Michela Bastianelli, Davide Premutico

The importance of addressing “skills mismatches”: Skill Gap Analysis (SGA) at the service of the Italian Employability Guarantee for Workers Programme (GOL)

8th International Astril Conference

THE FUTURE OF WORK: TECHNICAL PROGRESS, ARTIFICIAL INTELLIGENCE AND WORKING TIMES
SCUOLA DI ECONOMIA E STUDI AZIENDALI

ROMA - 23 - 24 JANUARY 2025

A brief introduction

In recent years, technological, digital, and green innovations have been widely adopted across economic sectors, significantly transforming industries and the nature of work (CEDEFOP, 2023). These changes have brought numerous benefits in terms of efficiency, productivity, and sustainability but have also introduced **new challenges, particularly in aligning the skills required in the labor market with those possessed by the workforce.**

The rapid advancements in artificial intelligence (AI) and machine learning have further accelerated this revolutionary process, fundamentally altering business operations and the skill sets needed for emerging roles. However, **this rapid evolution has intensified the issue of the skills mismatch, i.e., the misalignment between the skills employers seek and those available among workers (one typology of mismatch). Today, the pace at which required skills evolve often surpasses individuals' capacity to acquire them through traditional learning methods**.

Recent studies reveal that approximately **75% of employers face challenges in finding candidates with critical competencies, while job seekers increasingly struggle to secure employment due to their inability to meet market expectations** (Manpower, 2024; Pouliakas and Wruuck, 2022; Brunello and Wruuck, 2021; OECD, 2019). This phenomenon not only hampers employment prospects but also slows economic growth, threatens social cohesion, and limits the inclusion of vulnerable groups.

.

Some evidences from PIAAC adults and employers surveys (2023)

About **one-third of workers across OECD countries are mismatched to their jobs, whether in terms of their qualifications, skills or fields of study**. Over-skilling is more common than under-skilling in all countries except Estonia, Finland, Japan and Norway. Across countries, **10% of workers say that they do not have the skills required for their jobs**. Although the extent of mismatch varies, most countries and economies could benefit from better alignment of workers' skills with jobs to increase productivity and the returns to human capital investment.
Source: OECD (2024), Do Adults Have the Skills They Need to Thrive in a Changing World?: Survey of Adult Skills 2023, OECD Skills Studies, OECD Publishing, Paris, https://doi.org/10.1787/b263dc5d-en

The three skill areas most in need of improvement, identified by businesses, are technical, problem solving and teamwork skills. There are notable differences in the data, with businesses in the Netherlands and Slovak Republic, for example, rating customer handling among the top three gaps. Businesses in the Netherlands also highlight management skills as among the three main deficiencies. These skills are often not the focus of traditional academic programmes, which can leave graduates lacking in areas that are critical for career success. **More work can be done to properly update education and training curricula to reflect employer skill needs.**
Source: OECD (2024), Understanding Skill Gaps in Firms: Results of the PIAAC Employer Module, OECD Skills Studies, OECD Publishing, Paris, https://doi.org/10.1787/b388d1da-en

Bridging the skills gap has become a strategic priority

It benefits employers by providing a more qualified and productive workforce and empowers workers by enhancing their job opportunities and professional stability

More broadly, reducing this gap can positively impact social inclusion and sustainable economic growth but also job satisfaction and wages.

Effectively addressing the skills mismatch requires fostering a culture of continuous learning, enabling workers to regularly update their skill sets, and adopting assessment tools to identify areas for improvement.

These processes must be integrated into structured guidance and requalification programs that effectively respond to labor market demands.

Recommendation from PIAAC adults and employers surveys (2023)

According to the PIAAC survey interpretation (**Schleicher & Scarpetta 2024**)
policymakers can address these issues by:

1.Recognizing and certifying skills acquired through non-traditional pathways to promote a "skills-first" recruitment culture.

1.Providing career guidance with insights into emerging industries and in-demand skills.

2.Promoting flexible learning options like online, part-time, or modular training, along with financial incentives.

SKILL GAP ANALYSIS (SGA) within the Italian PES network

The SGA is one of the guidance tool of the Employability Guarantee for Workers (GOL) Programme, a key initiative of the National New Skills Plan included in Mission 5: Inclusion and Cohesion of the National Recovery and Resilience Plan (NRRP).

SGA aims at:

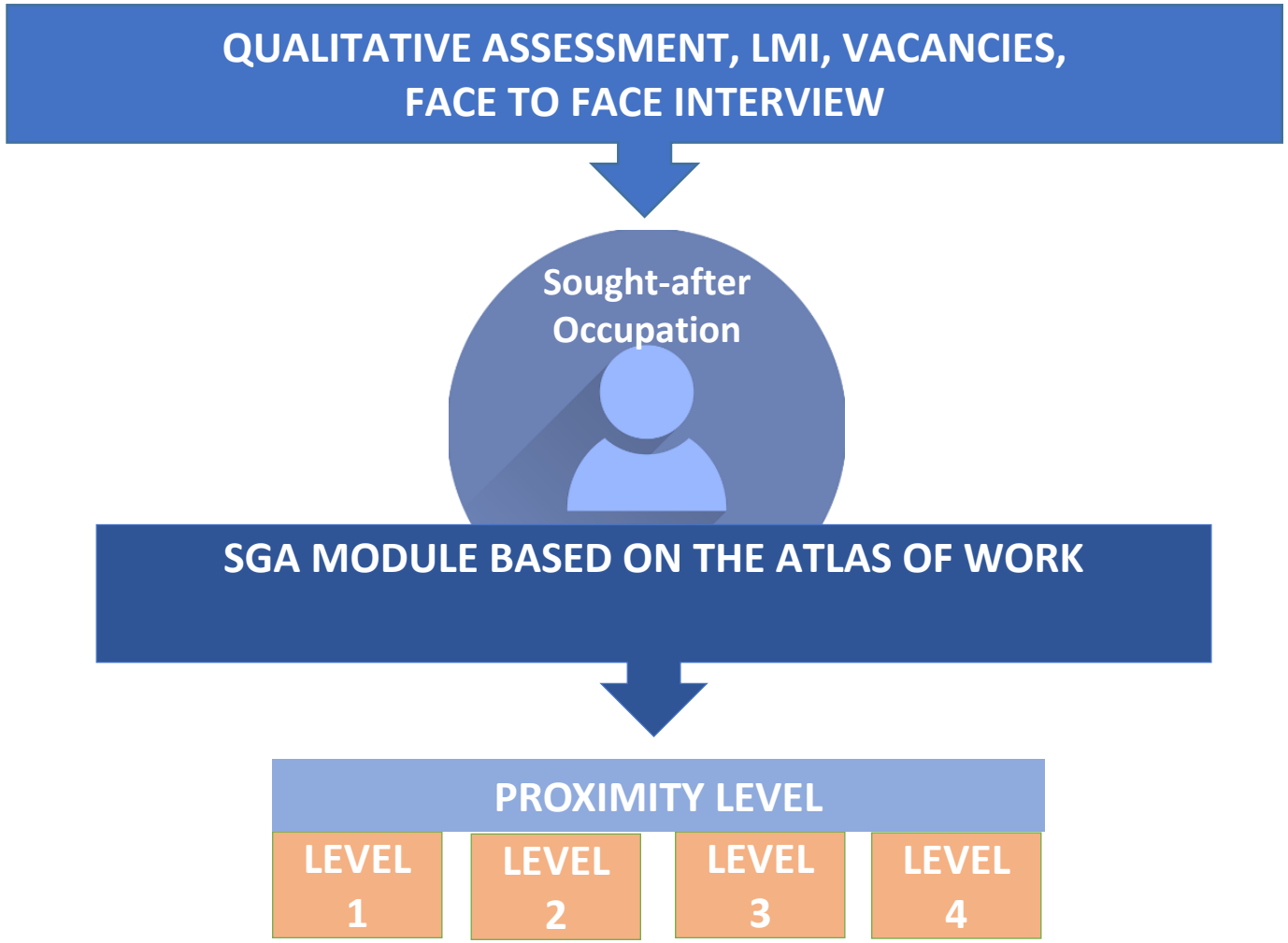
- estimating the distance (or gap) between the technical and professional skills possessed by GOL beneficiaries and those required for one or more occupations
- activating personalized training paths
- supply-demand matching in the Labour Market

SGA is based on:

- Close linking with the qualitative profiling assessement
- Job requirements approach for measuring the proficiency level
- ISTAT National Classification of Occupations as starting point for the identification of the sought-after/desired occupation
- Atlas of Work and Qualifications, used as benchmark
- A face to face interview (it is not a self-assessment tool)

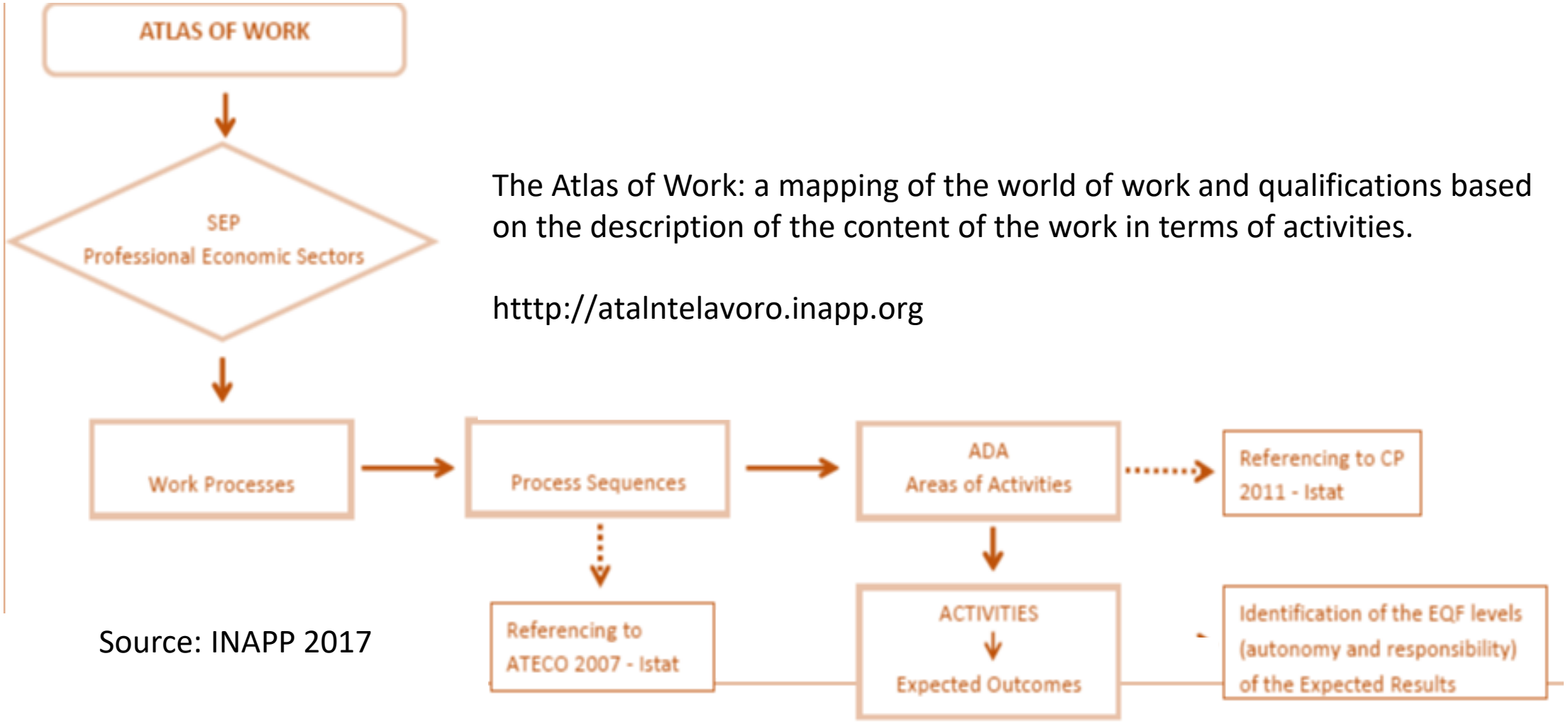
BASTIANELLI M. Premutico D., (2023), (2023), Programma Gol, Analisi della sperimentazione dei servizio di Skill Gap Analysis (Sga) e proposte di modifica, nota n. 7/2023 (Collana Focus Anpal n. 161)

SGA methodology: the administration process



BASTIANELLI M. Premutico D., (2023), (2023), Programma Gol, Analisi della sperimentazione dei servizio di Skill Gap Analysis (Sga) e proposte di modifica, nota n. 7/2023 (Collana Focus Anpal n. 161)
https://www.anpal.gov.it/documents/552016/1309678/Nota+GOL+Focus+Anpal+

The SGA Module is based on the Atlas of Work and qualifications



The Atlas of Work: a mapping of the world of work and qualifications based on the description of the content of the work in terms of activities.

htttp://atalntelavoro.inapp.org

Source: INAPP 2017

Atlas of work: example of connection among ADA, activities and expected outcomes

Activities Area (ADA)	Activities	Expected outcomes
ADA.23.01.02 (ex ADA.19.13.30) - Management and coordination of cooking activities	Management of conservation of raw materials and food	RA1: Manage procurement flows, based on needs, overseeing relations with suppliers and pre-establishing the storage and conservation methods for raw materials
	Procurement management in catering services	
	Recipes design and development	RA2: Design the menu, taking into account the type of service and the enhancement of traditionally offered dishes, at the same time innovating the proposals through the elaboration and development of new recipes and the originality of aesthetic propositions
	Menu design	
	Dessert offer design	
	Elaboration of confectionary recipes	
	Aesthetic proposition of culinary creations	
	Coordination of kitchen staff	RA3: Ensure correct management of orders, establishing roles and assigning tasks to resources, based on workflow planning and contingencies

Source: Atlas of Work and Qualifications

Job requirements approach: level of experience and score

Activities	Level of experience and score
Management of conservation of raw materials and food	❑ From no experience to a maximum of 6 months (score 0) ❑ From 6 to 24 months of experience (score 1) ❑ More than 24 months of experience (score 2)
Procurement management in catering services	…
Recipes design and development	
Menu design	…
Dessert offer design	…
Elaboration of confectionary recipes	…
Aesthetic proposition of culinary creations	…
Coordination of kitchen staff	…

Four proximity levels

	Coverage of the ADAs The total coverage with respect to the ADA is calculated as the simple arithmetic mean of the coverage obtained for all the ADA connected to the investigated professional unit.	**Coverage of esch expected outcomes (RA)** For each RA, the % coverage of the RA is calculated as the ratio between the score obtained for the RA and the maximum obtainable score ((Sum(BP*Weight))/ (Sum(BPmax*Weight)))*100.
Proximity level 1 no particular skills needs or, at the very least, only short periods of adaptation to the productive context (e.g. transition to similar professions in a different sector) or initial professional insertion, which can also be achieved through internship or apprenticeship.	Average score ≥ 75%	**RA1**: Manage procurement flows, based on needs, overseeing relations with suppliers and pre-establishing the storage and conservation methods for raw materials (score 83%) **RA2**: Design the menu, considering the type of service and the enhancement of traditionally offered dishes, at the same time innovating the proposals through the elaboration and development of new recipes and the originality of aesthetic propositions (score 75%) **RA3**: Ensure correct management of orders, establishing roles and assigning tasks to resources, based on workflow planning and contingencies (score 60%)
Proximity level 2 needs for brief and targeted training interventions for first-entry or reintegration into similar or nearby production sectors but with equivalent levels of autonomy and responsibility	Average score between 60% and 75%.	
Proximity level 3 need for longer training interventions for professional qualification purposes; reintegration into professional roles or similar production sectors characterized by higher professional contents and levels of autonomy and responsibility; strengthening basic skills.	Average score between 30% and 60%	
Proximity Level 4 the distance from the identified professional area requires the development of an intermediate training path in a career pathway perspective, for example through the offer of so-called micro-qualification paths	Average score < del 30%	

Testing phase (April – October 2023)

REGION	Cadidates in GOL al 31/12/2022		Sample of the SGA testing phase		
	v.a.	%	Fixed quote	Quote on % of candidates 31/12/2022	Total
Abruzzo	9.965	1,4	25	21	46
Basilicata	6.947	1,0	25	14	39
Calabria	28.795	4,1	25	60	85
Campania	97.181	13,7	25	202	227
Emilia-Romagna	44.066	6,2	25	92	117
Friuli-Venezia Giulia	22.070	3,1	25	46	71
Lazio	61.752	8,7	25	128	153
Liguria	9.837	1,4	25	20	45
Lombardia	76.971	10,9	25	160	185
Marche	18.551	2,6	25	39	64
Molise	1.726	0,2	25	4	29
P.A. Bolzano	2.320	0,3	25	5	30
P.A. Trento	5.004	0,7	25	10	35
Piemonte	44.784	6,3	25	93	118
Puglia	68.300	9,6	25	142	167
Sardegna	43.299	6,1	25	90	115
Sicilia	69.564	9,8	25	145	170
Toscana	45.681	6,4	25	95	120
Umbria	11.373	1,6	25	24	49
Valle d'Aosta	1.337	0,2	25	3	28
Veneto	39.604	5,6	25	82	107
Totale	709.127	100,0	525	1475	2000

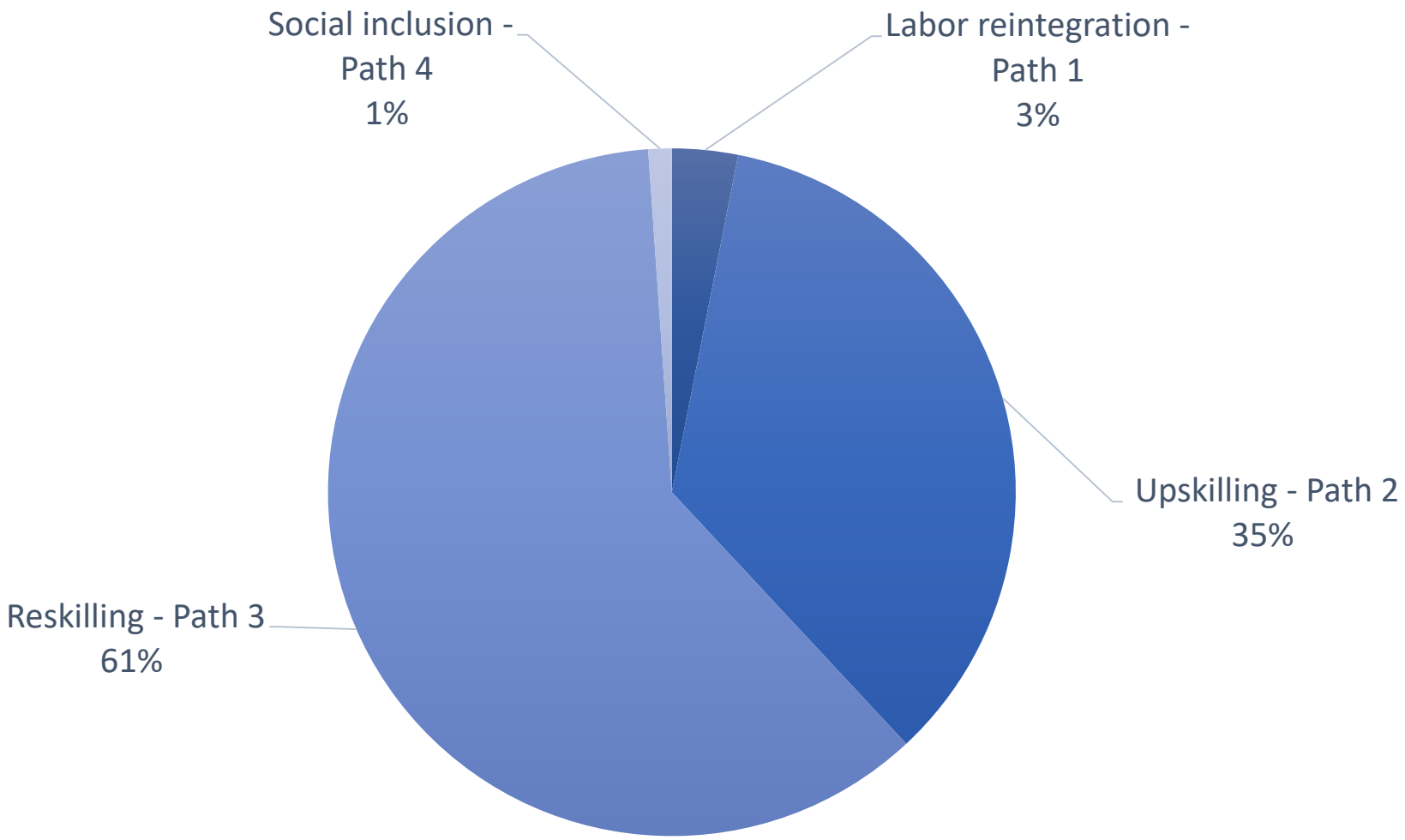
Source: Elaboration ANPAL on MyAnpal system data

Operational phase – SGA per Regions

Region	n. SGA carried out as 15.11.2024
Campania	411
Friuli-Venezia Giulia	623
Lazio	1.158
Lombardia	263
Marche	169
Molise	742
Pa Bolzano	234
Pa Trento-	145
Puglia	51.239
Sardegna	176
Sicilia	66.955
Toscana	310
Umbria	110
Total	122.557

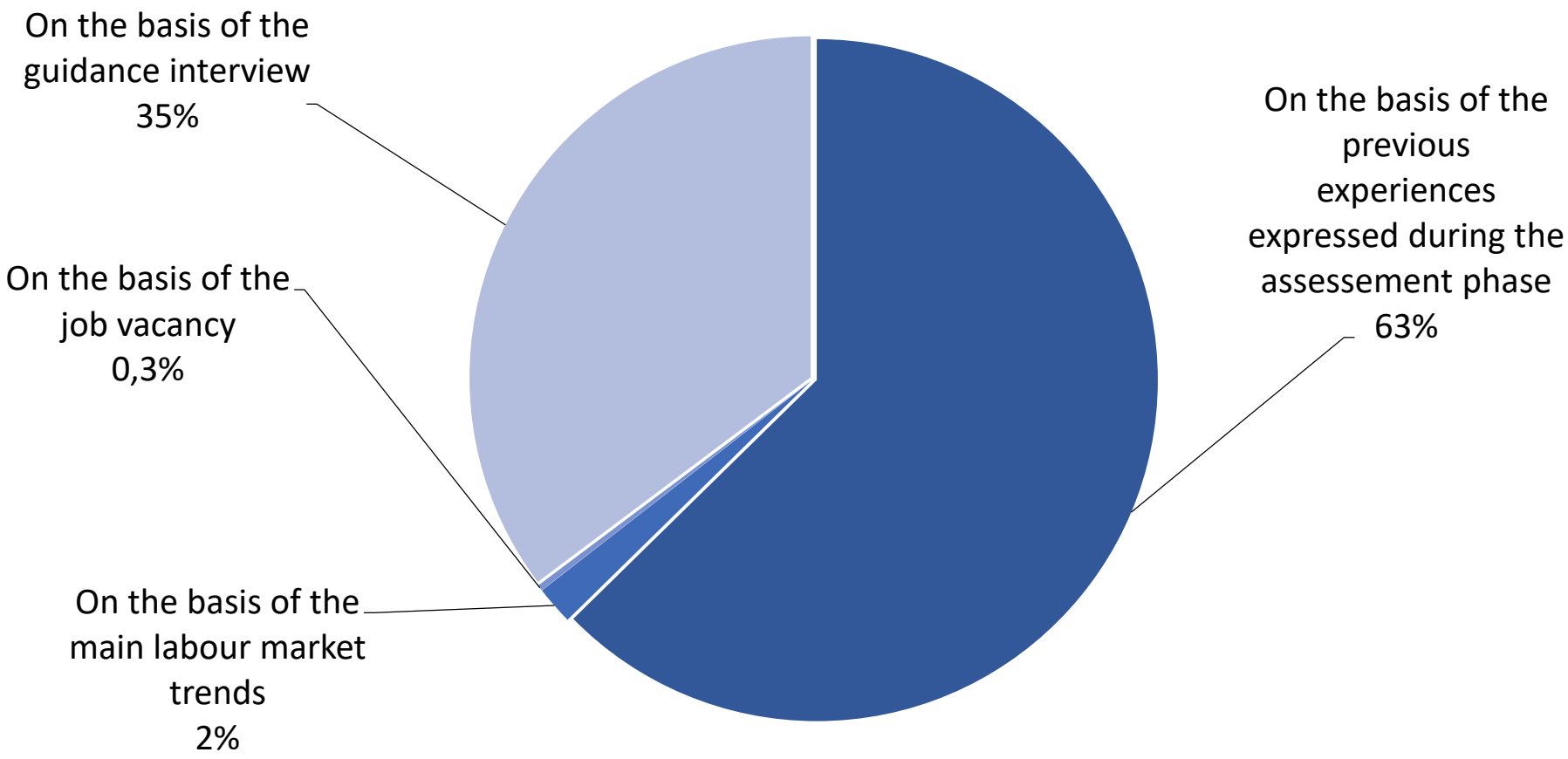
Source: Elaboration INAPP on MyAnpal system data

% SGA by GOL Programme pathways



Source: Elaboration INAPP on MyAnpal system data

SGA - Choice of profession



Source: Elaborations INAPP on MyAnpal system data

Operational phase: SGA carried out by professions

Cp 2011 Code	Profession	Number	Percent
4.1.1.1.0	Secretarial functions	16.151	17,4
5.4.4.3.0	Personal assistance workers	6.260	6,8
4.1.2.2.0	Data entry clercks	5.026	5,4
5.2.2.1.0	Chefs in hotels and restaurants	4.977	5,4
5.4.4.2.0	Child care and similar professions	3.986	4,3
4.3.1.2.0	Warehouse management workers and similar professions	2.577	2,8
4.2.2.2.0	Receptionists in accommodation and catering services	.2.207	2,4
6.4.1.3.1	Farmers and agricultural workers specialized in gardens and nurseries, growing flowers and ornamental plants	1.975	2,1
8.3.1.2.0	Unqualified personnel responsible for green maintenance	1.907	2,1
5.1.2.1.0	Wholesale sales clerks	1.500	1,6
4.3.2.1.0	Accounting clerks	1.431	1,5
8.1.4.2.0	Unqualified staff in catering services	1.366	1,5
3.3.4.1.0	Freight forwarders and technicians of the commercial organization	1.348	1,5
6.5.1.2.1	Bakers	1.284	1,4
First total 14 professions: 14		51.995	56,1
Totale other professions: 461		40.738	43,9
Total		92.733	100,0

Source: Elaboration INAPP on MyAnpal system data

Operational phase: not investigated ADA

Profession	% ADA not investigated
Forwarders and technicians of sales organization	16,2
Personal assistance workers	11,4
Software analysts and designers	7,3
Industrial and management engineers	6,4
Chefs in hotels and restaurants	5,3

Source: Elaboration INAPP on MyAnpal system data

Lessons learned

- Advantages in having a tool based on the ISTAT “CP” as a benchmark and on the descriptors of the occupation units adopted by the Atlas of Work, queried with the Job requirements for identifying the path and training field to be proposed to the beneficiary for upskilling and reskilling, also in view of a specific job vacancy

- Easy to use tool, intuitive and well received within the professional orientation session, proving, together with the operator's guidance intervention, to be a valid support for the beneficiary's personal growth in terms of awareness;

- Availability of different sources of information (assessment, job vacancy in the area, labor market trends, etc.) and the possibility of carrying out multiple SGAs gave the opportunity to bring out, as much as possible, the potential of the beneficiary as well as the opportunity to evaluate together with him/her the more adequate gap reduction pathway in terms of time and effort;

- The concept of “valorization of the competences acquired” is passed as the cornerstone of the SGA and, although small interventions have been made to refine the tool following the experimentation, this does not it has been modified.

.

Conclusion and future plans

- Also at an aggregate level, some interesting aspects could be observed for each profession taken in consideration:
  - the training needs in terms of specific skills with respect to a given population (defined on a territorial basis or on the basis of socio-demographic dimensions);
  - the possibility of supporting the training planning processes, having the detail of the level of coverage of the individual RAs, in a personalized and targeted way and in an increasingly modular-and incremental based perspective (such as in the logic of micro credentials).
- In addition, the evolution of the National Qualification Framework established in 2018 and the continuous maintenance and updating process of the Atlas of Work and Qualifications by INAPP will also make it possible to take into consideration some transversal skills coherent and compliant with the European and international competences frameworks as DigComp and GreenComp.

Thank you for your attention

INAPP
ISTITUTO NAZIONALE PER L'ANALISI DELLE POLITICHE PUBBLICHE

For further information:
m.bastianelli@inapp.gov.it

www.inapp.gov.it