

The seven competences of a sustainable professional

The *RESFIA+D* model for HRM, education and training

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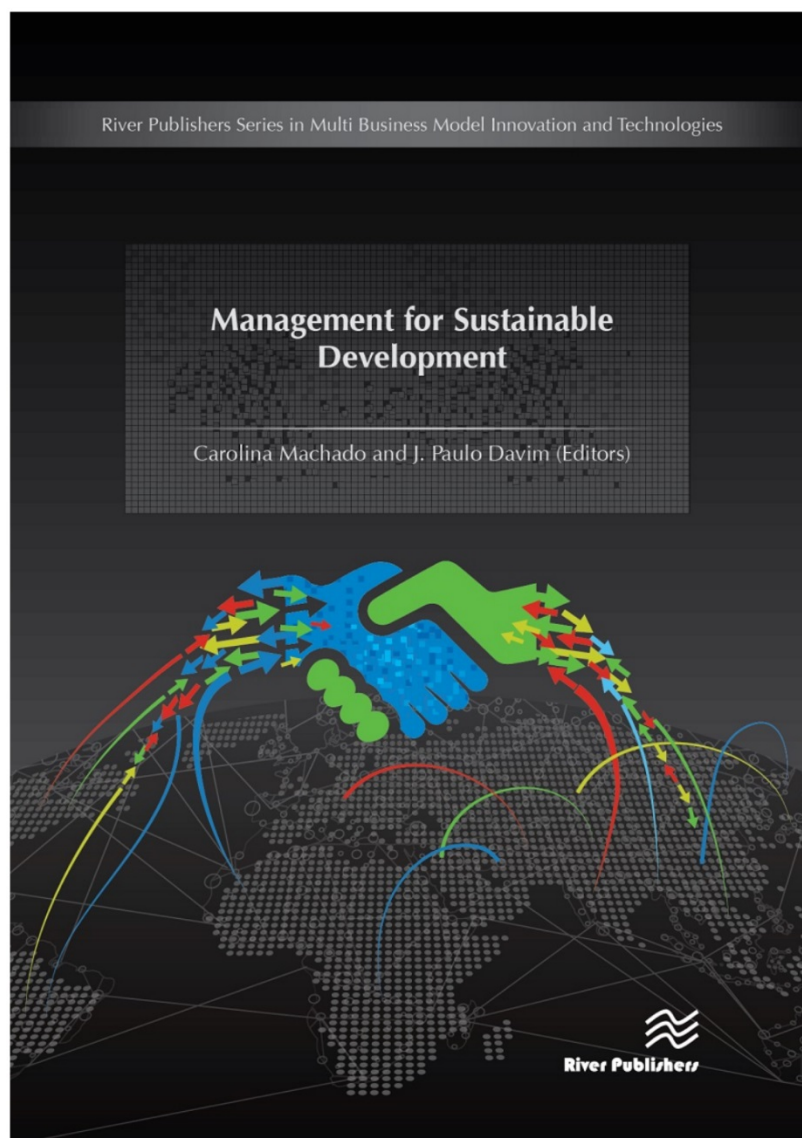
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Summary

Companies, governments and other organizations are essential for sustainable development. Their behavior however is always shaped by individual professionals. So, the competences of those professionals – actually of all professionals in whatever function or level – are quintessential for sustainable development.

The present chapter focuses on the competences of professionals towards sustainability. Several models for such competences have been designed over the last decades. One of them, the *RESFIA+D* model, has been operationalized as a management tool. It can be used by companies in relation to their long-term strategy and their HRM policy; by individual professionals as a tool for their personal development and career planning; and by universities and vocational schools to (re)design the graduate profiles or competence profiles, and hence the curricula.

In this chapter, first the notions of ‘competence’ and ‘sustainably competent professional’ will be described. An overview will be presented of a number of competence models, after which the *RESFIA+D* model will be introduced. On top of the set of competences in this model, a series of different levels of competence will be defined, after which procedures will be offered that enable companies, professionals and universities to apply the *RESFIA+D* model.

Next, some practical case studies of the application of *RESFIA+D* will be described. Finally, the chapter discusses the concept of ‘completeness’ in relation to a set of competences, focusing on *RESFIA+D*.

In several places in this chapter, competences will be illustrated with stories from real professionals exhibiting excellent behavior in relation to those competences. These stories are an illustration of the key thesis of the chapter:

Everybody, in whatever profession, has the ability to contribute to sustainability.

1. Introduction

Millions of companies and other organizations – NGO's, schools and universities, government departments, hospitals, etc. – are taking sustainable development seriously. Much has been invested in efforts to save nature and the environment, to increase social cohesion in communities and cities, to combat poverty, hunger and child labor, and to enhance corporate social responsibility (CSR). Both multinational companies and SME's are involved – although even more of them still lag behind.

Many authors writing about sustainable entrepreneurship and CSR focus on the behavior of companies and organizations *as a whole*. Although this is no doubt highly important, most of them seem to underestimate the fact that the behavior of companies ultimately always is the result of the behavior of *individuals*.

Some of these influential individuals are easy to recognize. They are the CEO's of the company, the board and the deans of the university or the hospital, the politicians within a municipality or a country: those with the top responsibilities. But other persons have an influence on the policy and the actions as well. Actually, each and every member of an organization is relevant for what the organization does and how it does it: the employees in a factory, the civil servants in a government department, the teachers and the students in a school or university, the doctors, the nurses and even the janitors in a hospital.

The consequence of this is that the competences of each of those professionals are relevant for the behavior and the rate of success of an organization. More specifically: if an organization strives to operate sustainably and societally responsibly, then the question is essential whether its staff members can be considered to be *sustainably competent professionals*.

The present chapter will discuss the concepts of 'competence', of 'sustainable development', and of the 'sustainably competent professional'. In order to do this, a model for sustainability competences will be used that was developed in the last decade in the Netherlands, called *RESFIA+D*. This model is being used in a number of organizations as a tool for HRM and for personal development, and in universities and schools for the (re)development of curricula of study programs (at the bachelor or master level) with the aim to integrate sustainable development into their education.

In order to illustrate this *RESFIA+D* model, a book was written by the author of the present chapter [1]. In this book, cases are described of professionals in a wide range of companies and other organizations, in which these professionals describe their personal actions within their jobs that are excellent examples of the various competences of *RESFIA+D*.

The book was published in 2015 in the Dutch language. At the same time, projects have started with the aim to publish the book in other languages, e.g. English, in which the Dutch cases are to be replaced by cases of professionals in the countries where these editions will be published.

Before going into the theoretical discussions about competences, the opening case of the Dutch edition of this book will be shown here.

A case study

Vita van der Heide, age 27, is a sustainability hero: what she has achieved is impressive.

Since a few years Vita is working as a beginning nurse in a large and modern hospital in the south of our country. In the years that she worked there, gradually she started to realize that, in her hospital, hardly ever any cases of child abuse were reported. At first she was ok with that, it gave her the impression that child abuse did not occur a lot in the city she lived and worked in. But over the years she started to find it more and more peculiar, as in other hospitals, even those in the same region, cases of child abuse were reported regularly. Those cases concerned physical or mental violence, or negligence, or even sexual abuse, in many cases by the own parents. It was hardly credible that, in the vicinity of the hospital Vita was working for, the number of child abuses really was considerably lower than in the rest of the country. There had to be another explanation! Apparently the hospital staff was less successful in recognizing the cases of abuse. Or might the colleagues have other reasons not to report?

Whatever the reason, it was quite serious: when children arrive in a hospital after having been abused heavily, it may be literally a matter of life and death that the medical staff does more than just bind up the wounds and dress the broken bones in plaster. If that is all the caretakers do, and they simply send the little patients back home, they fail dramatically.

Vita initiated talks about the problem with her colleagues, such as those at the emergency unit: naturally, they were the most important ones to recognize injuries and bruises, for example on the head, the arms or the genitals, as a case of child abuse. Most doctors and nurses were not worried, however. What you don't see, you don't know! Besides: from the discussions Vita had with them it became clear that many doctors and nurses found it all too much hassle: even one singular report of child abuse caused a mountain of work. Others told her that, now and then, they had indeed noticed signs of child abuse, but they had no idea about how or where to report this. In some discussions even fear showed up: what if, after an accused father filed a complaint against the informant, he would even await him or her outside the hospital?

Nevertheless: some of Vita's colleagues – a few doctors, a hospital psychologist and some nurses – agreed with Vita: this was not all right. A working group was formed. They investigated how other hospitals dealt with this kind of situations. They designed a training program for their own colleagues. How do you recognize child abuse? In which cases are broken arms, bruises, burning wounds, scars or injured genitals indications of abuse? How can you see through stories such as 'Yes, she fell down the stairs!' What do you do when you suspect child abuse? All such issues were adopted in the training program. Meetings with the hospital board were held to design a clear route for reporting. A standard report form was introduced, which had been in use in other hospitals for this purpose for several years.

The working group worked hard to disseminate the news about the reporting procedure and its relevance. Resistance came from many doctors and nurses. But the group persevered, supported by the hospital board. More and more colleagues grew enthusiastic. Now, a few years later, several cases of child abuse are reported weekly. Thanks to this, every year at least a hundred children are saved from a violent home situation, and in a number of cases from death.

Real professionals and their competences

What Vita has done is impressive. She was a young woman, pretty much at the start of her professional career. She did not have a managerial task: she was just one of those thousands of nurses in this huge hospital. But she minded what she saw – or rather: what she did *not* see. And that was not all. As she thought that something was wrong, she started an initiative. She did not rest until, in spite of all kinds of resistance, she found allies with whom she took up the glove together.

This first example wonderfully proves that everybody, in whatever profession, is able to do something really relevant. Vita got something in motion in the interest of *people*. Others have, thanks to their profession, been able to act for *nature* or for the environment. All of these people prove their genuine professionalism: men or women who do more than they ought to do based on their job description. Just because they themselves think they should.

They all contribute, each in their own way, to sustainable development. They show one or more extraordinary *competences*: skills that make them excellent professionals.

Vita proved to possess several of those competences when she struggled for the stakes of injured children. One such competence was: she listened to the voice of her consciousness. She did not uncritically do the tasks that had been ordered by her superiors. She thought for herself about her job and her working environment, and she took the initiative because she thought she ought to. This is an excellent example of a competence that is described in *RESFIA+D* as:

Employ his or her conscience as the ultimate yardstick.

In the *RESFIA+D* model, this competence is explained as follows: 'You exhibit exemplary behavior and leadership thanks to your openly conscious approach.' This is exactly what Vita did: although she did not have a management position, she established leadership by first getting a small group on her side, next the hospital board, and finally a large majority of the entire staff.

Another competence Vita showed was:

Personal responsibility.

She did not hide herself behind her formal job description or behind the assignments and opinions of her superiors, she felt a personal involvement of what was going on in 'her' hospital. There, too, she proved herself an excellent professional.

Competences for sustainability

The competence 'responsibility' is described in *RESFIA+D* as: 'Based on your personal responsibility you work continuously on the improvement of your activities, thus contributing to sustainable development.'

Perhaps it surprises the reader to see here the term 'sustainable development'. Does combating child abuse have anything to do with sustainable development?

Sure! To be precise: with what is described as 'social sustainability'. Besides that there is 'ecological sustainability', aiming at nature and the environment, and 'economic sustainability', dealing with economic stability, sustainability of companies, and prosperity of people and communities. Together they form the well-known triangle 'people', 'planet' and 'profit'.

Vita is a sustainability hero. She illustrates how someone in an 'ordinary' profession, in an 'ordinary' position in a random organization, can play a special role for the sake of our society. Her example proves that *everybody* can do that. On the condition that he or she really wants it, and keeps the eyes wide open to see what can be done.

Everybody, in whatever profession, has the ability to contribute to sustainability.

The civilian, the consumer and the professional

The reader may be familiar with it. Various sources – e.g. books and presentations – make a distinction between two kinds of roles of individuals: the *citizen* and the *consumer*. This idea can be recognized easily. Thinking as a citizen about responsible behavior, one may think 65 mph on a highway is a pretty fair speed, and healthy food is important. But when the same person is in a car, it feels good to drive much faster, and in a supermarket those nice & shiny, sweet or spicy snacks are more attractive. But maybe the reader's mind is stronger than average.

Every moment again it is a consideration: the sensible citizen versus the temptable consumer. Actually, both have opportunities to act sustainably: the citizen by voting conscientiously, participate in discussions or support societal organizations. The consumer by carefully using light and water, buying fair trade products and sustainable fish and wood, and never more than needed. Many excellent books and websites on such topics have been launched.

But there is a third role: the *professional*. Together, the citizen, the consumer and the professional form a kind of triangle representing the three main roles of human beings within their lives.

The present chapter focuses on the third role: the professional.

2. The sustainably competent professional

Professional competences

The concept of 'competence', acquired as a result of educational or other learning processes and experiences, has been defined many times, and not all definitions are in agreement with each other. Many definitions refer mainly to the behavior of the professional or to the results of such behavior. An example is [2]:

"A competence is the ability of an individual to show adequate behavior and therefore to act excellently e.g. as a researcher or a professional. The individual characteristics of the student are essential. Competences are combinations of (core professional) skills, knowledge, attitudes, standards and values. One student may be just as able as another, but personal characteristics like courage, perseverance and motivation determine which student is better suited for a certain function."

Other definitions put less emphasis on behavior, but instead directly describe competences as sets of skills, knowledge, etc.

A 'competence profile', i.e. a full set of competences, can be described using so-called 'critical professional situations', i.e. situations in which someone is confronted with a professional problem or dilemma which is exemplary for the profession [3]. Essential for such a situation description is: (a) a context in which it is located; (b) a kind of role or function that the professional fulfils, or a kind of result that has to be reached; (c) the specific tools that are needed: i.e. not only physical tools (like a hammer), but also knowledge, skills, attitude. These concepts may be illustrated with the example of some competences of a plumber.

The competent plumber

A competence: what is it, really? Or, to put it in another way, what is a competent professional?

About these two questions, complex theories have been formulated, based on thorough scientific studies. But it does not have to be that difficult. Actually it is very simple:

A competent professional is someone you will ask again to do a job for you.

Because he or she recently did it in a way that you liked.

In order to imagine how someone like that will act, it may be smart to start in a not too complicated way. No abstract kind of profession that cannot be grasped easily. Instead, in the present section a professional will be followed who has a clearly visible task in a well-known private environment.

For a starting point: please, imagine a dramatic situation in someone's own house. A small catastrophe. What has happened? The son of the family, three years old, has – just for fun – been hanging from the bathroom sink, which has broken entirely off the wall and is lying on the floor. The boy is all right, but less so is the bathroom. The water pipe has broken into pieces, and at present the house possesses a beautiful fountain, right where the family has always *not* dreamt of having one. The water is gushing out! It has already flooded the bathroom floor and the landing, and it has just started to waterfall down the stairs towards the hall & living room. What about the father of the family – what does he do? He can think of just one thing to do, and so he does: he panics!

“Call the plumber...” he sighs. Ten minutes later the plumber arrives. So now, what can you expect him to do, as a competent professional?

The first thing he does, is eliminate the immediate cause, making sure it does not get any worse. That is to say: find the main cock of the waterworks in the house and turn it off. And he definitely should not ask daddy where this main cock is, for daddy is panicking right now, all of a sudden he doesn't know anything anymore. So the good man has to know, all by his own, where the biggest chance is he will find the main cock: that is, under the doormat behind the front door. Without hesitation, he lifts the mat from its place, removes the wooden panel and turns off the main cock. Well, that's something.

The second thing he does is: calm Dad down, so he can contribute something useful. So the plumber addresses him and tells him things like: “Look, it isn't really that bad. It's clean water after all, we will make it all right. Now if you could fetch a couple of buckets and some towels, I will...” etcetera. It is good he does that, Papa's mind clears just a little and his senses return to him.

Only when this has been done, the plumber will go upstairs, equipped with the necessary tools, where he will start with the things you would expect primarily from a person like him. So he will plumb, or whatever it may be called, and start repairing the water pipe and the sink.

What the plumber actually did

Someone who proves to act in such a firm and expert way, is definitely a professional. And he did much more than just the technical stuff you might think of at first, in association to his profession.

In his first act in this locally disastrous situation, his role was primarily that of a disaster fighter. His act, the achievement he delivered, was the turning off of the main cock. In doing this, he made use of an architectural insight in how houses usually are constructed. At that moment the tool he used was this architectural insight.

In his second achievement, calming the father down and giving him some directions, he acted in a very different role: that of an aid worker. The tool he used this time was his knowledge of men.

Only in his third role he functioned as a technician, when he started making repairs. For this, he will probably have used tools such as pipe wrenches and soldering torches.

Context, roles, achievements and tools. These together define competences, as a brief overview will show.

Context:

Inundation in the bathroom

Role #1:

Disaster fighter

Achievement:

Find main cock, turn it off

Tool:

Architectural insight

Role #2:

Aid worker

Achievement:

Calm people, give directions

Tool:

Knowledge of men

Role #3:

Technician

Achievement:

Repair water works

Tools:

Pipe wrench, soldering torch, etc.

In this catastrophe scenario, the plumber established three different competences, and at the right moment he shifted fluently from one to another role. This example allows answering the two above questions.

*A **competence** is the ability to deliver, in a given **context**, in a certain **role** solid **achievements** making use of appropriate **tools**.*

*A **competent professional** is someone who is able, in a range of contexts, to shift flexibly between the various roles that are demanded, and who delivers solid achievements in each of them.*

A person who proved being able to do that – that's someone you will ask again to do a job for you.

Sustainable development

Many people associate the word 'sustainability' with nature and the environment. This includes related topics such as climate change, sustainable energy, pollution, and aerosols.

Others will quickly add: 'But wait, sustainability: isn't that about people too?' And when asked for an explanation, they may mention poverty and hunger in developing countries, or refugees, discrimination and issues concerning a multicultural society.

Indeed, sustainable development is about many issues. Sometimes this makes it hard for people to understand the concept properly. It may seem as if *every* problem we are struggling with – in the world, in Europe, Africa, America or Asia, in our own country, or even in our own village or township – has to do with sustainability. Many people have a feeling that 'sustainability' is some sort of container, in which you can throw each and every problem in the entire world. If this is true, then what use is such a word? What does it explain? How can you ever know how to live or work in a sustainable way?

The concept of 'sustainable development' was used for the first time in 1980, in a publication of three global organizations for nature and environment [4].

In the following years the 'Brundtland Commission' performed a thorough study, on behalf of the United Nations. In 1987 the commission published its final report, called 'Our common future' [5].

According to the report sustainable development is:

'a development that meets the needs of the present without compromising the ability of future generations to meet their own needs.'

In other words:

On the one hand sustainable development is about *now*: about the desire to grant every person in the world to lead a decent life. This concerns e.g. combating poverty and hunger. Besides: proper education and healthcare for everybody, wherever in the world. A healthy living environment, freedom, democracy, safety, human rights. In short: the chances for each human being to be a full member of society.

On the other hand sustainable development is about *later*: about the concerns we have that we are overexploiting our planet with our present lifestyle. About our desire to grant our children, grand- and great-grandchildren a decent future, which is only possible if we change our present way of living drastically.

More details about the two dimensions *now* and *later*, about the definitions of sustainable development and about the Triple P (see below) are to be found in [6], a university textbook introducing sustainable development to students of all disciplines, or in its Dutch equivalent, [7].

Solutions that really work

Are those two, *now* and *later*, really connected? What makes sustainable development anything different than a grab bag of issues, a *container concept*?

Actually all those issues in the 'grab bag' are strongly linked to each other. They influence each other in many ways.

One example illustrates this. One of the big issues of our generation is the world population growth. This growth takes place at a dazzling speed. It took mankind hundreds of thousands of years to grow to the number of one billion people: this point was reached around the year 1800. The second billion took us less than 130 years. In 2011 we completed the seventh billion, an accomplishment we made in just 12 years!

What is driving such growth? All right, sex, of course. But that is certainly not the only answer. An important key lies in the fact that the current population growth lies almost entirely in the poor countries. Why there? Because the people there need children – as an old age provision. In circumstances of poverty, your children are the only ones who will feed you, clothe you and house you when you are old. Moreover, if child mortality in your country is high, you will certainly want to have a lot of kids! It's a fixed pattern: *everywhere where prosperity increases, the birth rate decreases*. In various wealthy countries the population is even shrinking slightly.

If you want our great-grandchildren to have a decent future, the global population growth must come to a halt, so much is absolutely certain: if not, our planet will go to pieces. This requires a solid economic growth in the poor countries. So even if you don't wish the poor people to become more prosperous from a feeling of solidarity or compassion, you still do wise to wish that for them, from a rational consideration: it is quintessential for your own future, or at least of that of your posterity.

On the other hand: such a strong economic growth may of course increase the global *ecological footprint* considerably, as e.g. the present Republic of China illustrates. Unless we find clever ways to avoid this. Partly this can be done with the help of new science and technology. For the rest it will have to be accomplished through changes in our behavior as consumers.

This example illustrates: poverty, economy, ecology, science, technology and human behavior have a strong interaction with each other. For that reason, sustainability is not simply a container or a grab bag with all problems thrown separately into it. To the contrary: sustainability is the only way to understand the ways in which all of those problems and issues are linked together, and to find solutions that really work.

The Triple P

The way in which the Brundtland Commission describes sustainable development has been generally accepted. But, to be honest, in real life it is hard to apply practically. '*Meet the needs of the present generation*', right. How? And by the way: *which* needs? Everybody a second car and every half year a new smartphone? '*Future generations*': wonderful, but how many generations? A thousand?

Many ways have been designed to make sustainability more concrete. One of the best known was created by Ismail Serageldin in 1996 [8]: the 'Triple P', i.e. the three P's: 'people', 'planet' and 'profit'. Together they are called the 'pillars of sustainability'.

Social sustainability ('people') *at an individual level is about respect for human rights, freedom and safety, cultural values, education and health, personal development, diversity, empowerment and participation. At a societal level it concerns peace, democracy, solidarity en social cohesion.*

Ecological sustainability ('planet') *relates to conservation and resilience of the natural environment. This implies that ecosystems and biodiversity are protected, and the ability of the natural environment to provide us with resources and regenerate our waste is not harmed.*

Economic sustainability ('profit') *is present if the development towards social and ecological sustainability can take place in a sufficiently stable economic environment and is financially feasible, and if individuals, families and communities are guaranteed to be free of poverty. (Sometimes, instead of 'profit', the broader concept of 'prosperity' is used.)*

Sustainable development means that all the above aspects and themes are seen in their mutual dependency and interrelatedness, in such a way that the various interests, problems and solutions are constantly and harmoniously weighed against, and connected with each other. This principle is often referred to as: 'The three P's must be in balance'.

The necessity of sustainably competent professionals

The Brundtland report and the Triple P don't guarantee that sustainable development is now crystal-clear to everybody, or that it is easy to decide in all cases which decisions or actions are sustainable and which are not. Choices concerning sustainable solutions are usually far from simple. As the use of oil and gas contributes to the greenhouse effect and hence to climate change, would it be wise to use nuclear power for a couple of generations, or would that be even more unsustainable? Should we make cars more sustainable, or would that be highly unsustainable on the long term because we might have to get rid of all or most cars? Should we ban child labor in Asia and Africa as fast as we can, even if this means that their parents, who depend on their children's income, would starve?

No, easy answers don't exist. The dilemmas are complicated, and so are the solutions. At the same time there are lots of opportunities. Opportunities to make the world more beautiful than it is at present. Wouldn't it be great if there was no more hunger anywhere? If war had disappeared altogether? If all people could live in freedom and security? If nature was resilient? Whether this is possible, is not certain. But there are two things that are very certain.

The first certainty is:

If we all believe that the human world is doomed to perish, we will be right.

Negative thinking then will become a self-fulfilling prophecy, a prediction that makes itself come true, simply because everybody will sit down under it. The consequence is that there is only one thing we logically can do: put our shoulders to the wheel! Let's work on sustainability with everything we've got!

The second certainty is:

As the solutions are complicated, we need every professional to make it work.

As it is at present, a considerable number of companies – large and small ones – are contributing intensively to sustainable development, mainly because by coincidence persons happen to be in the management chairs who have decided so. The same is true for governments of countries: some have a sustainable policy... in many cases until the next election brings in another government. In other words: whether a company or a country strives to operate sustainably, depends on who happen to be in the executive positions. I.e., ultimately on coincidence.

But sustainable development is far too essential to depend on coincidence. We need everybody, each professional, high or low in whatever enterprise, government, educational institution or societal organization, to contribute to sustainability.

3. Competence models

Generic competences

A distinction can be made between generic competences, which are applicable to all disciplines and sectors, and more specific competences, which are applied to a sector, a discipline or even to one individual profession.

Several attempts were made to develop a set of generic competences. Some of them are related to existing professionals with many years of experience. Others have been developed as a tool for higher education, in order to describe academic profiles, graduate profiles, or end terms of curricula.

One set of competences, oriented at higher education, was formulated on behalf of the Dutch Council for University Colleges in 2001 [9]. The set consists of ten generic competences:

"1. Broad professionalization

The graduate is demonstrably equipped with current knowledge which is in line with recent (scientific) knowledge, insights, concepts and research findings and recent (international) developments in the professional field in order to qualify for:

- independently performing the tasks as a beginning professional

- independently functioning within an organization
- shaping the own professionalization

2. Multidisciplinary integration

Integration of knowledge, insights, attitudes and skills of various disciplines.

3. (Scientific) application

Application of - from (basic and applied) research available - knowledge, theories and concepts and research results on issues that graduates are faced with in their professional capacity.

4. Transfer and versatility

Application of knowledge, insights and skills in varying professional situations.

5. Creativity and complexity in actions

Defining and analyzing issues in which the problem is not clear in advance and for which no standard procedures are applicable.

6. Problem oriented working

Independently defining and analyzing complex issues concerning problems in the professional practice, based on relevant knowledge and (theoretical) insights, developing and applying (new) solution strategies, and judging the effectiveness of new solutions.

7. Methodical and reflective thinking and acting

Setting realistic targets, structurally planning the own work, and reflecting on the own professional activities, based on gathering and analyzing relevant information.

8. Social and communicative competence

Communicating and cooperating in a multicultural, international and multidisciplinary environment, meeting the demands of participation in a professional organization.

9. Basic qualification for management functions

Performing low-level leading and managing tasks.

10. Awareness of societal change

Developing understanding and involvement in ethical, normative and societal issues related to the professional practice.”

Around the same time, a set of generic competences for engineering education was formulated by a working group of universities for applied technology [10]. The working group chose a different approach, the results of which are shown in table 1.

Table 1. Generic competences for engineering education

<i>Segment</i>	<i>Key competence</i>	<i>Key terms</i>
Engineering	Thinking in models, systems, processes	Find solutions through models, systems, processes Analyze, evaluate, synthesize, solving problems Transfer of knowledge and information
	Working with innovation cycles	Applied research Phases in design or innovation cycle
	Role fulfilment	Making: project leader Translating: salesman, consultant Managing: manager, entrepreneur
	Professional	Awareness to use societal, ecological and economic boundaries Awareness to transcend disciplinary boundaries Strategic thinking Sustainable development Acting from relevant physical and business concepts, methods and tools
Self-guidance	Learning to learn	Attitude aimed at life-long learning Independently decide and implement learning goals and -strategies, evaluating the results Reflect on own behavior to give and receive feedback
	Take own responsibility	For professional and ethical dilemmas, make a decision based on solid societally accepted standards and values
	Take initiative	Adapt quickly to changing labor circumstances intrinsically motivated Result oriented working based on perseverance
Social-communicative	Functioning independent or in a team	Carry out tasks according to planning, which contribute to a chosen result As an expert, alone or as a team member, act according to customer wishes As an expert, alone or as a team member, give advice about disciplinary or professional issues Pay responsibility about own acting to oneself and to others
	Interdisciplinary communication	Function socially and communicatively effectively in a multidisciplinary environment within the professional context Good oral and written expression within the professional context
	Leadership	Based on own leadership style, encourage employees to persevere, accept and learn from mistakes Stimulate employees to take personal initiatives Be a role model for employees Show confidence and self-assuredness Give a feeling of shared responsibility to employees

The Dublin descriptors

In several European countries, a strong impulse for the definition of generic graduate qualifications came from the Bologna Agreement of 1999. Around 2001, Flanders and the Netherlands were preparing their joint accreditation system of higher education. As a consequence of the Bologna Agreement, they needed a clear distinction between the first, second and third cycle of higher education, which in many countries are equal to the Bachelor, Master and Doctor level. A 'Joint Quality Initiative' was set up, together with several other European countries. During a meeting in 2004 in Dublin, the so-called 'Dublin descriptors' were agreed (also called the 'Bologna Qualification Framework'). This set of qualifications defines the differences between the three cycles [11]:

“Qualifications that signify completion of the first cycle are awarded to students who:

- have demonstrated knowledge and understanding in a field of study that builds upon and extends their general secondary education, and is typically at a level that, whilst supported by advanced textbooks, includes some aspects that will be informed by knowledge of the forefront of their field of study;
- can apply their knowledge and understanding in a manner that indicates a professional approach to their work or vocation, and have competences typically demonstrated through devising and sustaining arguments and solving problems within their field of study;
- have the ability to gather and interpret relevant data (usually within their field of study) to form judgements that include reflection on relevant social, scientific or ethical issues;
- can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences;
- have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy.”

“Qualifications that signify completion of the second cycle are awarded to students who:

- (...)
- can apply their knowledge and understanding, and problem solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study;
- have the ability to integrate knowledge and handle complexity, and formulate judgements with incomplete or limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgements;
- can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously;
- (etc.)”

“Qualifications that signify completion of the third cycle are awarded to students who:

- (...)
- have demonstrated the ability to conceive, design, implement and adapt a substantial process of research with scholarly integrity;
- are capable of critical analysis, evaluation and synthesis of new and complex ideas;
- (...)
- can be expected to be able to promote, within academic and professional contexts, technological, social or cultural advancement in a knowledge based society.”

The Dublin descriptors were used by many universities and study programs as one of the starting points for the definition of professional competences of their graduates.

All three examples of generic competence profiles described above show a number of characteristics that are highly relevant for sustainably competent professionals. This is remarkable, as they did not have the intention to focus on sustainable development. Other attempts to define competences however did focus on sustainability.

Generic competences for sustainable development

In discussions with professors and lecturers in higher education, many times the same question has arisen:

“Should ‘sustainability’ be added as an extra competence to our existing competence profile?”

Such a question illustrates that a lot of lecturers found it hard to make a connection between sustainable development and the existing graduate profiles. If a ‘sustainability competence’ is formulated as ‘the ability to think and act in a sustainable way’ (as has been proposed by some), that does not really meet a desired characteristic of a competence profile, i.e. that the curriculum can be deduced from it. What exactly would ‘think and act in a sustainable way’ mean? In which critical professional situations is it expressed, in which roles and with which tools?

Several more appropriate approaches to ‘SD competences’ have been formulated, as [12, p. 105] describe. One is the ‘instrumentalist’ approach, offering lists of knowledge, skills and values.

Opponents however advocate an ‘emancipatory’ approach, putting an emphasis on raising a critical attitude of the students.

De Haan introduced the notion of 'Gestaltungskompetenz' ('shaping competence') [13], [14]. According to [12] this concept offers a combination of the instrumentalist and the emancipatory approach. The concept was detailed by [15] as a set of key competences:

1. competence in foresighted thinking;
2. competence in interdisciplinary work;
3. competence in cosmopolitan perception, transcultural understanding and co-operation;
4. participatory skills;
5. competence in planning and implementation;
6. capacity for empathy, compassion and solidarity;
7. competence in self-motivation and in motivating others; and
8. competence in distanced reflection on individual and cultural models.

Although this set of eight competences shows many similarities with the earlier quoted sets of competences, including the Dublin Descriptors, there is one important difference. Where most of De Haans competences are value-free, describing desired professional behavior in a 'technical' way, just as the earlier quoted generic competences, there is one competence which is normative and not value-free, and which refers to an attitude or to personal emotions rather than to behavior: #6, the capacity for empathy, compassion and solidarity.

Not all ESD developers add such values to their sets of SD competences. One such set is published by the Commission on Education and Communication of the IUCN [16], which states:

"To be successful, education for sustainable development (ESD), like all good education, must blend knowledge and skills. ESD must provide practical skills that will enable people to continue learning after they leave school, secure sustainable livelihoods, and live sustainable lives. These skills will differ with community conditions. The following partial list of skills will help initiate discussions about the types of skills students will need as adults in those communities. Note that these skills, while totally consistent with good basic education, also fall into one or more of the three realms of sustainable development:

- the ability to communicate effectively both orally and in writing;
- the ability to think about systems (both natural and social systems);
- the ability to think in time – to forecast, to think ahead, and to plan;
- the ability to think critically about value issues;
- the ability to comprehend quantity, quality, and value;
- the capacity to move from awareness to knowledge to action;
- the ability to work cooperatively with other people;
- the capacity to use various processes – knowing, inquiring, acting, judging, imagining, connecting, valuing, questioning and choosing; and
- the capacity to develop an aesthetic response to the environment."

In this set, values are mentioned several times, but there is no clear indication of a desire of the authors that the professionals act based on a set of ethical or normative values, let alone compassion. This may be a consequence of the characteristics of professional profiles in general, which usually are formulated in terms of behavior rather than attitudes or internal motivations or emotions. Another author however, Van der Woude [17], expressly includes such elements. He describes SD competences as a set of professional roles:

- The global citizen / steward
- The professional
- The equilibrist
- The forward thinker
- The connector
- The steersman
- The function oriented innovator
- The creatively involved

Each of these eight roles is explained by Van der Woude. As an example, the 'global citizen / steward' is described as follows:

“The global citizen / steward cares for himself, for others and for the physical reality. He is convinced that we should carefully deal with the finite stock of resources and that we should prevent environmental pollution and damage to nature in order to preserve our planet. He understands that this is only possible if we do not transfer our problems to others, don’t live at the cost of others, but share prosperity and well-being equally among the world population. North cannot over-consume at the cost of South. To reach a global balance, the global citizen / steward thinks we should be prepared to listen to each other, and that, instead of competition, we should seek cooperation and that we should work on a safe environment in which it is good to live and work.”

Such a description is clearly value-driven. Other proposed sets of SD competences seem to be somewhere in between, e.g. [18] and [19]. The same is true for the ESD competences defined in the Barcelona Declaration of 2004 (see [20]).

The various sets of descriptions of SD competences or roles differ to a certain degree. But an analogy comes up with the way in which the continuous spectrum of visible light is split up into a discrete number of colors: where western civilization is used to discern 7 colors (ranging from red to violet), other cultures use different sets of colors, but they all refer to the same spectrum. Analogously, the various discrete sets of competences seem to refer to about the same continuous spectrum describing a professional that is effectively able to contribute to sustainable development.

This is even true, when a specific aspect of sustainable development is studied: transitions, and more specifically: transition management. [21], [22] designed a competence profile for transition professionals. [23] added more details. Both combined in [24], this results in table 2.

Table 2. Competences of transition professionals

<i>Cluster</i>	<i>Role</i>	<i>Competence</i>	<i>Methods & techniques</i>
Pattern recognition	Manager	<ul style="list-style-type: none"> • Integral thinking • Frankly interviewing • Analytical skills • Conceptual power 	Integral system analysis Actor and network analysis Historic regime analysis Fact finding
Reorientation	Innovator Researcher Team worker Manager	<ul style="list-style-type: none"> • Vision and inspiration • Guts and Power of persuasion • Creativity and new ideas • Consciousness of history 	Scenario analysis Future explorations Backcasting Reframing
Experimenting	Innovator Net-worker Manager Team worker	<ul style="list-style-type: none"> • Alliance management • Mobilizing power • Organizational skills • Second order learning 	Actor and network analysis Strategic niche management Flexible design
Anchoring and scaling up	Net-worker Researcher Manager	<ul style="list-style-type: none"> • Anticipation skills • Entrepreneurship • Power of persuasion • Lobby and networking skills 	Actor and network analysis Integral system analysis Strategic niche management
Monitoring	Researcher Team worker	<ul style="list-style-type: none"> • Observation skills • Reflection skills • Anxiousness • Self-consciousness 	Transition monitoring Evaluation techniques Learning histories Reflection sessions
Transition management	Researcher Team worker Manager	<ul style="list-style-type: none"> • Systems thinking • Feeling for timing • Balance contents, process and result 	

Sets of competences like the above may offer some clarity to lecturers wanting to integrate sustainable development into competence-based education. Nevertheless, in the eyes of many university lecturers they were not sufficiently operational, as meetings and discussions in the years around and after 2005 made clear. Besides, managers of companies indicated that such competence sets were too abstract to allow them to apply the sets in real life, e.g. as a tool for HRM.

Repeated requests were received by the author of the present chapter from managers and lecturers to create practical clarity concerning the relations between competences and sustainable development. Hence, a project

was started with the aim to design a model for competences for sustainable development that could be applied in higher education, in companies and other organizations, and by individual professionals who want to plan the next steps in their careers. Based on the above mentioned sets of competences, *RESFIA+D* was developed, validated and improved between 2006 and 2012. It has been applied since 2009.

4. The *RESFIA+D* model: the seven competences of the sustainable professional

RESFIA+D

The *RESFIA+D* competence model consists of seven competences. The first six characters of its name, ‘*R-E-S-F-I-A*’, represent six generic competences, i.e. competences you may expect from *any* professional. The seventh, ‘*D*’, is short for ‘Disciplinary’, that is to say: related to separate professions, branches or disciplines. Each of the six generic competences is divided into three more specific descriptions of actions that are to be expressed by the professional. The competences are shown in table 3.

Table 3. The seven competences of *RESFIA+D*

<p><i>R: Responsibility</i></p> <p>A sustainably competent professional bears responsibility for his or her own work.</p> <ul style="list-style-type: none"> - <i>R1</i>: Create a stakeholder analysis on the basis of the consequence scope and the consequence period - <i>R2</i>: Take personal responsibility - <i>R3</i>: Be held personally accountable with respect to society (transparency)
<p><i>E: Emotional intelligence</i></p> <p>A sustainably competent professional empathizes with the values and emotions of others.</p> <ul style="list-style-type: none"> - <i>E1</i>: Recognize and respect his or her own values and those of other people and cultures - <i>E2</i>: Distinguish between facts, assumptions and opinions - <i>E3</i>: Cooperate on an interdisciplinary and transdisciplinary basis
<p><i>S: Systems orientation</i></p> <p>A sustainably competent professional thinks and acts from a systemic perspective.</p> <ul style="list-style-type: none"> - <i>S1</i>: Think from systems: flexibly zoom in and out on issues, i.e. thinking analytically and holistically in turn - <i>S2</i>: Recognize flaws in the fabric and sources of vigor in systems; have the ability to use the sources of vigor - <i>S3</i>: Think integrally and chain oriented
<p><i>F: Future orientation</i></p> <p>A sustainably competent professional works and thinks on the basis of a perspective of the future.</p> <ul style="list-style-type: none"> - <i>F1</i>: Think on different time scales – flexibly zoom in and out on short and long term approaches - <i>F2</i>: Recognize and utilize non-linear processes - <i>F3</i>: Think innovatively, creatively, out of the box
<p><i>I: Involvement</i></p> <p>A sustainably competent professional has a personal involvement in sustainable development.</p> <ul style="list-style-type: none"> - <i>I1</i>: Consistently involve sustainable development in the own work as a professional (sustainable attitude) - <i>I2</i>: Passionately work towards dreams and ideals - <i>I3</i>: Employ his or her conscience as the ultimate yardstick
<p><i>A: Action skills</i></p> <p>A sustainably competent professional is decisive and capable of acting.</p> <ul style="list-style-type: none"> - <i>A1</i>: Weigh up the unweighable and make decisions - <i>A2</i>: Deal with uncertainties - <i>A3</i>: Act when the time is right, and not go against the current: ‘action without action’
<p><i>+D: Disciplinary competences</i></p> <ul style="list-style-type: none"> - <i>D1</i>: To be defined by the user - <i>D2</i>: Etc.

In the following section, some of the generic competences will be illustrated by cases that are again derived from [1]. Next, a case from the same source will be used as an illustration to the disciplinary competences.

Some case studies of competences

Example 1: Finding stakeholders through crowdsourcing

First, here is an illustration of generic competence R1: *Create a stakeholder analysis on the basis of the consequence scope and the consequence period.*

The ideas of Simone Lopulisa immediately fell on fertile ground. She works for ASN Bank, one of those special banks that adopted sustainability as their basis or their mission, and really operate from that. The bank attaches much value to transparency and to a dialogue with customers, stakeholders and society. Probably that was the reason why Lopulisa's plan was immediately appreciated highly. She proposed to perform a stakeholder analysis in a special way.

Who all have an interest in whatever you do as a professional? Your customers, of course, or your pupils or students, or perhaps your patients, that stands to reason. Your shareholders, your managers, colleagues, employers: please choose whoever apply to you. Your partner and your children, if you have any, as your work (hopefully) creates income. They all are obvious stakeholders of your work.

But there is more. Suppose that your work causes annoying noises. Or perhaps your visiting customers cause parking problems. In those cases you create nuisance for your neighbors. This implies that they too have a stake in your work, albeit a negative stake.

Negative stakes may exist in many ways. If you work too hard, your family may suffer from it. If you sell clothing that is produced in China, there is a chance that you profit from child labor or wage slavery. If you drive by car to your work, you cause emission of greenhouse gases – even if you use an electric car – and aerosols. Don't get me wrong: this is not an accusation. *Everybody* causes negative effects, you just can't avoid it. Of course you can strive to minimize it.

The first step in accepting responsibility consists of finding all stakeholders, both those with a positive stake – a benefit – and those with a negative one. The next step entails consultation with them aiming to maximize the positive, and minimize or compensate for the negative.

If a company performs a stakeholder analysis, this usually starts with a group of sensitive and experienced members of staff, together discussing about who has a stake in what the company is doing. In most cases the traditional groups will be recognized, e.g. the shareholders and the customers. But the risk is that there will be 'blind spots', causing certain kinds of interests to go unnoticed. Simone Lopulisa proposed to adopt a totally different approach, through which each and all – known or yet unknown – stakeholders would get the opportunity to present themselves. Based on *crowdsourcing*.

"This goes far beyond defining a target group", Simone explains. "Crowdsourcing is the online gathering of knowledge and suggestions of a large group of people aiming at creating ideas, solving problems or the creation of a policy. Crowdsourcing makes an organization look further than just the traditional group of stakeholders. Social media enable you to reach a much larger group of partly yet unknown people and to spread the message fast. The dialogue you start this way is different from what it would have been if you only communicate with your clients. This 'new group of stakeholders' often delivers refreshing and surprising ideas."

In the summer of 2011 the method was applied for the first time, with the theme: human rights policy. This theme was split up into four parts: fair trade; against child labor; against arms trade; and sustainable energy. These were the key issues in an online discussion. Through reactions to theses in blogs, everyone who wished to participate in redefining the bank's policy was able to join. Assistance from societal organizations, e.g. Amnesty International, labor unions, Foster Parents Plan and Cordaid, was asked to get the process known to a lot of people, and to join the discussions themselves. The own bank employees were asked to utilize their private networks in order to further enlarge the publicity for the action. All in all this was highly successful. At the height of the action 140,000 twitterers were involved. The bank's own sustainability platform, fortheworldoftomorrow.nl, with 52,000 members, was involved as well.

The bank used the contributions to the discussions to improve its policy. One of the results was that privacy and freedom of expression became a separate chapter in the human rights policy.

One year later Lopulisa did a second crowdsourcing project. This time the theme was: climate change. A remarkable result of this round was that people expected ASN, as a sustainable bank, to take on a more activist role. The conclusions of the second round were also integrated in the policy.

Simone Lopulisa gave a few advises for those who want to try to do what she has done. “Always respond. Don’t make any free promises: if you promise to react to every message, then do so. Be honest, every time you respond. Thank the involved persons in a personal way. Send them feedback about what you have done with the input. Get going with the input you receive, and always inform the involved people if this appears to be impossible, for whatever reason. Crowdsourcing is a tool, not a target in itself: always start from an intrinsic motivation. Feel free to invite those who are eager to be involved more than once. Attempt to deepen the online dialogue by continuing it offline.”

The achievement:

You create a stakeholder analysis on the basis of the consequence scope and the consequence period.

This means:

- *You find all stakeholders of your work. For each of them, you determine what their stake consists of: both the positive and the negative interests.*
- *For this purpose you start with the determination of the consequence scope and the consequence period of your professional activities.*
- *You consult all stakeholders or their representatives in order to determine their stakes.*
- *You use the conclusions of this analysis and the consultations for the continuous improvement of your work.*

Many of our (positive or negative) stakeholders are perfectly able to defend their own interests. But not all. Little children and mentally disabled people don’t have that ability, or at most less so. In that case it is not them you communicate with but their representatives: parents, interest groups, the government, maybe a lawyer. Can animals be stakeholders? Legally they can’t as they are not persons, according to laws in many countries. But it is clear that some decisions will have a favorable or an unfavorable impact on certain animals. So yes, animals can de facto be stakeholders, and there are organizations defending their interests. How about nature as a whole? Sure! is the answer of organizations such as the World Wildlife Fund and the International Union for the Conservation of Nature (IUCN). In other words, a valid stakeholder analysis, being complete from a sustainability perspective, can be quite sizeable.

A valuable concept is the **consequence scope**. This is the full extent of persons, organizations, communities, nature and the environment that experience the consequences of your decisions and activities. But even that is not sufficient.

Sustainable development expressly is not only related to the present times, but also to the future. Is it possible for people born in or after the year 2050 to be stakeholders of the work we do *now*? Absolutely, beyond any doubt. Taking the interests of these yet nameless individuals into account is definitely a main aspect of our responsibility. However, it is impossible to communicate with them here and now. This implies that we should think, acting as their representatives, about their interests.

The counterpart of the consequence scope is the **consequence period**. That is the time it will take before the consequences of your decisions and actions have fully faded away. Consequence periods can vary hugely. If you choose between a cup of coffee or a cappuccino, the consequence period of your decision may be a quarter of an hour, as afterwards the coffee is gone and forgotten. If the national government decides to construct a transcontinental railroad or oil pipe, the consequence period of that decision is at least a full century. The consequence period of a nuclear plant amounts to hundreds of thousands of years, due to the radioactive waste.

Consequence scope and –period together form two dimensions: the dimensions of ‘space’ and ‘time’, or the above mentioned ‘now’ and ‘later’. Together they are helpful to define a natural rule of thumb for making sound decisions.

Directions for a good decision – a rule of thumb. A decision can only be a good decision:

- *if the advantages and disadvantages for the entire consequence scope are determined and scrupulously weighed up in consultation with the stakeholders; and*

- *if it can reasonably be expected that the people at the conclusion of the consequence period will still think it was a good decision.*

Example 2: Conscience

As a second illustration of a generic competence of *RESFIA+D*, competence I3 will be used: *Employ his or her conscience as the ultimate yardstick.*

"I drove to the office, handed in my car keys, the keys of the shops and my mobile telephone, and I quit." That is what Jenny Parren wrote, and in her lines you can still sense the tension the affair brought to her.

Jenny was employed in a well-known chain of clothes shops all around the country. She had risen from sales woman to shop manager and next to region manager. She did very well, until a new director was appointed by the board, as a supervisor to the region managers. "Let me call her Josie", Jenny writes.

Soon the atmosphere of the company started changing. Josie appeared to be a tough business woman, and she dragged the board into it as well. The enterprise became more business-like, more aiming at short-term financial gains. Jenny had to work very hard, up to 60 hours a week, but was paid for 38 hours. Even worse was that she was forced to demand the same from the shop employees. They had to work on after closing hours, for at least an hour on most days, without being paid for overtime.

Jenny tried to improve the situation. But a meeting with the board, consisting of the owners of the company, lead to nothing. Josie enjoyed a deep trust, it appeared, and that was that.

Shortly before Christmas the bomb burst. "One of my girls was ill while working in the shop", Parren writes.

"She suffered from a heavy flue so I sent her home on Monday, as she was seriously ill. When Josie heard this, she demanded the girl would be fired when she came back. Right after Christmas she was scheduled to get a permanent appointment, and according to Josie someone who became ill just before Christmas could not be trusted and wasn't worth it to become permanently appointed."

For Jenny this was unacceptable. "It put me in a conflict with my own norms and values: if I would do this, I would never be able to look at myself in the mirror." She refused to fire her staff member. As a reaction, Josie waited till Jenny had a day off and fired the sales woman herself.

This time, for Jenny the cup overflowed. She immediately handed in her resignation. Josie attempted to respect her term of notice, but Jenny gave her a choice: the resignation was to be accepted immediately, or else she would report ill because of overstrain – and not without a good reason.

Josie made the best of it and accepted the immediate resignation.

Two days later Jenny had a new job. Later she decided to continue her academic education in cultural and societal coaching that she had halted to start working in the clothing business. After her graduation, she now coaches youngsters in the age of 17 till 23 who want to contribute to the livability in their own local communities.

The achievement:

You employ your own conscience as the ultimate yardstick.

This means:

- *You investigate the goals, methods, tasks and assignments of your professional activities based on your own values and ethical standards. You express the results of this investigation for yourself.*
- *Goals, assignments or activities that are in conflict with your consciousness, are either not accepted or performed by you, or you adapt them, wherever possible in good consultation, until they agree with your conscience.*
- *You remain firm in your decisions, and you formulate them in an assertive but not aggressive way. Although you are open to reasonable arguments of others, you are not susceptible to pressure of them.*
- *In your work you exhibit exemplary behavior and leadership thanks to your openly conscientious approach.*

Example 3: The artist

Next, after two illustrations of generic competences, follows some attention to '+D'.

As there are thousands of different disciplines and professions, it is impossible to offer a complete overview of every disciplinary competence. Instead, one example will be given here, again derived from [1].

Artists come in many species. Visual artists, who may react with their paintings, photos, cartoons or three-dimensional creations critically to what is going on in society. Musicians and singers, shaking up the crowds. Standing-up comedians, poets and writers: together with the other artists they are the 'conscience' of a country, just like the jester in the Middle Ages.

Role: Conscience of society

Achievement: Wake up, protest, put into perspective, involve, start arguments, bring peace. Make people laugh.

Do you know Loesje? The poster girl? If you don't, please have a look at www.loesje.org. Since about thirty years she appears on doors and windows, walls and garages. Evil tongues claim she doesn't really exist, that she has been created by a group of artists who look at the world in a mood of astonishment. This astonishment is contagious. The author of this chapter has used Loesjes texts many times, in his teachings and his books. Like:

Environment

How would you feel if someone cuts your hair faster than it grows

Started the day with ten good intentions

They are finished already

Those asylum seekers aren't seeking asylum at all but just a place to live

Drink moderately

Protect the elephant

Support Greenpeace

Become a member of Amnesty and don't smoke

THE TV STARTS TO SOUND MORE AND MORE LIKE MY MOTHER

One of the creators of Loesje is Yoeke Nagel. She writes:

“ ‘How would a curious girl look at this?’ That was the question we asked ourselves when we felt ourselves get angry about Abuses and Injustices. A girl that is amazed about the universe. That is creative. Involved. Unprejudiced. Curious. A girl that, it seemed to us, would be called Loesje. In black characters on a white paper we asked her surprising questions. ‘Can someone just take that parking garage out of my sandbox?’ Sometimes we discussed for hours on end to retrieve the way back from indignation to astonishment. For there, in the astonishment about how things have been organized, lies the source for the creation of something new. A flower in the desert, that's what we wanted to be. Enchant a smile on the lips of the passer-by. Plant the thought: ‘It CAN be done’. Everything. Slay the dragon in a dance.

Poster girl Loesje was born noisily in the Dutch city of Arnhem, 24 November 1984. She was the dancing answer to the heavy and angry protests of the years before. Being angry, shouting ‘boo’ and ‘away with’ appeared not to make the world more colorful or friendly. Posing questions did. Pretend that everything is easy, and then show that it actually is. The idea behind Loesje was primarily to investigate the unused space for creativity. In all places and with everyone, as Loesje was in all places too, inviting everybody. Does anyone have a good idea for something new? Do you join to get it started?

Making poster texts and distributing them, walking in the streets armed with large buckets of wallpaper glue to put them illegally against walls, soon attracted people in other cities and – wow! that went fast, in other countries too – people who sang ‘yes’ to that challenge, who wanted to join in. Posing questions. Creating space. Breaking fresh winds. Loesje made herself eligible in the local elections of 1986 and got worldwide press attention and – what a relief – no seats. Since those days she could be found everywhere. Soon she became a symbol for the thought: ‘The darkness is more frightened from me’, appearing in brainstorm sessions within companies, on the pages of student agendas and on mother-in-law gifts, books, t-shirts and bicycle bells. The people doing Loesjes homework – creating poster texts, setting up unexpected actions throughout the country, gluing, conquering the world with buckets and wild hair – raced beyond their own limits with merry passion and a serious desire for a world that hugs people.

Those who read her remarks may just have one second of a doubt. Is this really necessary? Those lines? The running? That's good enough. The doubt creates space for questions that everyone will answer in his own way in his own due time.

That Loesje would become 25 years old, what, even 30, together with new people every time, posing ever new questions, new astonishment: even she herself could never have imagined that.

Beautiful, isn't it, everything...”

5. Levels of competence

Defining a set of competences is one thing. But it is not enough to make it applicable in a concrete way, i.e. in companies and universities. In order to make this possible, it is essential to make the model assessable. As a first step, *levels of competence* are required.

Several methods have been designed to define such levels. For instance, Vernhout describes four competence levels [25]:

Level 1: Some experience, effective professional behavior with some mentoring

Level 2: Ample experience, effective professional behavior without mentorship, based on personal initiatives

Level 3: High experience, effective professional behavior, stimulating others

Level 4: Creating an environment in which others can optimally develop their competences

Many academic and vocational study programs make use of a system in which the levels simply refer to the phases of a university curriculum, such as:

Level 1: First study year.

Level 2: Bachelor: major.

Level 3: Bachelor, graduation.

The disadvantage of the latter system is that these levels cannot be used to define the contents of a curriculum based on it, as this would be a circular reference. To a certain level, the same is true for the above system described by Vernhout, as terms like 'some experience' are not directly assessable.

A different set of four levels was defined by [26] for medical curricula and professions. This system is contradicting the thought that competences are defined as combinations of knowledge, skills and attitudes, as it defines:

Level 1: Knowledge

Level 2: Application of theory in (simulated) practice

Level 3: Practical skillfulness

Level 4: Integration of competences in daily work

A system that is used by Fontys University of Applied Sciences makes use of a set of four competence levels:

Level 1: Apply

Level 2: Integrate

Level 3: Improve

Level 4: Innovate

The competence levels of RESFIA+D

Fontys University did not define these four levels explicitly. Roorda [1] expanded the number of levels to 7, applying the four Fontys levels as *RESFIA+D*'s levels 3 till 6, and defined them as follows:

Level 1: Apprentice

At the first level you are an apprentice or a student. You have not yet gathered sufficient competences to practice your profession. You may assist your more experienced colleagues or teachers in the practice of their jobs, the main goal of which is not that you realize concrete achievements but that you learn from your tasks. You may partly perform your activities in simulated working circumstances instead of real ones. Whenever you do work in a real practical professional context, you don't have an obligation of result but merely one of effort.

Level 2: Work under supervision

At the second level you are able to perform your job fully or partly, under supervision. You are the 'journeyman', who is able to realize solid results with the aid of experienced colleagues.

A characteristic example in health care is the recently graduated physician with a provisional registration or a residency, working under the supervision of a medical specialist.

Level 3: Apply self-directed

At the third level you are able to bring into practice what you have learned as a self-directed professional. No more, no less.

At a pragmatic level you perform tasks that belong to the usual demands of your profession. Your vision, your opinions and your activities are mainly related to your personal expertise, your immediate working environment and the customary work methods. Creativity is not demanded and usually not even appreciated.

Level 4: Integrate

At the fourth level you are able to position your work within a wider context and to benefit from that. In the performance of your job you combine a complex combination of topics, work styles, persons and/or cultures. You may do this e.g.:

- beyond the limits of your own expertise;
- taking into consideration different cultures, value systems, traditions;
- beyond the usual expectations and work methods of your profession; and/or
- in flexibly changing roles, e.g. managing.

Level 5: Improve

At the fifth level you are able to implement concrete improvements in the work that you and others are doing. You oversee, both at a detailed level and at a systems level, your work and the system within which you perform your professional activities.

You judge your own work and that of others with whom you cooperate critically and you estimate its consequences in the widest sense.

Based on that, you act continuously or regularly to improve the work to which you contribute, and doing so you realize noticeable results.

Level 6: Innovate

At the sixth level you are a source of innovation within your discipline.

You introduce innovative insights into your work, concerning e.g.:

- the goals or targets that have been set
- the means and methods that are applied
- the effects of the work
- the scope of those effects in space & time
- the underlying vision
- the relations inside and outside of your working environment or your discipline, e.g. in society as a whole.

These innovations are demonstrably visible in your professional activities and in their results.

Level 7: Mastership

At the highest level you are prominent within your discipline. You have reached 'mastership'. Others learn from you, you are their role model, their 'archetype'. Your inspiring leadership is recognized and accepted by all. Such masters are hard to be found. You may think of Nobel Prize winners. Or Oscar winners. Or others, who perhaps have not won official awards, but who are to be recognized at a conference or meeting because, when they start talking, everybody else silences and listens. Probably you can name one or a few of those special persons within your own professional sector.

Assessment

After defining a set of competence levels, the concrete application in professional or academic contexts is made possible by describing tools and procedures for the assessment.

For *RESFIA+D* this has been done in two ways. One tool is a rather informal 'self-test', which is offered in [1], and which is reprinted here as table 4. This form can be filled out by individual professionals and students. In the column entitled 'Your level (according to you)' such 'subjects' simply make an estimate of their own personal level for each competence, numbered 1 till 7. In the next column they invite one or more persons who are familiar with their work to fill in their opinions. Next, in the right column the subject can fill in his or her personal ambitions for a defined period of time, e.g. one year. Based on the results, the subject may define a personal development plan, including e.g. training courses or internships.

In order to grasp the general idea of the contents of the various competences, of course the subject may read the casebook ([1]. Besides, table 4 refers in the column 'Explanation' to Roorda's textbook on sustainable development, [6].

Table 4. The RESFIA+D self-test

<i>Competence</i>	<i>Explanation (Roorda, [6])</i>	<i>Your level (According to you)</i>	<i>Your level (According to trusted person)</i>	<i>Your target</i>
<i>R: Responsibility</i>				
<i>A sustainably competent professional bears responsibility for his or her own work.</i>				
R1. Create a stakeholder analysis on the basis of the consequence scope and the consequence period	5.5			
R2. Take personal responsibility	8.2			
R3. Be held personally accountable with respect to society (transparency)	8.2			
<i>E: Emotional intelligence</i>				
<i>A sustainably competent professional empathizes with the values and emotions of others.</i>				
E1. Recognize and respect his or her own values and those of other people and cultures	4.3			
E2. Distinguish between facts, assumptions and opinions	8.5			
E3. Cooperate on an interdisciplinary and transdisciplinary basis	1.3, 4.8			
<i>S: System orientation</i>				
<i>A sustainably competent professional thinks and acts from a systemic perspective.</i>				
S1. Think from systems: flexibly zoom in and out on issues, i.e. thinking analytically and holistically in turn	3.5			
S2. Recognize flaws in the fabric and sources of vigor in systems; have the ability to use the sources of vigor	Chapter 2 - 4			
S3. Think integrally and chain oriented	8.3			
<i>F: Future orientation</i>				
<i>A sustainably competent professional thinks and acts on the basis of a perspective of the future.</i>				
F1. Think on different time scales – flexibly zoom in and out on short- and long-term approaches	5.5			
F2. Recognize and utilize non-linear processes	7.3			
F3. Think innovatively, creatively, out of the box	8.4			
<i>I: Involvement</i>				
<i>A sustainably competent professional has a personal involvement in sustainable development.</i>				
I1. Consistently involve sustainable development in his or her own work as a professional (sustainable attitude)	4.7			
I2. Passionately work towards dreams and ideals	4.2			
I3. Employ his or her conscience as the ultimate yardstick	8.2			
<i>A: Action skills</i>				
<i>A sustainably competent professional is decisive and capable of acting.</i>				
A1. Weigh up the unweighable and make decisions	8.5			
A2. Deal with uncertainties	6.3			
A3. Act when the time is right, and not go against the current: 'action without action'	4.2			

+D: Disciplinary competences

Add competences that are linked to your discipline and/or profession.

D1.			
D2.			
D3.			
D4.			
D5.			
D6.			

A second, more detailed tool for the assessment of *RESFIA+D* competences is a thorough description of the various levels for each of the competences separately. Such descriptions have been made for the levels 3 till 6, as they are the most relevant levels for higher education and for most high-level jobs.

Table 5 offers a few examples of such descriptions. The entire set of descriptions can be downloaded from <https://app.box.com/s/04xy2xss5mpz5i0vk13u>.

This second application tool of *RESFIA+D* can be used in several ways, as the next section describes.

Table 5. An example of the level descriptions of separate competences

Competence S: System orientation. A sustainably competent professional thinks and acts from a systemic perspective.			
Level 3: Apply	Level 4: Integrate	Level 5: Improve	Level 6: Innovate
<i>S1. Think from systems: flexibly zoom in and out on issues, i.e. thinking analytically and holistically in turn</i>			
<ul style="list-style-type: none"> You plan your professional activity on the basis of a systematic analysis of the separate subsystems and aspects of the system to which your activity is related. 	<ul style="list-style-type: none"> You make a synthesis of the consequences or results of your activity, i.e. you relate the results of this activity to each other in a balanced, coherent way. 	<ul style="list-style-type: none"> You perform both the analysis and the synthesis repeatedly during the activity, causing you to act continuously and consciously at all system levels. Doing this, you also include the environment of the involved system. 	<ul style="list-style-type: none"> From a combination of analytical and holistic considerations, you make proposals for structural improvements for the system within which you work, and if necessary also in its environment.
<i>S2. Recognize flaws in the fabric and sources of vigor in systems; have the ability to use the sources of vigor</i>			
<ul style="list-style-type: none"> You analyze the structure of your immediate working environment. Based on this you make a SWOT analysis. 	<ul style="list-style-type: none"> You make this SWOT analysis for the organization of which you are a member and its surroundings. You do so from a perspective of sustainable development, for example from the Triple P. 	<ul style="list-style-type: none"> You make the SWOT analysis in close collaboration with representatives from all levels of your organization. Based on the SWOT analysis you formulate recommendations to use strengths and opportunities, to improve weaknesses and to anticipate on threats. 	<ul style="list-style-type: none"> You make the SWOT analysis also in close collaboration with representatives in the wide surroundings of your organization. You make recommendations to strengthen the structure of the system considerably.

S3. Think integrally and chain oriented

- Of the services, products or processes related to your professional activity, you make explicit in which way they are a part of a longer chain or life cycle.
 - Of these services, products or processes, you map the consequences for sustainable development, and you relate them to the total of the consequences for sustainable development of the entire chain or life cycle.
 - You cooperate on this with others who control or influence other parts of the chain.
 - Based on the results of this analysis, you make recommendations to realize sustainable improvements in the complete chain.
 - You design entirely new chains fulfilling the same functions and needs, and conclude whether these are better than the existing ones considering sustainable development.
-

6. The application of *RESFIA+D*

RESFIA+D can be applied in three ways: as a tool for strategic management and human resource management (HRM); as a tool for individual professional development; and as a tool for education development in academic and vocational education.

Education (re)development

For the assessment of a university program, a group of about ten to fifteen persons is to be formed. In this group, the faculty and program management are represented, as well as a number of lecturers, students and alumni. Besides, some experienced representatives of the professional field should participate.

During the assessment, the group meets for about four hours. During this meeting, the 6 x 3 generic competences are discussed one by one. For each, the group members are invited to carefully read the level descriptions for the competence, e.g. the ones in table 5. Next, for each competence, three questions are discussed by the group:

1. Considering the assessed study program: which level, in your opinion, should be the minimum requirement for each student in order to graduate? In other words, what is your *ambition* for the program output?
2. How about the present competence profile: which level is described there for the current competence?
3. And concerning the actual curriculum: which level does the study program truly realize?

All decisions are taken by the group based on *consensus*, and this is essential. The assessor, who chairs the meeting, sees to it that the group members can freely discuss the various topics, guaranteeing that no pressure is exerted and that decisions are never made through majority votes.

When comparing the level descriptions with the existing competence descriptions of the study program, it is to be expected that in many cases the literal texts will not correspond 1 to 1, so the group needs to interpret the texts in an intelligent way.

As an example, a case is shown from a Dutch university of applied sciences. *RESFIA+D* was applied here in a study program at the bachelor level in 2014. This program, dedicated to commerce, was a part of a faculty of economic sciences. The results of the assessment are shown in table 6, and again in figure 1.

Table 6. The case of a BSc study (Bachelor of Commerce, 2014)

Competence	R1	R2	R3	E1	E2	E3	S1	S2	S3	F1	F2	F3	I1	I2	I3	A1	A2	A3
Present curriculum	3	4	5	5	3	5	4	5	2	3	4	3	2	4	2	3	4	4
Present competence profile	4	6	5	5	2	5	4	5	3	5	4	4	2	4	2	3	4	4
Ambition	5	6	6	5	5	5	4	5	4	6	5	5	5	5	5	5	5	5

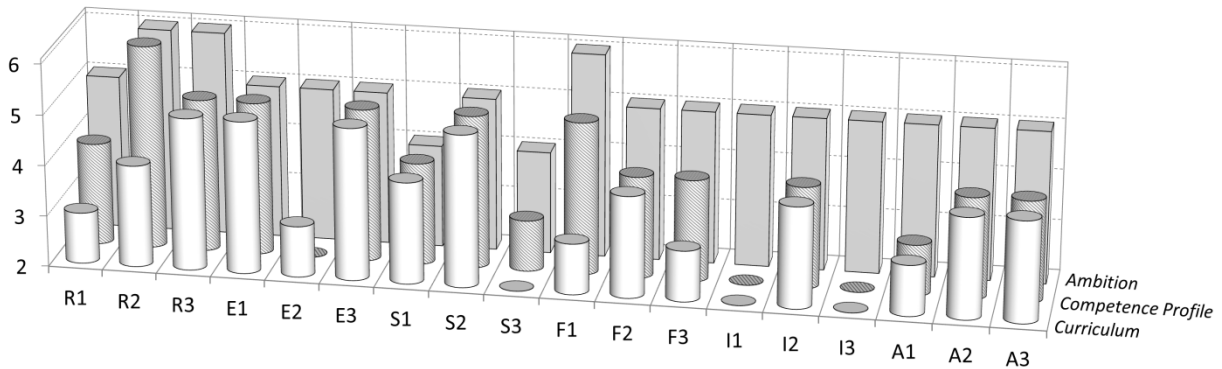


Figure 1. The case of table 6, shown graphically

Table 6 and figure 1 show some remarkable results. For competence R1, for instance, the group decided that the ambition of the program should be to deliver graduates to the professional field and to society who all possess this competence at least at level 5, *Improve*. According to the group, the current competence profile however only demanded a level of 4, *Integrate*, while the actual curriculum did not even realize this level as it just brought the students up to level 3, *Apply*.

In some cases (competences I1 and I3) the study program did not even pay any attention to these competences, consistent with the competence profile which did not demand it. The group however concluded that a minimum level of 5 should be appropriate for each graduate. Here, the influence of a view based on sustainable development was clearly visible.

A major advantage of such an assessment by a representative group, based on consensus, is that the conclusions are not drawn by an external expert but by the group itself, in which the managers and the teaching staff both are represented. Results, indicating that a number of improvements are required for the competence profile as well as in the actual curriculum, are not posed upon them by someone else but made by the group members themselves, so there is a sense of ownership, 100% acceptance and a sense of urgency.

After such an assessment, the investigated study program team decides on an action plan for improvement. In this process, the assessor acts as an advisor.

Individual professional development and career planning

RESFIA+D, including the detailed level descriptions of the levels 3 till 6, has also been applied as a self-assessment tool by individual professionals who want to assess and improve their competences regarding sustainability, as an aspect of their career planning. An example, dating from 2012, is shown in figure 2.

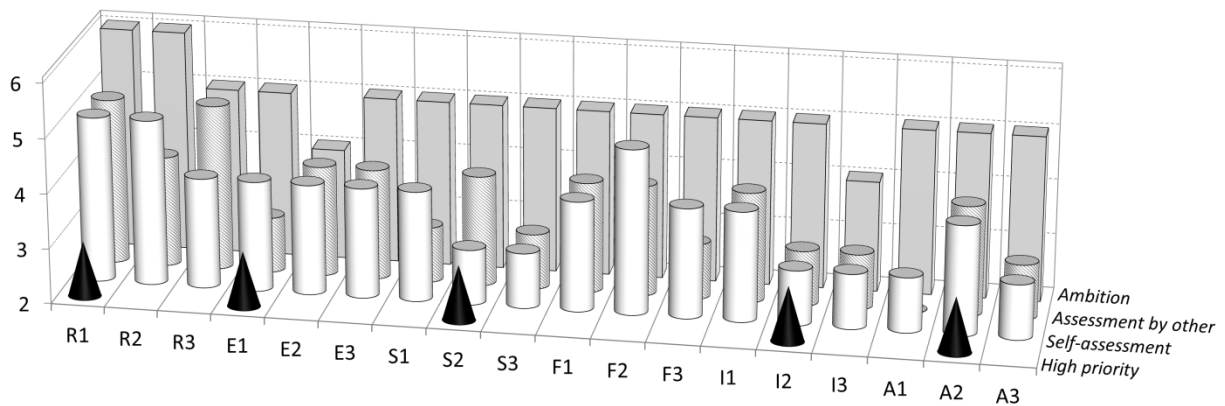


Figure 2. An example of RESFIA+D, applied by an individual professional for his career planning

The involved employee of a healthcare organization estimated his personal competence levels at the day of the assessment. He also asked a colleague to judge these levels for him, after which he defined his ambitions for the next two years. Finally, he selected his highest priorities for improvement. Based on the results, a training program was agreed between him and the management of the department he worked for.

Companies and other organizations

Companies have applied RESFIA+D in similar ways for groups of employees, and may even do so for members of the management or the board. After each of these persons fills out the RESFIA+D spreadsheet that is designed for this purpose, next the HRM department is able to develop a staff strategy aiming at an improvement of the company's ability to act in a sustainable and societally responsible way, including long-term staff development and recruitment.

7. About the completeness of RESFIA+D

All right, so the RESFIA+D model works. But is it correct? Does its set of competences reflect reality in a scientifically valid way?

The validity of the model has been tested in several ways, e.g. by a comparison with other sets of competences – as was described above – and by comments and reviews by experts. Besides, its operational validity has been proved by the applications.

Nevertheless, it is important to discuss whether a claim of completeness could be correct. Readers may e.g. wonder if other competences may be found that are relevant for sustainable development, or even propose such competences themselves. How about: ethical consciousness? Inspiration? Leadership? Or stewardship?

Earlier in this chapter, a comparison was made between a set of competences and a set of colors. Indeed, competences are a bit like colors: there are infinitely many of them. If a long series of colors would be mentioned, and then a claim would be formulated that these were *all* colors, it would not be very hard to point at colors that would still be missed. There would be every chance that the series didn't yet have Bulgarian rose, Vegas gold or Utah crimson. Eggplant, mint or vanilla. Or a nameless color that is indicated by its RGB values (red-green-blue), each expressed as a number between 0 and 65,535: this offers a variation of more than 280 trillion colors. That's a lot, but it is *nothing* compared to the infinity of all colors. An enumeration of colors will never near completion.

The same is true for competences for sustainability. Whoever wants to, will be able to express hundreds of them in the English language. And if some people think that is still not enough, they can make up their own new words or borrow them from other languages. In short, completion is at best a hopeless effort, and at worst a desperate exercise.

For the enormous variety of colors, the solution people have chosen is: give names to a limited number of main colors. And consider the rest as mixtures, combinations or variations of them.

As this has been done independently in many eras and cultures, this rendered a fascinating diversity.

In Western culture traditionally seven colors of the rainbow are distinguished, plus black and white. In total this makes a set of nine:

- *red, orange, yellow, green, blue, indigo, violet, black, white*

The Candoshi however, a native tribe living in Peru, distinguish only eight basic colors [27]:

- *chobiapi, ptsiyaro, kamachpa, kavabana, tarika, kantsirpi, pozani, borshi*

It is not very easy to make an English translation, but if you attempt, you get something like: *red, yellow, bright green, greenish blue, purple, black, pale & grey, white*

The Kwerba, a tribe in Irian Jaya, Indonesia, know even less, namely four colors [27]:

- *asiram, nokonum, kainanesenum, icem*

In English this is roughly equal to *red, yellow, green & blue & black, white*

If you think only four colors is rather primitive, please compare this with a hypermodern laser printer that, as a 5-color printer, possesses just one more color:

- *magenta, yellow, cyan, black, white*

For four of those colors the printer has separate toner cassettes. The fifth color, white, is produced cleverly by *not* using each of those four toners simultaneously. How would the Kwerba be primitive? They are hardly second to a printer from the twenty-first century.

Why are there such huge differences between color schemes? Because every scheme, whatever you design, will always be a simplification of reality. A continuous color spectrum is cut into a finite set of separate colors. Actually this is simply wrong. But what do you want? If you don't wish to make this mistake, you can never define a color. And so we cut the rainbow into pieces: 9 in Europe and America (if you include black and white), 8 with the Candoshi, 4 with the Kwerba, and all kinds of different numbers with hundreds of different cultures.

This cutting of a continuous spectrum into a finite set of separate elements is something we do all the time, in every area. Such as in management science. Do you want some examples?

9 is the number of criteria of the *EFQM Excellence Model* for quality management:

- *leadership, strategy, people, ...*

8 is the number of fields in *Leary's Rose*:

- *leading, helping, co-operative, ...*

7 habits is what highly effective people possess according to Stephen Covey:

- *proactive, begin with the end in mind, first things first, ...*

6 M's are basic to the *Six Sigma* method for quality management:

- *machines, methods, materials, ...*

5 layers together form the hierarchy of Maslow, a model for the needs and motivations of people:

- *physiological needs, safety, social needs, ...*

4 steps is what Deming's control cycle consists of:

- *plan, do, check, act*

3 is the number of elements of the Triple P of sustainable development:

- *people, planet, profit*

2 basic principles exist according to traditional Chinese philosophy:

- *yang, yin*

1 is the number of universes we live in:

- *reality*

There are no cosmic laws prescribing that a quality cycle consists of precisely four steps, as Deming proposed. No doubt Deming realized this too. Do effective leaders possess exactly seven habits, as Covey taught us? Covey himself does not think so, as a few years later he discovered an eighth habit:

- *find your voice, in other words: inspire others*

What all of these designers of the above models and systems have done, is splitting up reality into parts. While doing this, they corrupt reality, but that is *all right*, as it provides us with a method to deal with reality effectively.

Mathematicians speak of a 'cover'. The nine criteria of the EFQM model 'cover' the wide area of quality management, roughly equal to the way in which a window screen covers an open window: hermetically closed for midges & bugs and thus effective, but not 100% closed, allowing fresh air to come in.

In the same way the sustainability competences of *RESFIA+D* cover the wide area of the competences of a sustainable professional. Its spectrum is:

- *responsibility, emotional intelligence, systems orientation, ...*

This is not airtight, but it is effective. If competences are mentioned that are not literally in *RESFIA+D*, there is every chance that they are variations to competences that are actually present, or a combination of a few of them. Such as:

Looking for *ethical awareness*? Have a look at the *conscience*, competence I3.

You want to find the concept of *inspiration*: go to *passion, dreams and ideals*, I2. Besides, look at *innovative, creative, out of the box*: F3.

As to *stewardship*: seek *responsibility*, R2, and ye shall find.

Concerning *leadership*: this concept is of a different nature. It is not so much a competence, but rather a competence *level*. Large scale leadership is present at the top level, Mastership. Aspects of leadership can be found at several lower levels.

From this viewpoint, the ‘rainbow’ of sustainability competences of *RESFIA+D* may well be complete: not in the sense of ‘airtight’, but in the sense of a ‘cover’.

If researchers or other professionals still would claim that one or more essential sustainability competences are missing, then maybe some interesting discussions lie ahead.

About the Author

Niko Roorda works as a senior consultant on sustainable development, corporate social responsibility and change management for companies and universities in several countries. On the basis of more than twenty years’ experience in these topics, he received his PhD title at Maastricht University in 2010, after graduating (MSc) in theoretical physics and philosophy in 1981.

Roorda wrote nine books and more than 50 articles about sustainable development and related topics. He is a reviewer for four scientific journals.

Roorda developed the AISHE tool for the assessment of sustainable development in higher education. AISHE has been applied in universities in more than twenty countries. He also developed *RESFIA+D*, which is the topic of the present chapter. The relations between AISHE, *RESFIA+D* and other tools & strategies for sustainable development are described in [28].

For his achievements, Roorda received the Dutch National Award for Innovation and Sustainable Development.

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