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Auditing for Change

Sustainability, Digitalisation and Audit Innovation at the Tribunal de Contas



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 - Environmental sustainability auditing
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 - New audit planning methods
 - Data-driven risk-assessment tools

2026-2028 Strategic Plan

- Tribunal de Contas defines sustainability and digital transformation as structural dimensions shaping the future relevance of
 - Public oversight
 - Internal evaluation of the institution itself
- Stemming from past experiences, those areas are now an institutional priority
- In fact, those areas constitute two of three strategic objectives:
 - Strategic Objective 2, “Management and Sustainability”
 - Strategic Objective 3, “Digital Transformation and Quality”

Environmental Sustainability Auditing

- Set of audits focused on sustainability and environmental issues
- Ex. Audit Report No. 15/2024 – 2nd Section, available at <https://www.tcontas.pt/pt-pt/ProdutosTC/Relatorios/RelatoriosAuditoria/Documents/2024/rel015-2024-2s.pdf>

Environmental Sustainability Auditing (Audit Report No. 15/2024)

- Audit on sustainable development in the areas of industry, innovation and infrastructure
 - Assessed the existence and effectiveness of systems and methods to accomplish the objectives enshrined in the 2030 Agenda, in particular SDG 9
 - SDG 9 was defined as a priority for Portugal
 - But found to be one of the least implemented at the time of the audit

Environmental Sustainability Auditing (Audit Report No. 15/2024)

- Main conclusions:
 - Lack of institutionalised coordination, continuity and effective oversight in the implementation of SDG 9 [lack of institutional accountability]
 - Guiding to a conclusion of lack of political leadership (the ones who had the task to establish the organisational framework needed)
 - Focus on international reporting (formal adherence) rather than creating the conditions to thrive
 - No existing framework related to financing needed investments

Environmental Sustainability Auditing (Audit Report No. 15/2024)

- Recommendations
 - Government urged to publicise the strategic vision to implement SDG 9
 - Need for clarification of the implementation structure
 - Budgetary integration of resources to implement SDG 9
 - Establishment of an adequate structure capable of monitoring and effectively controlling the timely execution of measures and of reporting annually

Environmental Sustainability Auditing (Audit Report No. 15/2024)

- Reflection
 - Reveal the capacity of auditing to identify risks in new domains and assure implementation of new objectives
 - Auditing as a mean to influence public power in *effectively* pursuit of public policy objectives related to environmental sustainability
 - SAls as a third-party “advisor” in correcting public policy to address new challenges

Public Sector Digitalisation Auditing

- Tribunal de Contas audited the execution of major public investments designed to support public sector digitalisation
- Ex. Follow up Report No. 4/2025 – 2nd Section available at <https://www.tcontas.pt/pt-pt/ProdutosTC/Documents/rel004-2025-2s.pdf>

Public Sector Digitalisation Auditing (Follow up Report No. 4/2025)

- Objective
 - Assess investments in computers and connectivity to schools (C20 – Digital Schools programme)
 - Part of a continuous oversight process starting with a previous audit report in 2022. Previous audit concluded:
 - The programme was still in an early stage
 - RRP (Recovery and Resilience Plan) monitoring and control systems were being improved and had not yet fully completed some verification procedures
 - Assess the stage of the programme
 - Assess the implementation of recommendations

Public Sector Digitalisation Auditing (Follow up Report No. 4/2025)

- Main conclusions
 - Execution rate: 64%
 - Subsequent revisions to the programme make performance difficult to assess
 - Public bodies are always being diverted from the original deadline and targets, which therefore remain unmet
 - It gave an interesting insight for future audits
 - “... an impact assessment of the goals of C20 – Digital Schools, within the ecosystem of Digital Education and with a holistic vision of public policy, is an unavoidable challenge.”
 - A trend to assess results, not just fulfil of targets and goals previously defined

Transforming from Within: Digital Innovation at the Tribunal de Contas

- Strategic Objective 3 – Digital Transformation and Quality – drives internal modernisation
 - Moving beyond traditional audit methods
 - Embedding data analytics and AI into audit workflows
- Two flagship digital initiatives respond to this strategic commitment:
 - SIPA IX – Integrated Risk-Based Audit Planning System
 - AI-assisted risk assessment in public procurement

SIPA IX – Risk-Based Integrated Audit Planning System

- SIPA IX: Risk-Based Integrated Audit Planning System
 - Synergy between the Audit Division IX (DAIX) and the Department of Information Systems and Technologies (DSTI)
 - Purpose: identify higher-risk entities and areas to maximise audit effectiveness
- Key strategic questions addressed:
 - Which entities and areas present the highest risk profiles?
 - How to optimise resource allocation and coverage?
 - How to ensure transparency and technical grounding in audit selection?
 - Do we have knowledge of the entity's audit record?

Main Goals



Which entities present the highest risk?

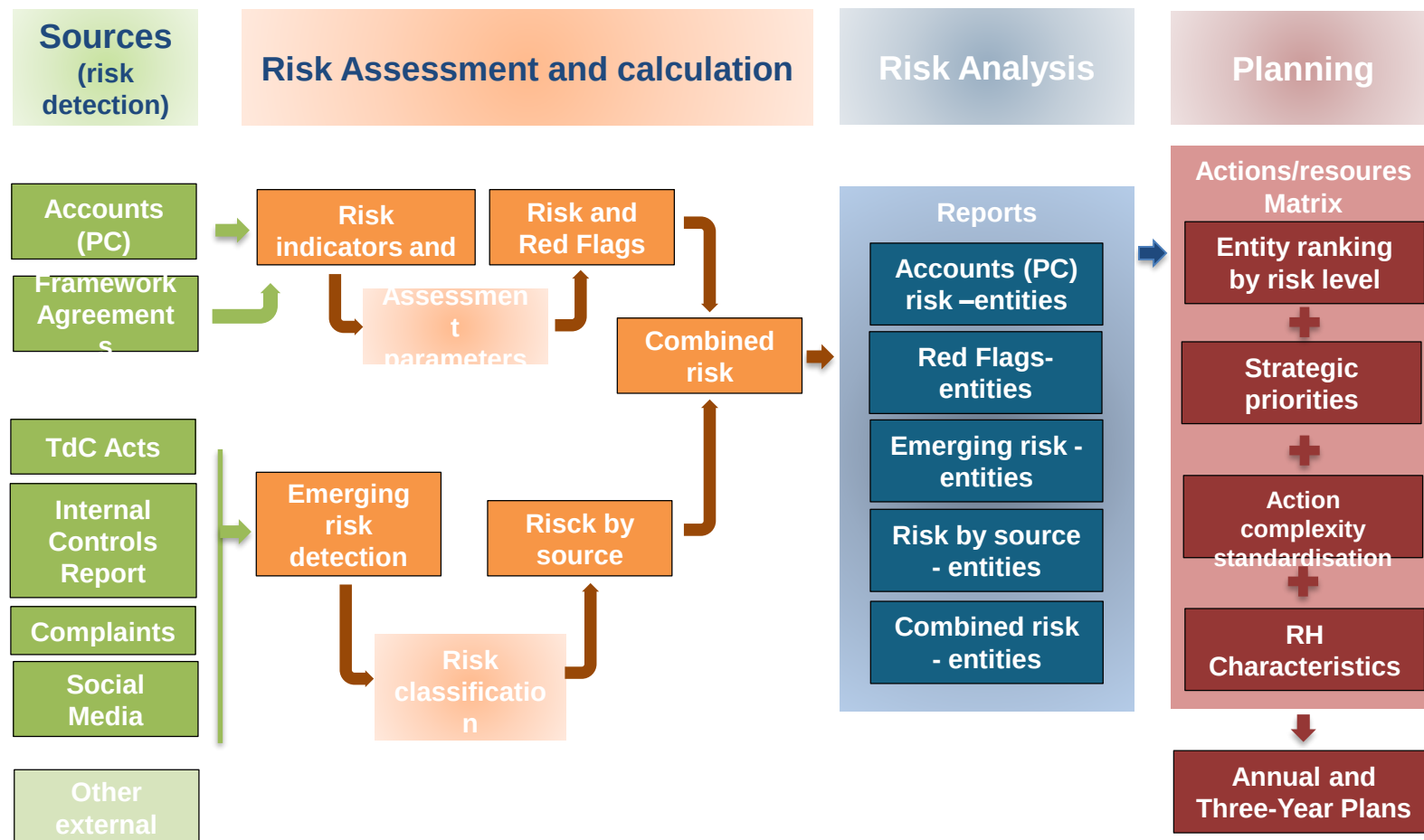
Which risk situations are most frequent or most significant?

How to ensure broader coverage of the entity universe and a greater perception of control?

What is the expected execution time for actions at standard complexity levels?

Given the characteristics of available staff, which actions can be included in the Plans?

How many auditors (with what profiles) would be needed to carry out all actions above a pre-determined risk level?



Framework
Agreement

Reports

Internal
Control
Reports

Complaints

Social
Media

Accounts
(PC)

Sources of risk identification

Risk area	Risk category	Emerging risk	
			
Risk assessment criteria		Weight	Range
Materiality		0,25	0 to 3
Timeliness		0,20	0 to 3
Economy, efficiency and effectiveness		0,20	0 to 3
Recurrence e propagation		0,25	0 a 3
Social relevance		0,10	0 a 3

Municipalities: 25 indicators; 4 Red Flags; 4 risk intervals (0-3)

Municipality-owned corporations: 24 indicators; 6 Red Flags; 4 risk intervals (0 to 3)

Other entities: to be developed.

Ranking of entities by combined risk - Example

Rank	Municipalities	Red Flags	Combined risk	Risk						Risk				
				Accounts (PC)	Financial balance	Performance	Liquidity	Dist. Accounts	Legal compliance	Reports	Complaints	Social Media	Framework Agreements	Internal Control Reports
1	Vila Real de Santo António	0	1,66	1,46	0,67	1,83	2,14	1,00	1,00	2,28	2,32	2,96	2,47	1,25
2	Tarouca	1	1,62	1,42	0,83	2,00	1,86	1,00	0,75	2,96	1,53	2,58	2,36	1,75
3	Tábua	1	1,59	1,36	1,00	1,75	1,71	1,00	1,00	2,57	2,62	1,17	2,12	2,96
4	Mira	0	1,56	1,30	0,33	2,60	1,57	1,00	0,75	2,75	1,16	2,75	2,07	2,81
5	Cuba	2	1,55	1,38	0,33	2,17	2,14	1,00	0,50	1,40	2,77	1,54	2,11	2,61
6	Ribeira de Pena	0	1,55	1,25	0,83	2,17	1,14	1,00	0,75	2,78	2,53	2,38	1,61	2,96
7	Monchique	0	1,54	1,29	0,50	2,50	1,57	1,00	0,25	2,70	2,35	1,07	2,31	2,97
8	Freixo de Espada à Cinta	2	1,51	1,30	0,83	2,00	2,00	1,00	0,00	1,43	1,81	2,85	2,81	1,69
9	Carrazeda de Ansiães	0	1,50	1,42	0,67	2,00	1,43	1,00	1,75	1,27	1,14	1,46	2,57	2,38
10	Batalha	1	1,50	1,25	0,83	2,17	1,29	0,00	0,75	1,92	2,39	2,53	2,46	2,01
11	Figueiró dos Vinhos	1	1,50	1,25	0,67	2,33	1,43	1,00	0,25	2,80	1,98	2,92	1,72	1,88
12	Vila Pouca de Aguiar	0	1,50	1,35	0,60	2,67	1,14	1,00	0,75	1,05	1,85	1,82	2,75	2,31
13	Moura	0	1,50	1,17	0,67	2,20	1,14	0,00	1,00	2,25	2,31	2,92	2,51	2,31
14	Lousã	1	1,49	1,38	0,83	2,33	1,43	1,00	0,75	2,50	1,33	1,86	1,74	1,67
15	Peniche	1	1,48	1,21	0,83	2,17	1,14	0,00	0,75	1,74	2,87	2,53	2,02	2,40

https://teams.microsoft.com/l/message/19:1455c39f-d538-47b0-8cb5-3905b66a6a5e_84cf95ba-8ffc-4601-8d2f-5f4cec24cf68@unq.gbl.spaces/1780670789827?context=%7B%22contextType%22%3A%22chat%22%7D

 Model-generated values

 Randomly simulated values



Takeaways

- Planning based on risk criteria
- Maintain an “audit record” of entities
- Optimise the allocation of existing resources
- Establish a chain of accountability for results
- Identify the scale of high-risk entities and situations for which no resources are available

AI-Based Risk Assessment in Public Procurement

- A cross-cutting model designed to strengthen the Portuguese SAI's oversight of public procurement
 - Uses data science, advanced analytics and artificial intelligence to identify higher risk cases
 - Supports audit selection by showing where to focus and what to analyse
- Main purpose: more efficient, targeted and transparent control of public spending
- Initiative developed in partnership with OECD and NOVA University Lisboa
 - OECD managed the project
 - NOVA provided the technical expertise
- To lead this digital transformation, the Tribunal de Contas appointed the Department for Innovation, Technology and Methodologies (CITM)

Objective

- Improve the Tribunal de Contas identification of risks and early detection of irregularities
 - Through advanced data analysis and machine learning
- Develop and refine a risk assessment methodology
 - Including a data-driven risk model to support audit assessments
- Align with the Court Digital Transformation Strategy
- Increase the effectiveness and efficiency of the public procurement system
- Help auditors concentrate limited resources on the procedures with the greatest potential impact

How the Model Works

- Public procurement represents a major share of public expenditure and is exposed to multiple risks
- The model is fed daily with contract data from various data sources
- Machine learning algorithms compute risk scores for contracting entities
 - The model is built around precise risk indicators and automated identification of red flags
 - Indicators focus on detection of illegalities and irregularities
 - Efficiency-related criteria are also incorporated
- The platform serves a dual purpose:
 - Identify entities with the highest risk profiles when selecting audits
 - Direct audit efforts more effectively within a selected entity

Risk Indicators and Red Flags

- Competition and market risks
 - Single-bid tenders, repeated suppliers, limited market opening or unusual bidding patterns
- Integrity and transparency risks
 - Direct awards, weak justification, missing publication, conflicts of interest or links between entities
- Execution and strategic risks
 - Additional works, price changes, delays, data inconsistencies and weak monitoring of green or social criteria

Data Sources and Institutional Cooperation

- The model depends on combining internal and external data sources
 - Internal TdC systems: eContas, GENT, GDOC and audit-related information
 - External sources: BASE/IMPIC procurement data, beneficial ownership data, tax data and competition-related information
- Institutional cooperation is therefore decisive
 - IMPIC, Autoridade da Concorrência, Autoridade Tributária e Aduaneira e Instituto dos Registos e Notariado are key partners
 - Interoperability, access protocols and data protection rules condition the depth of the model

Analytical Approaches

- Rule-based approach
 - Predefined indicators identify clear irregularities or warning signs
- Inference-based approach
 - Relationships reveal patterns between contracting authorities, suppliers, contracts and beneficial owner
- Model-based approach
 - Machine learning AI can rank or predict higher-risk procurement cases

- **Challenges remain:**
 - Ensuring access to critical data – e.g. data from the tax authorities
 - Overcoming data quality issues
 - Automating processes to support more effective audits
- **Critical safeguards:**
 - Data quality, algorithm transparency, explainability, privacy and protection of personal data
 - Ethical and responsible implementation aligned with Independence, integrity, accountability and transparency
- **Expected impact:**
 - Earlier detection of risk, better audit prioritisation and stronger public procurement oversight
 - Greater trust from audited entities and citizens in the reliability of audit work

Final Remarks

- The Tribunal de Contas' audit work supports shifts in public decision-making towards sustainability and digitalisation
- Data analytics and digital tools can improve oversight effectiveness
- The Tribunal de Contas experience highlights the value of partnerships
- A replicable model for other SAIs seeking to modernise their audit planning

Thank you!

