid by public funds.

NDBs contribute to solving several market failures. On the one hand, they can promote financial sector development by offering long-term loans and other financial products and by helping to create inclusive financial sectors. On the other hand, NDBs as public entities should intervene strictly in the case of a

9 Rethinking the Role of National Development Banks, UN Paper, Department of Economic and Social Affairs. Financing for Development Office, 2006.

proven market failure; their operation is governed by the principle that they will not compete with financial institutions in the private sector.

Figure 1: Core features of the European development banks

MANDATE AND ROLE	MANDATE AND ROLE	MANDATE AND ROLE	MANDATE AND ROLE
Sustainable development mandate	Proper mix of public and private funding	Prioritise development outcomes	Equal borrower representation at multilateral NDBs
Targeting finance where it is needed (market failure)	Careful choice of investment methods	Reinvest any profits	Strong transparency, based on the right to information
Responsible social and environmental standards	Internal systems to focus, assess and monitoring	Prudent care of public funds	Insulation from political pressure
Stable, long-term perspective		Incentivise staff to deliver for the public good	Strong accountability systems
Support for national strategies			

Source: Nyikos' compilation based on "Public development banks: towards a better model; A Eurodad discussion paper".

The definition of the success relating to the NDB as an organization is linked to the transparency of its revenues and costs for each of its product/service, the existence of a crystalline agreement on who will pay for the eventual loss generated by the product/service; the impact on the society is a critical factor, as well. Successful development banks have a clearly defined mandate, and they are obliged to use the public sources in an efficient and effective way. As another aspect of transparency, NDBs ensure that companies they work with as clients or partners do not avoid or evade taxes (Fig.1.).

The European NDB-system has a vertical and a horizontal dimension. Vertically, there are development banks at European, national and subnational level. Rather than separate layers, the different levels and entities are often linked (e.g. KfW[10]). On the horizontal dimension the heterogeneity is high: differences rather relate to the mode of how these banks are organized and their promotional tasks are implemented.

From the "supervision regime and relevant regulation" point of view, some institutions are subject to European Central Bank (ECB) supervision (wholly or in part); others remain under the supervision of the respective national authorities. At an international level, there is a broad consensus that, wher-

10 The KfW, formerly KfW Bankengruppe (banking group), is a German state-owned development bank. Its name originally comes from Kreditanstalt für Wiederaufbau ("Credit Institute for Reconstruction"). As of 2018, it is Germany's third largest bank by balance sheet.

ever applicable, NDBs should be subject to regulatory and supervisory standards like private financial institutions. Due to increasing pressure on the banks across Europe, they must become more efficient in justifying the use of public money. This requirement translates into clear and transparent goals and key performance indicators, which are based on broad public consensus looking for the best deal for the taxpayer while fulfilling the economic policy goals defined in the institution's mandate.

The degree of government involvement in decision-making clearly differentiates independent institutions from government sector organizations. A high degree of government involvement in decision-making is observable where the government/ministry defines the strategy as well as the creation of new products or controls the Supervisory board (indirect influence) and determines framework conditions through the Supervisory board (e.g.: BGK[11], MFB[12], SZRB[13], CMZRB[14]). A low degree of government involvement in decision-making is characteristic if the bank itself develops the business plan and sets the strategy, whereas the government only formally approves it (BBB[15]). In other instances, the Board of Directors defines the strategy and key focus areas, followed by a discussion with the government in the spirit of cooperation (FINNVERA[16]).

The degree of government involvement typically increases with the breadth of the mandate. A minimum government involvement in decision-making is typical in case of a dedicated and exclusive focus on SMEs. As regards large deals, these actions are often backed up politically, which results in a higher degree of overall dependence on the government, incl. profit orientation vs. subsidy role. Both the degree of government (shareholder) involvement and the for-profit/non-profit orientation need to be decided by the shareholder and deeply embedded into the institution's profile (Fig.2.). The role of government is generally higher in institutions operating in Eastern Europe. More recent institutions present a rather lower level of government involvement (BBB established in 2014, Finnvera in 1999, Bpifrance[17] in 2013). These institutions are profit oriented and focus on finding the "best deal for the taxpayer. To systematise and model these features, see Figure 2 below. In cases where the government does not intervene beyond the setting of the mandate, the development bank typically attempts to operate in a "bank-like" manner with financially sustainable solutions ("earn money" model). When, in addition to the mandate, the government sets out the strategic initiatives and financing too, the development bank is in fact acting to channel resources to the identified investment targets ("spend money" model).

11 Bank Gospodarstwa Krajowego.

12 Magyar Fejlesztési Bank.

13 Slovenská záručná a rozvojová banka.

14 Czech-Moravian Guarantee and Development Bank.

15 British Business Bank.

16 Finnvera is a Finnish state-owned financing company. It is the official export credit agency for Finland

17 Banque Publique d'Investissement

Figure 2: Decisions/functions models of development banks

»Earn money« model		**»Spend money« model**
The owner of the strategic initiative is responsible for financing the operations!		
Government	Mandate	Government
Development bank	Strategic initiative	Government
Development bank	Execution	Development bank
Development bank	Financing	Government

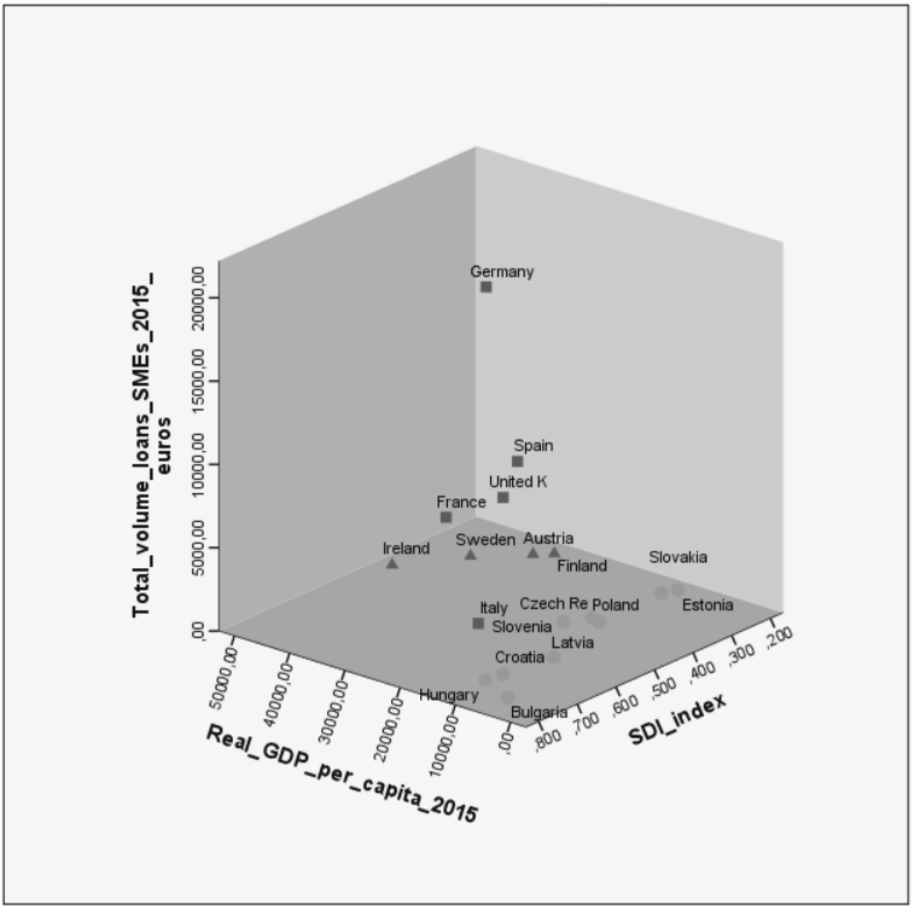
Source: Nyikos' compilation

Based on the above, if a national government is strongly committed to sustainable development, a higher degree of overall dependence on this government by the NDB will result in sustainable finance. Meanwhile, for the profit oriented, business-like NDBs sustainable finance will be more challenging. However, the strategic objectives of the owner-state play a key role. Additionally, the European taxonomy will be relevant for all the NDBs in terms of establishing financial development programmes and investments.

Development banks can lend directly to customers (1st tier/retail) or channel credit via other (private) banks (2nd tier/wholesale). Many development banks operate with a mix. Most of the banks hold a comprehensive portfolio, i.e. also offering other types of development activities than loans and guarantees, e.g. venture capital investments or advisory services.

An analysis of how the EU's national development banks play their role in addressing market failures in providing access to finance is framed by cluster analysis based on the data of the activities of the NDBs (balance sheet, annual volume of loan, guarantee and equity) and the country-specific data (real GDP per capita, SDI). This has resulted in clusters, as identified in the chapter "Data and Methods", illustrated by Fig. 3 in a 3D frame of reference.

Figure 3: Clusters of European NDBs



Source: Nyikos' compilation

Cluster 1 (marked with blue squares) comprises NDBs in countries (IT, FR, UK, ES, and DE) with a moderate SDI value and GDP, utilizing SME loans to a greater extent. In these countries, NDBs have a longer tradition and they also play a stronger role in the national economic development policies. Although financial markets are well developed and strong in these countries, their governments support SMEs through massive amounts of financial assistance and a broad range of business development instruments.

Cluster 2 (marked with green circles) contains NDBs in countries (HU, BG, HR, LV, SK, SL, CZ, PL, and EE) with different SDI values and a lower level of GDP, whereby these countries utilize SME loans to a smaller extent. These so-called cohesion policy countries implement significant amount of EU grant assistance for sustainable economic development. Nevertheless, the results of these efforts present variations (see SDI values). Also, they started to use repayable financial development instruments and they are characterized by a lower volume of the SME loans accordingly.

Cluster 3 (marked with red triangles) includes NDBs in countries (AT, SE, IE, and FI) with a higher development index and GDP which utilize SME loans to a smaller extent. In these countries there is a strong financial market in operation. Therefore, the provision of improved access to finance for SMEs does not form a key element of the country's economic development policy.

After examining the specificities of the NDBs in the different clusters and presenting the different groups, our results also confirm that despite the common goals, mandates and main specificities differences between the NDBs, even if the variations are linked to the economic situation and SDI of the country, can be captured.

3.2 Strategic goals and activities of the NDBs – the presence of sustainability finance

As prescribed in the previous chapter, in the case of financial gaps NDBs provide long-term financing solutions, a function complementary to commercial banks and private financial organisations. Sustainability and long-termism go hand in hand. Long-termism describes the practice of making decisions that have long-term objectives or consequences. Investments into environmental and social objectives require a long-term orientation, too.

National development banks have been set out to fulfil a wide variety of missions, such as promotional missions with general interest (addressing market insufficiencies) using different kinds of financial sources mainly public funds. Development banks can be 'sectoral' banks with a focus on specific sectors e.g. SME development or 'universal' development banks working on all aspects of development banking. Export-Import banks carry out traditional activities of export-import financing. Exim banks facilitate trade with foreign countries by providing financing or insurance for exports and imports[18]. Most of the development banks concentrate on providing services to both the public and private sector and for companies of any sizes. In some cases (e.g. BGK, CDC[19], CDP[20]), the broad focus is driven by the broader mandate covering export-import activities, as well. Via evaluating the strategic objectives of NDBs, it has become visible that several goals are linked to the sustainable environmental sectors and even the investment-objectives are pointing in the sustainable direction.

In 2019, the European Green Deal (EGD) was announced and presented the European Union's fundamental commitment to tackle climate and environ-

18 In line with the OECD's Arrangement on Guidelines for Officially Supported Export Credits. For the EU Member States, Article 132 of the Treaty Establishing the European Community formerly stipulated that *"Member States shall progressively harmonise the systems whereby they grant aid for exports to third countries, to the extent necessary to ensure that competition between undertakings of the Community is not distorted. On a proposal from the Commission, the Council shall, acting by a qualified majority, issue any directives needed for this purpose."* To this end, Council Directive 98/29/EC sets out provisions for the harmonisation of export credit insurance with medium and long-term cover.

19 Commonwealth Development Corporation.

20 Cassa Depositi e Prestiti.

mental-related challenges. However, for the same objectives a range of financial and economic reforms will be needed, too (Fig.4).

Figure 4: Finance and industry related reforms in the EU Green Deal

Finance reform	Economic reforms
• Sustainable Europe Investment Plan • Renewed Strategy on Sustainable Finance	• Rapid decarbonisation of energy systems • Innovation in sustainable industry • Large-scale renovation of existing buildings • Development of cleaner public and private transport • Progress towards sustainable food systems

Source: Nyikos' compilation

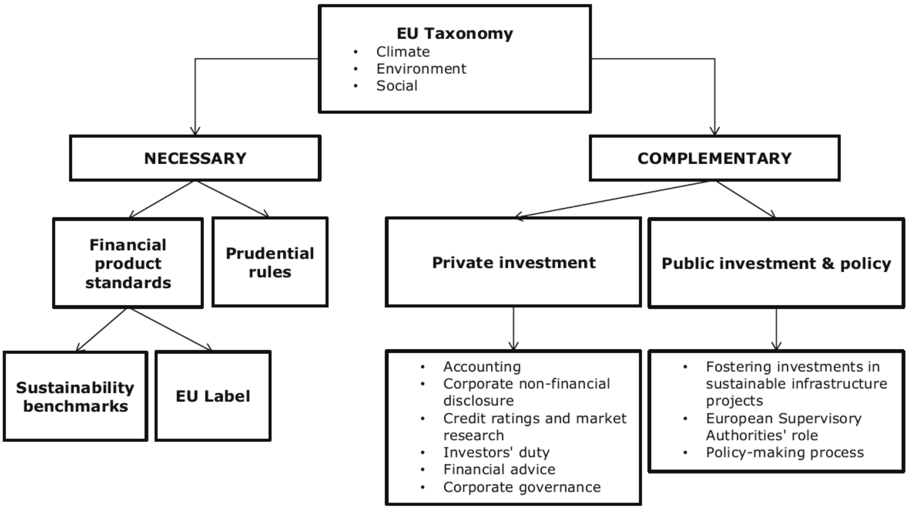
A shift of capital flows towards more sustainable economic activities must be underpinned by a shared understanding of what 'sustainable' means. In the sustainable finance area, a unified EU classification system provides clarity on which activities can be considered 'sustainable'. Accordingly, in the financial markets an additional challenge will be the implementation of a new regulation[21]. The rules governing the establishment of a framework to facilitate sustainable investment also referred to as the taxonomy regulation entered into force. This regulation prescribes specific rules for financial market participants, investors, large companies and national regulators.

The regulation states the specific requirements that companies need to fulfil. These norms are differently set (Vértesy 2018) by economic sectors[22] in order to help reaching six environmental objectives: climate change mitigation, climate change adaptation, sustainable use and protection of water and marine resources, transition to a circular economy, pollution prevention and control, and protection and restoration of biodiversity and ecosystems. As a general rule guiding the performance criteria, an economic activity is qualified as environmentally sustainable when (i) it contributes substantially to at least one of the six environmental objectives; (ii) it follows the principle of "Do No Significant Harm" to any other environmental objectives; and (iii) it complies with minimal social safeguards. Indeed, when an economic activity meets the EU Taxonomy performance thresholds it is certified as "EU Taxonomy-aligned".

21 Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020.

22 By 1 June, 2021, the European Commission will also adopt a delegated act in order to specify how these obligations should be applied in practice. The delegated act will cover the differences between non-financial and financial companies.

Figure 5: Structure and effect of EU Taxonomy



Source: European Commission[23]

The Taxonomy will be used in a range of financial products, both equity and debt based, and by private- and public-sector actors (Fig.5.). Financial market participants offering financial products in the EU are required to make Taxonomy disclosures. This is mandatory for certain types of products or offerings, and on a comply-or-explain basis for all others. Financial market participants will be required to state the following: how and to what extent they have used the Taxonomy in determining the sustainability of the underlying investments, to what environmental objective(s) the investments contribute; and the proportion of underlying investments that are Taxonomy-aligned, expressed as a percentage of the investment, fund, or portfolio. Accordingly, the Taxonomy screening criteria will first be of high level. Nevertheless, they will decrease over time, extending to the recognition of capital and operational expenditures that contribute to meeting the screening criteria over time, and the inclusion of improvement measures to reduce emissions and improve energy efficiency where the best available technologies and practices are presently used. While all economic activities have a role to play, not all economic activities will substantially contribute to environmental goals (Nyikos, 2022).

Infrastructure projects supported by NDBs range from transport networks (railways, highways, seaports, airports, and so forth) to energy networks (power grids, gas and oil pipelines, and so on) and generation (power plants, renewable energy, etc.) or in rent and price-controlled social housing and educational infrastructure. The capacity to develop and implement sustainable projects, however, varies widely across the EU and between sectors (Hoffman, 2018; Hajdu et al., 2016). A wider range of advisory services and technical assistance offered by the NDBs could advance a larger pipeline of sustainable projects. Beyond large-scale infrastructure projects (Béres et al., 2019), the

23 COM(2018) 97 final.

clean energy transition also requires adequate finance to be made available for smaller-scale, distributed projects.

Examining the activity areas and investments of NDBs together with the NACE codes (see in Tab.5.) it has to be emphasised that besides the clearly sustainable sectors other economic activities could meaningfully promote sustainability as well: for example, an economic activity being performed in an environmentally sustainable manner such as the so called greening activities. Additionally, we should also recognize enabling activities. These extend to economic activities, which through the provision of their products or services enable the making of a substantial contribution in other activities (e.g. an economic activity manufacturing a component that improves the environmental performance of another activity).

The database of the Survey on European Development Banks and Promotional Financial Institutions 2016 reflects that European development banks provide a significant proportion of their funding to SMEs and medium-sized companies in economic sectors under EU Taxonomy rules such as Manufacturing, Electricity, gas, steam and air conditioning supply, Construction, Transporting and storage and ITC. In the Water supply, sewerage, waste management sectors they essentially finance medium- and large companies as well as public companies. Looking at the economic sectors financed by NDBs it is clear that their investments are represented with a higher weight in sustainable sectors per se. For more precise findings, a more in-depth analysis is needed in order to identify the actual project content and its taxonomy classification (in addition to the economic sector of the projects financed). Nevertheless, such public data are currently not available. However, based on the long-time financial mandate together with the climate objectives of the European countries in the strategic development plans (which have to be supported by NDBs) all the relevant factors are pushing NDBs in the direction of sustainable finance.

Accordingly, based on these results we conclude that there is no need for a significant restructuring of the activities of the European national development banks for complying with the EU taxonomy rules.

Table 4: Economic sectors and project owners financed by the NDBs

	Micro firms, entrepreneurs	Small companies	Medium-sized companies	Large companies	Public companies	Avg	NACE Sustainable Activity
Agriculture, forestry and fishing	30%	40%	40%	0%	0%	18%	Afforestation Rehabilitation, Reforestation Reforestation Existing Forest Management Conservation forest Growing of perennial crops Growing of non-perennial crops Livestock production
Mining and quarrying	0%	0%	10%	20%	10%	7%	
Manufacturing	60%	70%	80%	50%	30%	48%	Manufacture of low carbon technologies Manufacture of cement Manufacture of aluminium Manufacture of iron and steel Manufacture of hydrogen Manufacture of other inorganic basic chemicals Manufacture of carbon black; Manufacture of other inorganic basic chemicals Manufacture of disodium carbonate (soda ash); Manufacture of other inorganic basic chemicals Manufacture of chlorine; Manufacture of other organic basic chemicals Manufacture of fertilizers and nitrogen compounds Manufacture of plastics in primary form

	Micro firms, entrepreneurs	Small companies	Medium-sized companies	Large companies	Public companies	Avg	NACE Sustainable Activity
Electricity, gas, steam and air conditioning supply	60%	70%	80%	70%	50%	55%	Production of Electricity from Solar PV; from Concentrated Solar Power; from Wind Power; from Ocean Energy; from Hydropower; from Geothermal; from Gas (not exclusive to natural gas); from Bioenergy (Biomass, Biogas and Biofuels) Transmission and Distribution of Electricity Storage of Electricity; Storage of Thermal Energy; Storage of Hydrogen Manufacture of Biogas or Biofuels Retrofit of Gas Transmission and Distribution Networks District Heating/Cooling Distribution Installation and operation of Electric Heat Pumps Cogeneration of Heat/cool and Power from Concentrated Solar Power; from Geothermal Energy; from Gas (not exclusive to natural gas); from Bioenergy (Biomass, Biogas, Biofuels) Production of Heat/cool from Concentrated Solar Power; from Geothermal; Gas (not exclusive to natural gas); from Bioenergy (Biomass, Biogas, Biofuels); using Waste Heat
Water supply, sewerage, waste management	40%	40%	70%	70%	60%	47%	Water collection, treatment and supply Centralized wastewater treatment Anaerobic Digestion of Sewage sludge Separate collection and transport of non-hazardous waste in source segregated fractions Anaerobic digestion of bio-waste Composting of bio-waste Material recovery from non-hazardous waste Landfill gas capture and utilization Direct Air Capture of CO2 Capture of anthropogenic emissions Transport of CO2 Permanent Sequestration of captured CO2

	Micro firms, entrepreneurs	Small companies	Medium-sized companies	Large companies	Public companies	Avg	NACE Sustainable Activity
Construction	70%	80%	90%	60%	30%	55%	Construction of new buildings Building renovation Individual renovation measures, installation of renewables on-site and professional, scientific and technical activities Infrastructure for low carbon transport (water transport or land transport)
Wholesale and retail trade	70%	80%	90%	40%	20%	50%	
Transporting and storage	70%	80%	80%	50%	30%	52%	Passenger Rail Transport (Interurban) Freight Rail Transport Public transport Freight transport services by road Interurban scheduled road transport Inland passenger water transport; Inland freight water transport Passenger cars and commercial vehicles
Accommodation and food services activities	70%	80%	80%	30%	20%	47%	
Information and communication	60%	70%	70%	40%	30%	45%	Data-driven climate change monitoring solutions Data processing, hosting and related activities
Financial and insurance activities	10%	20%	30%	30%	10%	17%	
Real estate activities	30%	30%	50%	50%	40%	33%	Acquisition and ownership of buildings

	Micro firms, entrepreneurs	Small companies	Medium-sized companies	Large companies	Public companies	Avg	NACE Sustainable Activity
Professional, scientific and technical activities	50%	60%	70%	30%	30%	40%	
Administrative and support service activities	40%	50%	50%	30%	20%	32%	
Public administration and defence	20%	20%	20%	30%	20%	18%	
Education	20%	20%	30%	30%	30%	22%	
Human health and social work activities	40%	50%	50%	30%	40%	35%	
Arts and entertainment	40%	50%	60%	40%	40%	38%	
Other services activities	20%	30%	30%	0%	0%	13%	
Average	42%	49%	57%	37%	27%	35%	

Source: Nyikos' compilation, websites and Survey on European Development Banks and Promotional Financial Institutions, 2016.

4 Conclusion

Europe's marked shift into the sustainable economy direction, compounded with the socio-economic impact of the coronavirus pandemic have created unprecedented investment finance needs. The research focuses on the role NDBs can play in addressing the apparent financing gap. First their governance and operational modes, as well as their specific activities have been analysed.

National development banks have a broad range of specific missions. They are addressing market insufficiencies, such as the SME-financing gap or long-term infrastructure finance, covering the hidden transaction costs of exports. They foster innovation, address general-interest missions from supporting the agricultural sector to developing infrastructure and promoting tourism. These missions all respond to market needs, which, for various reasons are underserved by the private banking sector. Successful development banks have evidenced a clearly defined mandate and an efficient split of roles and responsibilities with other institutions. Requirements on development banks do not differ from standard commercial banks in terms of a professional approach to risk management and banking operation in general. However, development banks are using public money to address market failures and financing gaps and therefore the level of government involvement to define the conditions of their activities is higher.

National development banks functioning in Europe could be categorized in accordance with the level of government influence, the financial market situation as well as the level of economic development and the sustainable development index of the country. According to the level of government influence, two models can be set up the "earn money" model and the "spend money" model. Based on the analyses of the relevant data three distinct clusters emerged which were clearly underpinned by the examined information and accorded with the operational experiences.

The research looked at the different management and investment areas of the European national development banks. It explored their interactions and implementation practices as well as how they adhere to the sustainable finance requirements and regulation of the European Taxonomy.

We concluded that there is no need for the European NDBs to significantly change their strategic goals to harmonise with the EU new green strategic goals on sustainable finance as their original setup and objectives are already in accordance with the new expectations (H1). Having analysed the investment-related information, which was obtained via the survey with contributions from 18 European NDBs compared with the NACE categorization we recognized that they do not need to change significantly the direction of their investments as NDBs invest mostly in the economic sectors, which the new taxonomy system classifies as sustainable (H2). However, further research efforts are still needed in order to identify the actual project content and its taxonomy classification.

The study offers an important contribution for these organizations when identifying new financing pathways, which permit to deliver timely and adequate flows of public investment to achieve Europe' sustainable development goals, set forth in the Green Deal.

A key challenge to analysing the European situation rests with mapping and evaluating all of the aspects and defining precise and workable solutions. In this respect, one of the major contributions of the present study is its construction of structured information presenting relevant conditions relating to sustainable finance for development banks/funding agencies in Europe. Although this is not a comprehensive overview — the scope of the total European financial markets and how they relate to sustainable development are too broad a theme to be captured within a single review — the article represents a starting point on which further investigations can be built upon. Additionally, the European Commission has recently adopted a new Digital Finance Package, including Digital Finance and Retail Payments Strategies, legislative proposals on crypto-assets and digital resilience that could further widen the agenda of this research direction.

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Appendix: Survey questions (Date of comparison: December 2016)

Basic information
Web link
Country
Year of establishment
Legal form (joint stock company / public entity / etc.)
Shareholder structure
Specialized legislation / act on financial institution (yes/ no)
Current number of employees
Regulation and statistical classification
Banking supervision or other regulation
Subject of CRR / CRD IV
Eurostat classification (government sector - S 13 or financial sector - S 12)
Other institutions in the country providing public aid through financial instruments to sectors/regions/ clients, not covered by activities of the institution being reviewed
Business model (on-lending / direct contact with client; both, etc.)
Branch network
Public procurement
Is the institution a Contracting Authority (EU Directive about public procurement)? (yes/no)
Public procurement (in-house, participation in public tender)
Status of a »special credit institution« (yes/no)
Types of supported activities pursuant to financial products (loan, refinancing loan, subordinated loan), guarantee to bank, guarantee to client (final beneficiary), venture capital - client, venture capital - fund, loan - fund
Support of entrepreneurship
Support of energy savings and utilization of renewably energy sources
Support of housing

Support / Development of transport / energy / municipal and other infrastructure
Support of research & development
Support of agriculture and forestry
Support of export
Development assistance
Current accounts and cash desks (yes / no)
Advisory services (yes / no)
Accepting deposits from individuals (natural persons) (yes / no)
Accepting deposits from corporates persons (yes / no)
Is the institution profit oriented (yes / no)
Sources of income (yes / no)
a) Grant of the founder / public budget on operational costs
b) Fees from clients
c) Fees from banks
d) Fee from state
e) Earnings from special long-term resources (deposits)
Loss coverage
Risk fund from state (yes / no)
First piece loss (yes / no)
Other
Bonds issuer (yes / no, issued volume)
EIAH (signed MoU yes / no)
Expectation of significant changes