A STEP TOWARD UNIVERSAL COMPETENCY PROFILER

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Abstract

Last decade, the competences, competency and competency profiling have been recognized as the core information and process to provide basics for implementation of efficient interchangeable widely recognized education and worldwide employment. Competences are components of a job which are reflected in behaviour that are observable in a workplace. A list of the knowledge, skills, and abilities necessary to perform a job well is determined as competency profile. Types of skills listed in a competency profile depend on the job and the work environment. Generally, employers make competency profiles either to evaluate candidates for a job or determine where an employee needs to improve performance to meet the needs of the position. Competency profiles are usually used as a part of competency-based human resources management. They are similar to job descriptions, but they provide ways to evaluate how the employee’s skill set and job performance measure up to the requirements. Preparing EQF and NQF based job / profession profiles and related sets of competences (knowledge, skills, other / wider competences) is still ongoing process. In the contribution we present the theory and model behind the competence profiler we developed, the data architecture and the user interface of the e-tool itself. As can be observed, although it was developed for competency profiling in chemical engineering and contains exemplary selection of ISCO job profiles, its usage is not limited for areas or fields of expertise or job / profession profiles.

Keywords: competitiveness, competency, competency profiling, competency-based education and training

Introduction

To change the current unsustainable trajectory of the global ecosystem and to remedy lingering stagnation from the financial crisis, key actors are proposing
revolutionary economic reforms where a new economy ought to be based on Green Growth [1]. Green Growth goes beyond growth balanced with environmental protection; Green Growth is quality-oriented, low-carbon, energy efficient growth with a focus on creating value through clean technology, natural infrastructure and innovation in markets for environmental goods and services. Green Growth strategies should aim to break the vicious cycle between environmental deterioration and unsustainable economic growth-poverty and replace it with a virtuous cycle of quality growth, environmental enhancement and social inclusiveness (i.e., climate action, energy security, sustainable housing) [2]. The macro-level of governance refers to national and supranational policies. A key driver of Green Growth at the macro level is the race to improve competitiveness. Competitiveness is advocated as the recipe for growth at the firm, national and global level [3, 4] thus conciliating national and supranational interests. Country competitiveness can be defined as the ability of a nation to produce goods and services that meet the needs of international markets while maintaining or expanding real incomes [5]. Interestingly development of stringent environmental regulation can be viewed as an effective path to improve national competitiveness [6]. Competitiveness drivers in the green goods and services sectors are e.g. costs, quality, food safety, technology and coordination, pricing and import conditions [4]. The meso-level of governance includes industry and firms. The meso-level has a profound influence on Green Growth. Sectoral competitiveness is a critical link between business and national competitiveness [7]. Schumpeter [8] emphasizes that economic growth is administered by the state but driven by the capitalist enterprise. At this level, Green Growth will still be driven by the quest for profit, more specifically profiting from ecological crisis through the exploitation of green markets [9].

The transition dimensions are in turn intertwined with three core drivers of Green Growth: innovation (technological but also social); globalization (economic but also cultural and institutional); and ecological urgency. Globalization refers to a series of qualitative and quantitative processes of changes in cross-borders flows of goods, services, capital, knowledge and people. Technology is one of the key processes underlying economic globalization, and both globalization and technology are related to the spread of trans-boundary pollution and economic growth [10]. Encouragingly, Green innovation is growing at different levels in developing countries. A very important role plays human resource management (HR). HR practitioners must be ready for innovative actions taken to leverage the talents of organizational members.
The new role of HR management demands an outlook that differs considerably from the compliance mind-set. HR management practitioners are expected to be experts on leveraging human talent within their organizations for the purpose of achieving competitive advantage. They must demonstrate new sensitivity to the full range of human capabilities (including emotional intelligence), align HR efforts with strategic objectives, and integrate various HR activities so that people are consistently encouraged to achieve desired results [11].

Traditionally, job analysis—the process of identifying the work that people do—has been the foundation of HR department activities. According to a classic treatment by Walker [12], a job analysis has four possible purposes. Each purpose provides a view of the job from a different angle; therefore, each is identified by a slightly different approach. One purpose is to discover what people do in their jobs. This approach takes a close look at the reality of the jobs. A second purpose is to find out what people think job incumbents do in their jobs. This approach seeks to gather perceptions about the jobs. A third purpose is to ascertain what people or their immediate supervisors believe job incumbents should be doing at their jobs. This approach determines the job norms. A fourth purpose is to determine what people or their supervisors believe job incumbents are doing or should be preparing to do in their jobs in the future should changes occur in their workplace. This approach to job analysis emphasizes planning for changes [13].

A job description, which tells what the incumbent does, and a job specification, which clarifies the minimum requirements necessary to qualify for a job, are major outputs of job analysis. Job descriptions and job specifications, in turn, are key to such HR functions as employee recruitment, selection, training, and performance management [11].

One problem with traditional job descriptions is that they are written only to clarify those activities job incumbents are supposed to perform and may not clearly describe measurable worker outputs or results that meet the requirements for organizational success. Outputs or results are the products or services that workers produce and deliver to others; recipients might include co-workers, constituents, customers, or persons or organizations external to the workers' organizations. Outputs or results should be produced to a level of quality that meets or exceeds the receiver's expectations [11].
Another problem with traditional job descriptions is that they quickly become outdated. In today's dynamic organizations, work activities do not remain the same for long. Job descriptions, however, rarely keep pace with changes in work requirements. That leads to much confusion as people try to figure out whether a job description is current or outdated [11].

At traditional job description model, workers are left to guess about the measurable outputs or results they are expected to produce, in what form, at what level of quality, and on what schedule. Sometimes workers are not alone in playing this guessing game. When they put those questions to a supervisor they might be greeted with a blank stare or given answers too vague to make sense. Frustrated, workers continue doing what they have always done—or what they have seen others do—without knowing for certain whether they are achieving desired outputs. But when customers, supervisors, or managers do not receive the products or services they expected on time or of sufficient quality, they blame the worker [11]. This scenario illustrates a possibly three-fold problem. First, there might be a mismatch between workers' capabilities and the outputs or results they are required to produce. Second, the information provided could be inaccurate or incomplete. Third and finally, the expected outputs might not conform to traditionally defined jobs that are rigid, compact, and inflexible.

The point is that job descriptions are not enough. Joinson [14, p. 12] suggested that "one option is moving away from skills-based descriptions and toward 'job roles,' focused on broader abilities (a set of knowledge, skills and wider competences), that are easier to alter as technologies and customer needs change." Although it is true that well-prepared job descriptions can be a powerful tool, keeping them clear and current is a major challenge that exceeds the grasp of many organizations today.

Therefore, the main purpose of our paper is to determine a competency profiler, which will be able to overcome all of these aforementioned problems.

**Competency profiling**

Much has been written on Competency Profiling. It is a well-known term within HR circles in corporate organisations. Once the exact functions of a job have been identified, the next step is to conduct competency profiling to identify appropriate units of competency (or a full qualification) to meet the requirements of the job. The
units of competency may need to be customised (or adapted) to ensure the learning outcomes match the specific needs of the enterprise and learners. Competency Profiling is typically a method for identifying specified skills, knowledge, attitudes and behaviour necessary to fulfilling a task, activity or career. In most commercial organisations its ultimate purpose is to provide value to the external customer. All organisations need to be able to match the competency profiles of their people, to their business drivers and strategies. It is therefore becoming increasingly important for enterprises to assess and validate the competencies of individual employees against job requirements.

In categorising competence, some organisations make distinctions between competencies, which refer to desired personal attributes and behaviours and competences, which are the knowledge and skill required to bring about improved performance. Competencies should be seen as [15, p. 28]:

“a signal from the organization to the individual of the expected areas and levels of performance. They provide the individual with a map or indication of the behaviours that will be valued, recognized and in some organizations rewarded. Competencies can be understood to represent the language of performance in an organization, articulating both the expected outcomes of an individual’s efforts and the manner in which these activities are carried out”.

Competency has been defined in different ways. Some see competency as an underlying characteristic of an individual that causally relates to superior performance in a job or situation. s is a fairly wide definition and includes aspects such as [15, 16]:

• motives, for example the motivation to achieve;
• traits and attitudes such as conscientiousness;
• self-concept, say the level of self-confidence;
• knowledge;
• behaviours or skills.

Excellent performers on-the-job demonstrate these behaviours much more consistently than average or poor performers. Competencies provide significant help with key problems such as [17]:


• Clarifying workforce standards and expectations.

• Aligning individuals, teams and managers with the organization's business strategies.

• Creating empowerment, accountability and alignment of coach, team member and employer in performance development.

• Developing equitable, focused appraisal, and compensation decision.

Competencies only include behaviours that demonstrate excellent performance. Therefore, they do not include knowledge, but do include "applied" knowledge or the behavioural application of knowledge that produces success. In addition, competencies do include skills, but only the manifestation of skills that produce success. Finally, competencies are not work motives, but do include observable behaviours related to motives [16, 17].

Competency models can be organized as flexible tools that can be used to support various practices such as [17]:

• Employee orientation

• Employee development

• Performance management and coaching

• Career strategies

• Candidate interviews

• Team assessment

• Succession planning

Competencies are generally presented with a definition and key behavioural indicators [17]:

• Responds to customer's needs in a manner that provides added value and generates significant customer satisfaction.

• Demonstrates a deep understanding of internal and external customers and their needs.
• Mobilizes the appropriate resources to respond to customers' needs.

• Takes personal responsibility for customer satisfaction (e.g., focuses on value added interactions).

• Builds credibility and trust with the customer through open and direct communication (e.g., uses effective listening skills, provides timely feedback etc.).

• Ensures that customers believe their issues and concerns are given highest priority.

Competencies do not include “baseline” skills and knowledge (i.e. commonly expected performance characteristics such as finishing assigned work, answering the telephone, writing follow-up letters, etc.), job tasks, or unusual or idiosyncratic behaviours that may contribute to a single individual’s success.

There are several types of competency [15]: (1) Universal - These are competencies that could be seen to be related to performance in just about any job. From the sample framework, examples would be “Interpersonal Skill” and “Oral Communication”. (2) Occupational - These are competencies that relate to a specific job or family of jobs. In the sample framework, “Leadership” might be an example of an “occupational” in that it does not apply to the vast majority of jobs. (3) Relational - What is required in a particular job can vary widely according to the particular setting of the job.

Much used in technical and further education fields most practitioners argue it is imperative to separate out the levels of competency to provide meaningful assessment. For example levels can include [18]:

• practical competence: the demonstrated ability to perform a set of tasks

• foundational competence: demonstrated understanding of the what and why to carrying out the tasks

• reflexive competence: the ability to integrate actions with an understanding of action so that learning occurs and changes are made when necessary, and

• applied competence: the demonstrated ability to perform a set of tasks with understanding and reflexivity.
Benefits of implementing a competency-based approach

Benefits of implementing a competency-based approach to modern HR should be demonstrated as three-fold model, namely: for the company, for managers and for employees.

At the Company level, competency-based practices [17]: (1) Reinforce corporate strategy, culture and vision. (2) Establish expectations for performance excellence resulting in a systematic approach to professional development, improved job satisfaction and better employee retention. (3) Increase the effectiveness of training and professional development programs by linking them to the success criteria. (4) Provide common, organization wide standards for career levels that enable employees to move across business boundaries.

Managers will be capable to [17]: (1) Identify performance criteria to improve the accuracy and ease of the hiring and selection process. (2) Provide more objective performance standards. (3) Clarify standards of excellence for easier communication of performance expectations to direct reports. (3) Provide a clear foundation for dialogue to occur between the manager and employee about performance, development and career related issues.

At Employees, competency-based practices allow to [17]: (1) Identify the success criteria (i.e., behavioural standards of performance excellence) required to be successful in their role. (2) Support a more specific and objective assessment of their strengths and specify targeted areas for professional development. (3) Provide developmental tools and methods for enhancing their skills. (3) Provide the basis for a more objective dialogue with their manager or team about performance, development and career related issues.

Defining competency provides the foundation for recruitment and selection strategies. For existing workers, knowing specifically what skills and knowledge are required of them enables them to assess their ability to provide them. This gives them an opportunity to appreciate their own strengths, and recognise gaps, or areas requiring development. Being aware of areas where they could improve means they can then consider and plan how to address those gaps as part of a competency-based learning program.

Competency models are developed through a process of clarifying the business strategy and determining how the models would be used. While it can be a very
complex exercise depending on the size and nature of the enterprise, there are a few broad steps involved [19]:

1. Project Planning - meeting with stakeholders to clarify the scope and objectives of the profiling exercise, and discussing approaches to competency identification, implementation, communication and administration.

2. Benchmarking - reviewing job descriptions, training materials and competency models for similar positions within the enterprise.

3. Profiling - using one or more approaches such as interviews, focus groups, questionnaires or direct observation to identify the knowledge, skills and behaviours underlying successful job performance.

4. Validation - reviewing and refining the competency profiles with stakeholders and documenting the results.

**Competency models**

A competency model can be an effective way of communicating to the workforce the values of the senior management and what people should focus on in their own behaviour. For example, a competency based appraisal system helps to distinguish individuals with the characteristics that are required to build and maintain an organization's values (teamwork, respect for individual innovation or initiative) from those who do not exhibit the behaviours that will support these values. In this way competency models can translate general messages about needed strategy and culture change into specifics. Over the years many different methods of developing competency models have evolved but all of them follow McClelland's lead of determining what leads to superior performance, identifying top performers and finding out what they do [16]. There are two principles that are followed in these models:

1. Focus on the superior performers without making an assumption.

2. Focus on what they do to perform the given role.
There are various developed models that are used as a basis for selection, training, promotion and other issues related to HR, namely [16]:

1. **Job Competence Assessment Method** - This is developed using interviews and observations of outstanding and average performers to determine the competencies that differentiate between them in critical incidents [11].

2. **Modified Job Competence Assessment Method** - This also identifies such behavioural differences, but to reduce costs, interviewees provide a written account of critical incidents.

3. **Generic Model Overlay Method** - Organizations purchase an off-the-shelf generic competency model for a specific role or function.

4. **Customized Generic Model Method** - Organizations use a tentative list of competencies that are identified internally to aid in their selection of a generic model and then validate it with the input of outstanding and average performers.

5. **Flexible Job Competency Model Method** - This seeks to identify the competencies that will be required to perform effectively under different conditions in the future.

6. **Systems Method** - This demands reflecting on not only what exemplary performers do now, or what they do overall, but also behaviours that may be important in the future.

7. **Accelerated Competency Systems Method** - This places the focus on the competencies that specifically support the production of output, such as an organization's products, services or information.

As we see, there are several approaches with solid underpinnings from which to choose. The process used to develop a model must be straightforward and easy to implement. The final product must have immediate practical application, commitment and buy-in for those who will be expected to implement or change their behaviour based on it. The development process should include a step to ensure that the behaviours described in the model correlate with effectiveness on the job.
Strength competency profiler

The green transition will require the development of a better understanding of the implications of green jobs on competitiveness, green growth, and health and safety at the workplace. On the one hand, measures aimed at environmentally friendly workplaces can help to improve working environments, having a positive impact on workers' safety and health, and enhance green growth. In order to shape the future of occupational sustainability, competitiveness, added value, safety and health in green jobs and inform EU decision makers, Member States' Governments, trade unions and employers, the European Agency for Safety and Health at work carried out research about the new and emerging risks associated with green technologies by 2020. Considering this research, the Leonardo da VINCI TOI Project STRENGTH (Structuring of Work Related Competences in Chemical Engineering), 2013-1-ES1-LEO05-66726, developed green matrix of key green competencies areas for chemical engineering, namely: agriculture; biotechnology; environmental, health and safety; food science, and pharmacy.

STRENGTH tool for competence description is centred on chemical engineering sector for green jobs development and generation of relevant to them organizational and individual professional profiles. Vocational sector competencies of chemical engineering according to European Qualification Framework (EQF) levels 6 and 7 [20] and creation of a competence matrix as e-data base of green skills and competences descriptions with generation of organizational and individual professional profiles are described in the following section. Competence areas and entire matrix development also strictly followed principles of the European Credit System for Vocational Education and Training (ECVET) [21] to obtain inter- and international comparability, competencies recognition and equal opportunities at labour market. STRENGTH mobility mechanism well fits current needs and requirements of individuals and / or organizations for training and developing of green competencies [22].

The tool is part of the project STRENGTH website [22], Figure 1. It was developed as online application with administrative (back-end) and public (front-end) part and it is integrated as a standalone PHP application inside project website engine Joomla!
In the continuation we present the semantic model for the tool that served as the motivation and some screenshots from the tool. The semantic model served also for related tool's entity relationship model for data storage and advising functionality.
Competency profiler development

The tool was developed according to the following basic semantic model:

- **Competences**: core of the model and “everywhere present” entity are the competences which represent knowledge, skills and wider competences.

- **Areas**: most competences are connected with some specific area or areas. In case of STRENGTH project, these areas are pharmaceutical industry, food science and technology, agriculture engineering, biotechnology, and environmental, health and safety.

- **Courses**: if we “exclude” competences that an individual can obtain from elsewhere, competences can be formally obtained in formal or informal courses, seminars, workshops, etc. For example, at some course individual can obtain first list of competences, on a second course second list, and similar to other courses. Courses are or can be mutually independent, but can have same competences in their list of competences (e.g. competences 1 and 2). Lastly, when individual is successful at course, he / she can get some kind of recognition document about that, e.g. certificate. By their basic meaning, courses are connected with areas.

- **Job profiles**: on the other side we have jobs, and regardless if they are in private or public sector these jobs can be also seen from competence point of view as a list of competences defining corresponding job profiles. Similar to courses, also jobs and job profiles are connected with areas.

- **Individuals**: apart from the theoretical side (competences, areas, courses, job profiles), we have the most important integral part of whole image representing practical side - the individuals. Individuals can have some kind and level of education, and can have job (s). Regardless of that, they can be also observed through the list of competences.

Courses, jobs, job profiles and individuals can be described as lists of competences also called “competence modelling” or “competence mapping”. They can be also understood as a “need - have - offer” model (NHO model) as shown in Figure 2.
For more realistic competence modelling, levels have to be added (Figure 3). Namely, course don’t necessary treat all the competences in the same course at the same level; also for some jobs some competences are needed on higher levels than others; and the same applies for the individuals.

By using the semantic model, several real world questions can be answered, for example: (1) Which jobs are in the “food science and technology” area? (2) What I need
to know, what must be my skills, and what I have to master for job X? (3) Which course or courses I need to take for job profile X? (4) Where can I get all needed knowledge, skills and etc. for job profile X? (5) What is my level of competency? (6) Which job is "nearest / closest" to me?, etc.

Answers to questions 1 - 3 are very straightforward and can be answered by using the tool on project website. Question 4 is closely related to the project results. Some projects offer learning, while other projects prepare the requirements, guides and suggestions for institutions and other interested parties to prepare their own learning functionality (course management, course materials, course implementations, teaching and administrative staff, course documents, etc.).

For question 5, the tool CPA offers assessment based on description of marks. Alternative to that is formal assessment which is usually done by competent approved institutions; however they can also use these descriptions. Basis for (self) assessment by using the tool is the description of competency assessment as shown in Table 1. Marks 1-3 are considered as “passed”.

Question 6 is especially useful for individuals who seek for new job opportunities and would like to obtain new competences based on the following objectives: (1) The smallest number of competences that have to be obtained; (2) The smallest number of courses that have to be taken; (3) The smallest number of competences using weights for different levels, etc.

Table 1. Assessment description of competence “knowledge 11” for EQF level 6 in project area “environment, health and safety”

<table>
<thead>
<tr>
<th>Competence (learning / training outcome)</th>
<th>Benchmarks (B) (assessment criteria)</th>
<th>Guidelines for (self) assessors</th>
<th>Marks / grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perform emergency / crisis management in terms of planning and response, including incident investigation to ensure thorough root-cause analysis and comprehensive corrective action.</td>
<td>B1: Potential incidents and malfunctions are identified. B2: Root-cause analysis is performed and corrective actions are designed. B3: Operational plan for active / effective implementation is made.</td>
<td>No incidents or / and malfunctions are identified. Potential incidents and malfunctions are identified. Potential incidents and malfunction are identified and validated. Action plan for effective crisis management is made (implementation ready).</td>
<td>0-no competency 1-satisfactory 2-good 3-excellent</td>
</tr>
</tbody>
</table>
All mentioned objectives are mathematical optimization problems where one seeks a minimum. List of competences that are connected to courses and set of courses are called organizational professional profiles, while the missing competences of individuals to cover organizational professional profiles are called individual professional profiles.

First objective is especially useful in cases where courses are implemented as modules and subsets of modules can be recognized as granted according to individuals' lists of competences. The most realistic is the third objective because it takes into account the hardness and spent time (e.g. credits) and correspond to individuals' expectations about learning "harder and more" or “easier and less”. By answering to these questions the tool acts as an advisor.

### Competency profiling

STRENGTH needs analysis revealed the following important sectors of green job perspectives in chemical engineering sector: Agricultural engineering, Biotechnology, Environmental, health and safety, Food Science and Technology, and Pharmaceutical Industry. A significant gap between labour market needs and formal education acquired competences was detected. Considering International Standard Classification of Education (ISCED) and International Standard Classification of Occupation (ISCO) project STRENGTH developed ECVET-based courses aimed for development of green abilities in competence matrix areas. Educational and training organization from green chemistry is able to prepare their own organizational profile of relevant competences / courses for training program / qualification on EQF level (e.g., 6, 7). Courses are ready for use with specific target groups, considering the market needs and wants. For each of five competence area, a mapping of existing or already acquired competences was done (Figure 4) as an important input in the profiler.
Considering the durability of knowledge, skills and broad competences, every learner / trainee has an opportunity to self-evaluate existing green ability, and afterwards consciously choose adequate training course or green ability. By click on profiling tool button, a trainee may choose competences needed for competitive mastering of a new green profile. For example, if a trainee is a vocational education teacher, he has already acquainted competences in red, and he needs to know more about Environmental management (Figure 5) claimed with job position / profile or...
with new subject matter he got. For acquiring of this competence, course of AE 01: Design of agro industries and AE 08: Rural development and agricultural policy must be taken. Nevertheless, a trainee felt not comfortable at competence of Environmental challenges or advantages associated with innovative technologies implication, thus, he decided for refreshment courses, AE 01, AE 03, AE 06 (blue labelled). In total, a trainee will be awarded with 20.5 European Credits (EC) when he / she passed the individual profile learning pathway.

After competences mapping, a selection is sent for personal folder and to VET organizer in order to prepare ECVET records and other mobility documents.

A trainee has also an inversely option, to choose the course, which he / she needs / wants to take and afterwards, competences / green abilities are listed.

A part of the competency profiler is also an assessment / evaluation / selection tool (Figure 6). For example, the competence area of Agricultural engineering for green jobs is successfully covered with nine green abilities. Those green abilities are aggregated from knowledge, skills and wider competences, related to green chemical engineering. An importance of this tool is threefold. Firstly, a trainee can evaluate (self-asses) a level of competences acquired in a course (individual development) and a trainee should be assessed on that scale by a supervisor or by other from managerial staff. This assessment allows employee selection and retention. Secondly, a trainee or employee may asses an importance of competences for job profile, for organizational profile to obtain more competitiveness or added value of a particular job profile. Thus, we can balance competences in time, and control the entire profile to be not outdated. Thirdly, managers might use the tool to select best workers or successors for continuity of company tradition and competitiveness (succession planning). Outputs or results should be produced to a level of a quality that meets or exceeds the receiver's expectations.
Figure 5. Competency profiling of vocational education teacher for agricultural engineering green ability acquiring
A competency profiler tool enhances refreshments or elevates added value of any job profile. Any stakeholder, scholar or web site visitor can contribute to the upgrade / update the list of competences, by proposing new or modified competence. Simply, by click on the New competence button, write down a title and short description of competency for new job profile, and afterwards submit to administrator or
competencies profiles keeper (Figure 7). Similar, a new course for agricultural engineering green competences acquiring should be proposed (Figure 8).

![Figure 7. Competencies dynamism tool- proposing a new competence](image)
Figure 8. A new, proposed course of “Green Pedagogy: Preserving, Creating, Developing”, for agricultural engineering green abilities acquiring

Conclusions

Developing and describing matrices of competences in relation to courses and profession profiles is a well established process. Several institutions tackled that,
most intensively in recent Bologna process. Vocational education and training is still having gaps in that and project STRENGTH - Structuring of Work Related Competences in Chemical Engineering tries to fill them in five areas related to chemical engineering.

As part of the project, the tool for defining competence matrices in multi-language setting was developed. In addition, the tool was equipped with the intelligence of an advisor helping individuals seeking additional professional education, or seeking new entrepreneurship opportunities by finding suitable job profiles, individual professional profiles and courses for them.

STRENGTH competency profiler overcomes all of current competence / job descriptions model weaknesses, namely: (1) Competence upgrade / refreshment is enabled. Promptly upgrade / update of competences, green abilities, and courses are enabled. (2) All outputs or trainee's / employee's results are measured, monitored, and also benchmarked for competence importance. (3) A mismatch, between workers' capabilities and the outputs or results they are required to produce, is reduced. (4) The information provided through competency profiler is accurate or complete, and (5) The expected outputs might conform to competency-based HR and job profiles (organizational, individual) are dynamic, adjustable, and flexible.

Real world competency profiling developed in STRENGTH project is ready for the general public, and it is flexible enough to be adjusted with different sectors specificities.

Future work on competency profiler is needed to obtain competencies database, especially, a work with managerial staff and HR from different sectors is needed. An eco-economics tool is proposed as new functionality of competency profiler, including technological matrix and forecast mechanism of a job profile added value. Green jobs have potential, also generating by green pedagogy, which should be included at the new competency model development. A re-design of instructional paradigm is needed by introduction of green oriented methods, strategies and approaches to teaching and learning.

References


