Paraguay

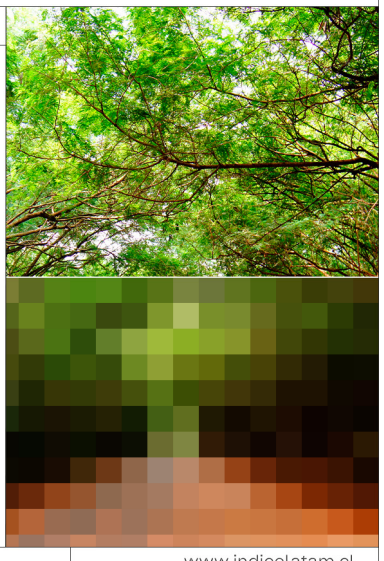
Index Score **18,82** | Ranking **11**

6.780.744 / Population
5.891,50 USD / GDP per capita
0,14 / % allocated to R&D
0,717 / Human Development Index (HDI)

Infrastructre Average	**32,85**
Data Availability Average	**32,54**
Talent Development Average	**7,64**
Enabling Factors Average	**24,35**
Research Average	**35,53**
Innovation and Development Average	**25,89**
Adoption Average	**9,93**
Research, Development and Adoption Average	**23,78**
International Vinculation Average	**0,00**
Vision and Institutionality Average	**0,00**
Regulation Average	**25,00**
Governance Average	**8,33**

OVERALL SITUATION

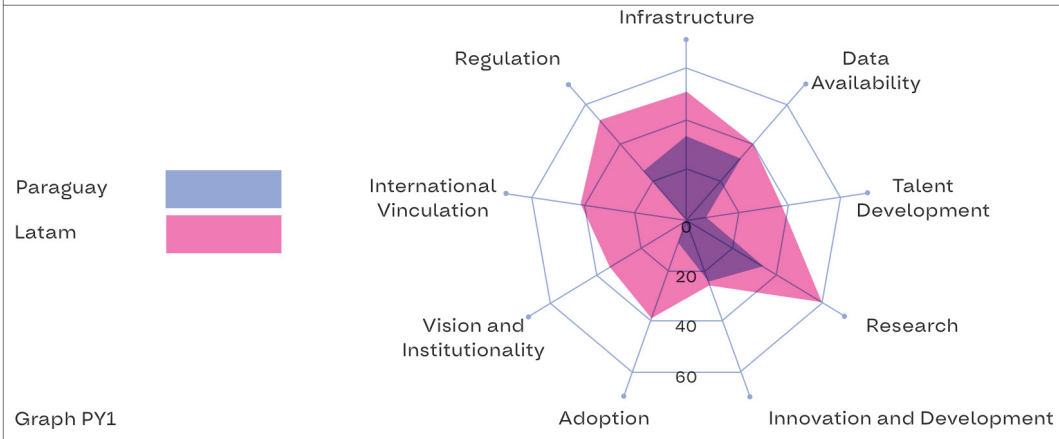
Paraguay shows significant challenges in several areas of the ILIA, which is reflected in its last place position. The country faces challenges in infrastructure, talent development, research, R&D, adoption and the overall governance dimension. However, there are opportunities to improve and develop these areas, leveraging the potential of its scientific community to drive technology adoption. The path to further development in the field of AI will require coordinated efforts and a strategic vision to bridge the gaps. There is no evidence of a significant level of talent migration for the country and internationalization of scientific exchange is not evident.



Paraguay

Index Score **18,82**

Ranking **11**



Graph PY1

GENERAL FINDINGS

Paraguay has a great potential to develop a solid infrastructure to boost artificial intelligence (AI) in the country; currently, it is slightly below the Latin American average in connectivity. In computing, it presents a mixed situation, with a good position in the cloud sub-indicator, but lacks supercomputers and has few data centers. In terms of devices, although it is close to the regional average in mobile device subscriptions, the percentage of households with computers is significantly below the regional average, which translates into low digital penetration. In relation to the Data Barometer, it faces challenges, as most of the sub-indicators are below the Latin American average, except for use and impact. Governance also shows values close to the average, and improving data availability, capabilities and governance will be essential for the development of AI in the country.

In terms of talent development, Paraguay faces the challenge of generating open AI courses, taking advantage of the base offered by having ICT incorporated into the national curriculum. In terms of professional training in AI, Paraguay has the lowest values in each of the sub-indicators in the region, which offers possibilities for improvement and learning in each element. In relation to advanced human capital, the country exhibits a structural weakness that must be addressed to generate minimum conditions that allow the AI ecosystem to flourish.

Regarding research, it shows auspicious indicators and opportunities for improvement. It stands out in the productivity and impact of AI research, which indicates that local scientific production shows a relatively higher quality than the average for the region. However, there are challenges in the small number of AI publications and active researchers. These areas can be strengthened to boost research in the field. In terms of R&D, Paraguay exhibits open source productivity above the Latin American average, but the quality and impact of open source is below average. The number of patents is at the average for the region, while it exhibits one of the lowest scores at the regional level in government promotion of investment in AI.

In terms of governance, there is no national AI strategy or equivalent, which is a relevant gap. This represents an opportunity to involve different actors in the joint formulation of a transversally legitimized strategy. At the international level no level of involvement is detected either, while in regulation there is only regulation associated with the Cybersecurity Law. In this dimension, the main opportunities for immediate improvement for Paraguay are detected.

Paraguay

Index Score **18,82** | Ranking **11**

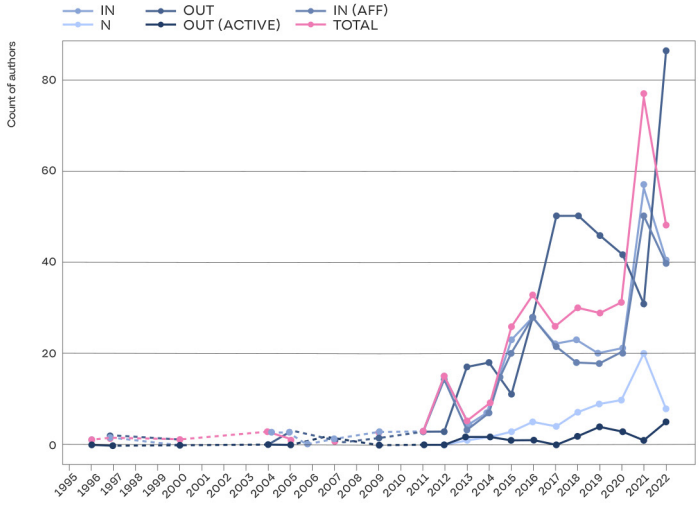
TALENT DRAIN:

It is important to consider that the curves of the talent drain graphs for Paraguay present a more irregular behavior than for other countries in the region, since the number of authors is lower. In any case, from the data, a marginal but constant increase can be seen from 2011 to 2022, but it is less than that of the rest of the elements of analysis (out-active). In addition, we observe that the number of authors was almost zero until 2012, only surpassing 30 authors in 2016 (total) and 2021, when it surpasses all the other curves in the graph. As for Latin America in 2022, we see a negative impact, probably due to the pandemic.

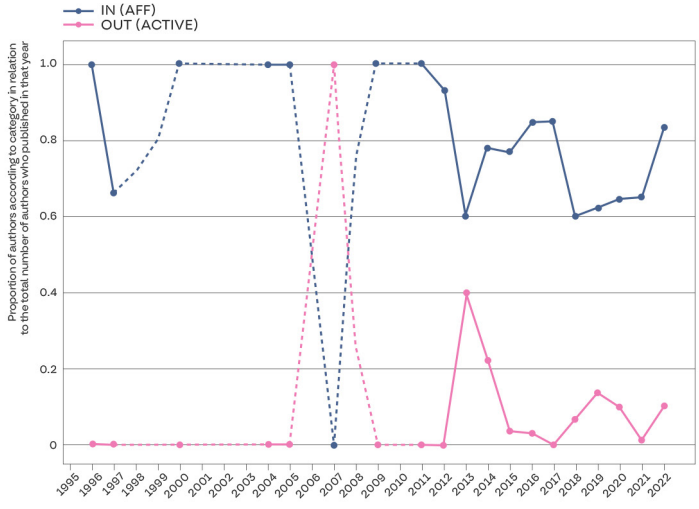
The number of authors who constantly publish in IA has increased throughout the series, but remains low, only in 2021 did it exceed 20 (N). In addition, those who published in other countries and began to publish in Paraguay have progressively increased (in-aff), especially since 2021, an increase that is also reflected in those publishing for the first time in IA (In).

Since 2015, the number of authors integrating AI concepts in their publications has been increasing (out) reaching 86 its best year, but it cannot be affirmed that there is a strong trend towards transdisciplinarity in AI as there is in the rest of the region (see Graph PY2).

Talent migration: Paraguay / Graph PY2



Talent migration: Paraguay / Graph PY3



The high variability in the first 20 years is due to the fact that the academic community was still small, so the mobility of few authors has an impact on the curves. Graph PY2 shows that the proportion of authors who had not published in the region and who do so in the year of analysis, although it has jumps, is consistently high, but decreases slightly over time (in-aff), indicating that foreign influence in the discipline for the country is high. On the other hand, due to the low number of authors, it is not possible to identify a clear trend of talent migration (see graph PY3).

Paraguay

Index Score **18,82**

Ranking **11**

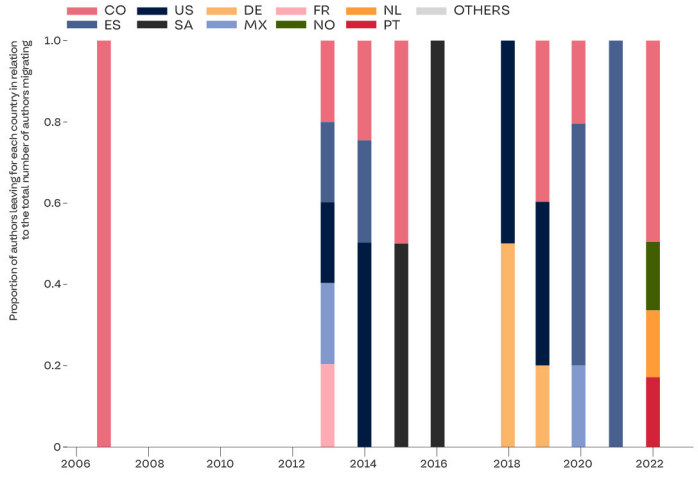
TALENT DRAIN:

Regarding the origin and destination of the authors, it is important to point out that we have a small sample to make a more complete longitudinal descriptive analysis of the country's situation. In any case, the importance of Spain and Colombia can be seen, probably because of the language affinities both for those who arrive and for those who leave. The exchange with the USA is also noteworthy.

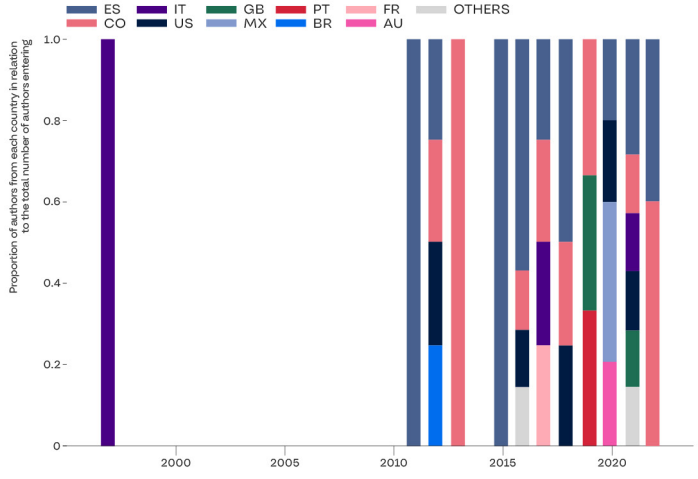
Most of the authors entering Paraguay seem to be those returning from postgraduate studies, due to the mimicry of patterns of exit and entry. At the regional level, we observe the recurrence of these migration patterns described above, both for arrivals and departures. Unlike the region, China does not appear as a destination or origin, nor is there a decrease in the relative importance of European countries and the USA.

The phenomenon of diversification of destinations is also absent, possibly due to the low amount of scientific exchange of authors both within and outside the country (see Graph PY4).

Talent migration: Where are the authors that published in Paraguay going? / Graph PY4



Talent migration: Where does the authors that publish in Paraguay come from? / Graph PY5



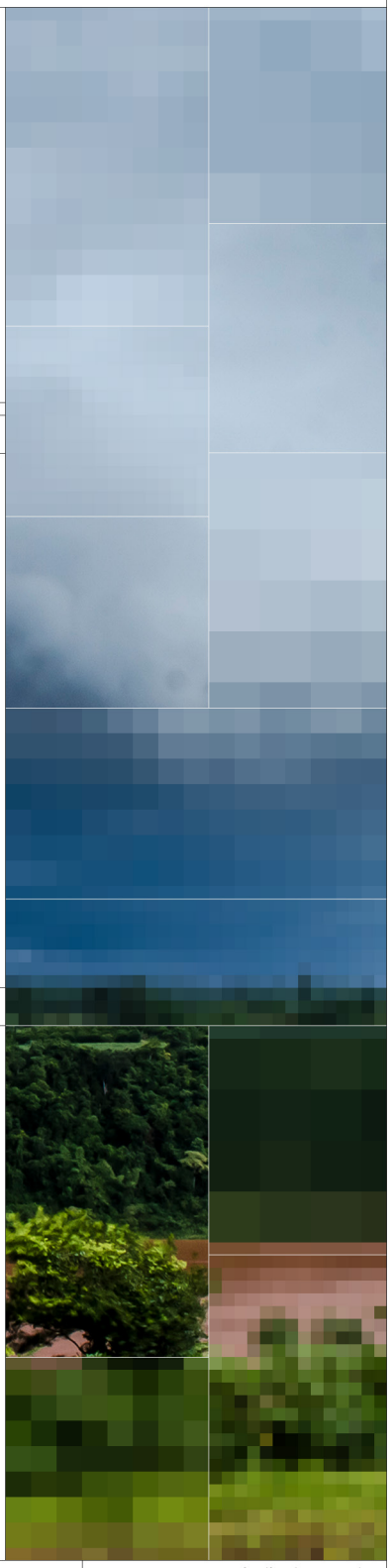


TABLE PY 1 Summary of scores and ranking in each sumdimension and indicators for Paraguay

Dimension	Subdimension	Indicators	Paraguay	LAC Average	Ranking
Enabling factors	Infrastructure	Conectivity	34,079	56,320	11
		Computing	14,100	33,725	11
		Devices	50,387	63,597	11
	Infrastructure average		**32,855**	**51,214**	**12**
	Data	Data barometer	32,548	39,800	7
	Data availability average		**32,548**	**39,800**	**7**
	Talent development	AI literacy	0,000	48,958	6
		AI professional formation	4,253	33,888	9
		Advanced human capital	18,687	28,053	6
	Talent development average		**7,647**	**36,966**	**12**
Enabling factors average			**24,350**	**42,660**	**11**
Research, development and adoption	Research	Research	35,532	58,471	11
	Research average		**35,532**	**58,471**	**11**
	Innovation and development	Development	31,119	24,768	4
		Innovation	20,672	24,684	3
	Innovation and development average		**25,896**	**24,726**	**4**
	Adoption	Use of AI in companies	11,211	25,798	6
		Public promotion of AI	8,650	50,734	11
	Adoption average		**9,931**	**38,266**	**11**
Research, development and adoption average			**23,786**	**40,488**	**10**
Governance	Vision and institutionality	AI Strategy	0,000	35,417	8
		Social involvement	0,000	21,875	5
		Institutionality	0,000	43,750	2
	Vision and institutionality average		**0,000**	**33,681**	**8**
	International vinculation average		**0,000**	**45,833**	**4**
	Regulation average		**25,000**	**54,167**	**4**
Governance average			**8,333**	**44,560**	**9**
AI Index			**18,823**	**42,615**	**11**