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# Jobs and qualifications in Rural Engineering

Ex. : Engineer from the Institute of Life and  
Environmental Sciences and Industry

TEMPUS IV – SUFAREL

Kotka – September 18th, 19th - 2012



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# Contents

- Introduction of the stakeholders
- The point of view of the labour market and the occupational standards
- The point of view of Education and the qualifications standards



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## The stakeholders



# A global system – Two pillars

- Jobs are registered in a national and operational inventory of jobs and positions :  
“Le Répertoire Opérationnel des Métiers et des Emplois” (ROME)

## Les fiches métiers

Répertoire Opérationnel des Métiers et des Emplois (ROME)



- Qualifications are registered in a national inventory of professional qualifications :  
“Le Répertoire National des Certifications Professionnelles” (RNCP)



# The National Job Center (Pôle Emploi)

- **R.O.M.E.** : répertoire opérationnel des métiers et des emplois (the operational inventory of jobs and occupations)
- It is a register set up by the national job center in France (**Pôle Emploi**).
- It gathers more than 10 000 titles of jobs / positions and more than 500 files describe these jobs → **occupational standards**
- The files give a description of jobs and make it easier for employers and job seekers to compare job offers with applications.

# The National Committee of Professional Certifications

- Social partners, professional organizations have been closely involved to set up the National Register of vocational certifications (→ RNCP in France).
- The French Law dated 17 January 2002 confers on the CNCP (the Committee) the responsibility for drawing up and updating the RNCP
- The RNCP guarantees that any qualifications are registered following its level and the professional sector it belongs to (hierarchization of jobs).
  - ✓ registration according to a unique format.
  - ✓ coherence between the two registers (between the professional standards and the qualification standards).
  - ✓ the RNCP is also responsible of the register of qualifications by positioning them within the NQF and control the positioning of other certifications that are not under its responsibility.
- Aim → match the requirements of the labour market



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# The point of view of the labour market : occupational standards



# The operational jobs and positions inventory (R.O.M.E.)

- It gives a description of a family of jobs within a unique file :
  - ✓ corresponding naming for the same job
  - ✓ the definition of the job
  - ✓ the requirements to get the job
  - ✓ **the context of the activity**
  - ✓ **the competences, knowledge**
  - ✓ the **specific competences** (particular situations...)
  - ✓ environment, location
  - ✓ mobility

**Main**  
**Descriptors :**  
Context  
Competences  
Knowledge



# Example in the sector of Agriculture, Fishing, Landscape, Animal care...

- This “Professional Sector” is divided in several categories
  - ✓ agricultural machinery and foresters, landscape and natural areas, technical assistance and studies, production, animal care

## Les fiches métiers

Aide ?

Répertoire Opérationnel des Métiers et des Emplois (ROME)

Les fiches emploi/métier vous permettent de mieux connaître les métiers tels que nous les décrivons pour effectuer les rapprochements entre les offres d'emploi et les demandes d'emploi. (pour plus d'information consulter l'aide ? )

Rechercher une fiche métier

Par métier

Par compétences

Par domaine professionnel

Par thème

Par code ROME

AGRICULTURE ET PÊCHE, ESPACES NATURELS ET

Préciser le domaine

Préciser le domaine

Engins agricoles et forestiers

Espaces naturels et espaces verts

Etudes et assistance technique

Production

Soins aux animaux

Lancer la recherche

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# Example in the sector of Agriculture, Fishing, Landscape, Animal care...

- This “Professional Sector” is also associated to a theme :
  - ✓ Environment and sustainable development sector
  - ✓ Historical conservation and restoration of artwork
  - ✓ Research careers
  - ✓ Maritime occupations, nautical activities, and shipbuilding
  - ✓ Summer jobs, seasonal activities
  - ✓ Human services
  - ✓ Engineering
  - ✓ Low skilled jobs

## Les fiches métiers

Aide ?

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Rechercher une fiche métier

Par métier

Par compétences

Par domaine professionnel

Affiner le domaine professionnel

Associer un thème

Par thème

Par code ROME

Sélectionner un thème

Sélectionner un thème

- Métiers de l'environnement et du développement durable
- Métiers du patrimoine et de la restauration d'oeuvres d'art
- Métiers de la recherche
- Métiers de la mer, du nautisme et de la construction navale
- Métiers saisonniers, de vacances / Jobs d'été
- Métiers des services à la personne à domicile
- Métiers de l'ingénierie
- Métiers accessibles sans diplôme et sans expérience

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# Example in the sector of Agriculture, Fishing, Landscape, Animal care...

- Professional sector → associated to the topic “Environment and sustainable development sector”
- List (family) of jobs and activities, classification and hierarchization : each family is linked to a file describing the activities, the competences required (knowledge and skills), and the alternative jobs

Family of jobs	Alternative jobs / naming
Woodcutter	Arboricultural technician, forest worker, tree surgeon, wood cutting assistant...
Maintenance of natural areas	Green spaces cleaner, hedges cleaner, maintenance of walking and cycling trails, landscape gardener...
Nature conservation	Gamekeeper, fisheries protection, forester...
Forestry	Forestry worker, forestry foreman, team leader...
Counselling and technical assistance in agriculture	Counselling in farm management, agricultural counsellor, technician in vegetables growing...
<b>Engineering in agriculture and natural environment</b>	Agro-economist, Forest expert, Rural engineer...

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Example in the field of Agriculture, Fishing, Landscape, Animal care...

## Engineering in agriculture and natural environment : general definition

- The file extracted from the job center register (file A1303 © Pôle Emploi) gives a general definition
- General Definition : “...leading studies or management of scientific technical and economical projects (studies within the sector, territorial planning and water resource management, conservation of natural areas...) following the institutional requirements and territorial planning projects, and respecting agricultural exploitation location and environmental rules...”
- Evolution or alternative position :
  - ✓ implementation of call for tenders, and control
  - ✓ training, teaching and raising public awareness concerning these issues
  - ✓ coordinating a team

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Example in the field of Agriculture, Fishing, Landscape, Animal care...

## Engineering in agriculture and natural environment : the context of the activity

- The position and location :
  - ✓ territorial or state organization,
  - ✓ research unity,
  - ✓ industry,
  - ✓ Forest National Office
  - ✓ laboratory,
  - ✓ university, high school
- Description of activities and competencies associated

Example in the field of Agriculture, Fishing, Landscape, Animal care...

## Engineering in agriculture and natural environment : the knowledge

- Scientific and theoretical knowledge
  - ✓ agronomy, botany, climatology,
  - ✓ rural engineering, ecosystems,
  - ✓ environmental standards, rural law, ...
- Technical knowledge
  - ✓ cultivation techniques,
  - ✓ animal production techniques,
  - ✓ database software...
- Specific knowledge (depending on **the context of the activity**)
  - ✓ Public procurement code (to implement call for tenders)
  - ✓ Teaching methods (to teach),...



Example in the field of Agriculture, Fishing, Landscape, Animal care...

## Engineering in agriculture and natural environment : activities & competencies

- Examples :
  - ✓ identifying issues, and projects of research
  - ✓ evaluation of the feasibility
  - ✓ planning the strategic stages of a project, operating procedures...
  - ✓ counselling territorial organizations, industries, O.N.F. (Office national des forêts / forests national office),...
  - ✓ recommending measures for environmental protection
  - ✓ writing reports on specific issues, following environmental programs or institutional guidelines

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# Engineering in agriculture and natural environment

- Concerning the qualifications standards : the register of Pôle emploi refers to the National Register of vocational certifications



A1303 Ingénierie en agriculture et environnement naturel

Description du métier   Activités et compétences   Mobilité professionnelle   **Certifications**

**Certifications**

 • **Les certifications CNCP associées à cette fiche métier**  
Consulter sur le site CNCP les diplômes et certifications associées.  
[Voir les diplômes et certifications associées](#)

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# The point of view of Education : qualifications standards

## Example

### Engineer from the Institute of Life and Environmental Sciences and Industry

- The qualifications registered are described in a specific file within the register with :
  - ✓ A reference to the NQF (the file also indicates the level corresponding in the EQF)
  - ✓ The identification of the authority which attests the conformity of the procedure and awards the certification
  - ✓ A reference table describing certified learning outcomes and occupational standards, with a description of the context of the activity
  - ✓ A procedure to validate learning outcomes

## Engineer from the Institute of Life and Environmental Sciences and Industry : context of the activity

- Definition of an engineer (a title delivered by a specific commission) :
  - ✓ “It consists in the identification of issues and solving complex problems linked to conception, realization, and implementation of products, systems or services. The engineer must have good technical, economic, social and human knowledge and a solid scientific background”
- The reference table of competences → coherence with the jobs and occupations inventory

## Engineer from the Institute of Life and Environmental Sciences and Industry : context of the activity

- Specificity of the engineer AgroParisTech :
  - ✓ based on a **multidisciplinary training** integrating Life and Environmental Sciences and Technologies into Engineering Sciences and into Human, Economic and Social Sciences.
  - ✓ **open-mindedness, scientific and human capacities** allowing him/her to comprehend all the dimensions of sustainable development.
- Generic skills in this sector:
  - ✓ **analyzing** and **modelling** complex systems,
  - ✓ **conception** and **implementation** of strong, innovative solutions (scientific, technical, social, environmental approach / short-term or long-term projects),
  - ✓ **leading projects** by taking into account the social responsibility in a globalized frame

## Engineer from the Institute of Life and Environmental Sciences and Industry : competences

- **Generic competences** linked to the position of Engineer (savoirs-faire, savoirs-être)
  - ✓ Capacity to manage project: he/she leads and manage the projects in all aspects
  - ✓ Capacity to communicate: oral and written communication, and two foreign languages
  - ✓ (English – level equal to or higher than B2)
  - ✓ Capacity to lead and manage a team or to cooperate within a team
- **Specific Technical and Scientific skills** linked to the sector selected by the applicant and to the context of the activity:
  - ✓ he/she proposes, undertakes and implements the strategies to handle a complex issue linked to Life Sciences with strong technical and scientific background (**knowledge**) in *one specific area*



## Example in the field of *Productions, sectors and territories for Sustainable Development* : specific technical and scientific competences

- The Engineer is able to:
  - ✓ **Understand and manage** the working of production systems in order to produce goods and resources in a sufficient quantity and of good quality (**vegetal, animal, and forests resources**)
  - ✓ **Understand and integrate the ecological processes** in order to guarantee the sustainability of systems of production and the production of **ecosystem services** (benefits gained from ecosystems)
  - ✓ **Understand and integrate the social and economic conditions** (or process) of production systems and territories and **the indicators of its sustainability**
  - ✓ **Integrate the three dimensions of sustainability** of production systems and take into account the whole **ecosystems services** linked to agriculture and forests
- The Engineer knows how to:
  - ✓ **Analyse, evaluate, and manage** existing production systems
  - ✓ **Design and realize** innovative production systems at plot or territory level, coordinated to the evolution of needs and constraints of the stakeholders of the food-processing industry and sector (upstream and downstream)



## Example in the field of *Environmental management and Engineering* : specific technical and scientific competences / knowledge

- The Engineer is able to:
  - ✓ **Evaluate** the quality of the environment and of ecosystems services
  - ✓ **Evaluate** the environmental impacts of agriculture, forestry, industry, or territorial planning particularly on biodiversity.
  - ✓ **Analyze** the environmental risks
  - ✓ **Propose** and implement sustainable methods of management, planning, and production
  - ✓ **Design** plans of management of resources, species, natural spaces, landscapes, environmental risks combining technical expertise and analysis of stakes and stakeholders
  - ✓ **Design** environmental technologies and process by making use of ecological engineering for the management of biodiversity, water, waste, for the remediation of soils, and industrial conception
  - ✓ **Propose adapted solutions** to global changes
  - ✓ **Analyse** the dynamics within the group of actors, and **set up arrangements** for coordination adapted to the situations and to the environmental issues.
  - ✓ **Propose** an efficient agenda for actions legally, economically, and socially adapted to the relevant activities

# Engineer from the Institute of Life and Environmental Sciences and Industry : business sectors and jobs

- **Sectors**

- ✓ **Industry** : food-processing industry, pharmaceutical industry, wood industry, ...
- ✓ **Agriculture, forests, environment, territory planning** : vegetal and animal production, aquaculture; forests management, agricultural and forests development, territory planning, management and conservation of the environment, national forest office ...
- ✓ **Services** : administration, private consulting firm, ...

- **Types of jobs**

- ✓ **Studies** : Engineer in studies, Engineer in Research and Development, Consultant, Teacher, professor, researcher
- ✓ **Production** : Engineer in agricultural production, Engineer in forest production, .... Purchasing Manager, Manager in quality, control, safety activities
- ✓ **Management, communication** : director, manager, manager within an administrative service, International Relations Services, ...

## Engineer from the Institute of Life and Environmental Sciences and Industry : procedure to validate

- **First year** ( 60 ECTS) : common-core syllabus + realization of a training period of 4 weeks in small firm dealing with Life Sciences
- **Second year** ( 60 ECTS) : common-core syllabus, specific subjects and optional courses + a project + a minimum training period of 2 months in a professional context
- **Third year** ( 60 ECTS) : advanced knowledge + a project + a training period of 6 months with realization of a report at the end of study.
- The **pedagogical methods** are based on varied operational situations such as visits or projects realized in laboratory, in the sectors, in companies or competent bodies
- **Learning outcomes are validated** by examination during the year or terminal examination.
- The qualification can be validated through VAE (**validation of non formal learning**) based on the experience (partly or totally)

# French NQF...

Level I – Definition	Indicators
<p>Staff occupying jobs requiring normally a higher level of training (master – PhD, post-master's degree)</p>	<p>Besides scientific knowledge asserted in the context of a professional activity, a level qualification I (French NQF) requires the control of process of conception and research</p>