# Regulatory approaches' influence on environmental agencies internal quality

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# Acknowledgements

# Summary

The increasing public concern regarding the government's priorities in spending public resources puts pressure on public organisations to address quality issues in their practice. In United Kingdom both BRTF (Better Regulation Task Force) (BIS, 2005b) and the Hampton report (BIS, 2005a) highlighted management and quality problems in public organisations in UK. These reports revealed obstacles within institutions' intent to offer recommendations and appropriate solutions for agencies working with legal enforcement and control. The reports expressed expectations of both higher quality and cost reduction assuming increased efficiency and effectiveness would be enhanced with help by a risk-based approach in the regulatory process and legal enforcement.

This study examines to what extent internal quality theories are applicable and useful for environmental regulators in United Kingdom. The study is also concerned with the regulatory approach, in other words, how the choice of legal system to promote legal compliance influence the perceived internal quality by the regulators.

Quality management in a management system (such as ISO) is based on Deming's theory (SIS, 2001) and the Shewhart cycle (SIS, 2001), in which continuous improvements are made in relation to objectives that are set up (and revised). These theories serve as a general quality foundation, while the C-SQ-P (Mukherjee *et al.*, 2003) theory contributes to more specific understanding of an internal public-service environment. The review of the existing approaches and the recommended alternative law-system (risk-based decision-making) confirm how the chosen approach could affect the internal quality management. The literature contributes with wide and deep sources applicable to internal quality within public-service organisations. However, the context differs a lot for an environmental regulator who is affected by the chosen regulatory approach which they secure compliance by.

# Sammanfattning

Det finns ett växande samhällsintresse för hur regeringen handhar de offentliga finansiella medlen vilket leder till en ökad press på offentliga myndigheters kvalitetsledning i deras verksamhet. I Storbritannien har både BRTF (Better Regulation Task Force) (BIS, 2005b) och Hamptons rapport (BIS, 2005a) tagit upp ledning- och kvalitetsvårigheter för myndighetsutövandet i Storbritannien. Rapporterna påvisar bekymmer med intentionen att bidra med rekommendationer och passande lösningar för myndigheter vars verksamhet består av lagimplementation och lagefterlevnad. Rapporterna uttryckte förväntningar att med en riskbaserad verksamhet kunde högre kvalitet och kostnadsbesparingar ses som ett resultat, vilket även förväntas bidra till bättre effektivitet.

Denna studie undersöker hur användbara de teoretiska bidragen är för intern kvalitetshantering inom Storbritanniens miljömyndigheter. Studien berör även de processer som myndigheterna väljer att använda sig av för att kontrollera aktörers efterlevnad av lagar och hur dessa processer påverkar myndighetens interna kvalité.

Kvalitetsledningssystem såsom ISO är baserade på Demings teori (SIS, 2001) och Shewhart cykeln (SIS, 2001), där kontinuerlig förbättring är jämförda med de uppsatta målen och därefter reviderade. Dessa teorier fungerar som en bas i en generell förståelse medan C-SQ-P (Mukherjee *et al.*, 2003) teorin bidrar till en mer specifik förståelse för intern kvalitet i den offentliga tjänstesektorn. Granskningen av den interna hanteringen av de valda efterlevnadsprocesserna visar att processerna kan påverka hur den interna kvalitén framstår. Litteraturen bistår med både bred och djup inom intern kvalitet i offentliga tjänsteinstitutioner. Dock besitter miljömyndigheter en mycket komplex kvalitetssituation. Denna komplexa kvalitetssituation påverkas bland annat av valda processer för kontroll av lagefterlevnad.

# Abbreviations

BIS – Department for Business, Innovation & Skills: http://www.bis.gov.uk/

BRTF – Better Regulation Task Force

HSE – Health and Safety Executive: http://www.hse.gov.uk/index.htm

TQM – Total Quality Management

QFD – Quality Function Deployment: http://www.qfdi.org/

# Table of Contents

# List of Figures

# 1 Introduction

Chapter 1 provides a broad background of the research and continues with a more specific problem description. Further on, the problem description provides a foundation for objectives, aims and research questions.

## 1.1 Problem background

It is appropriate to highlight some vital quality definitions, history and perspectives for the readers to enhance this papers contribution to research and the public. The following sections will cover these parts.

### 1.1.1 What is quality?

Quality is related to stakeholders' expectations (Sandholm, 2001). Stakeholders are in this circumstance refered to any individuals, operators or organisations that are getting affected by the offered products or/and services. Stakeholders see quality as a result of total quality which is divided into construction quality and performance quality. Construction quality, or specification quality as it is also denominated, is the specifications that the service or product is supposed to be produced by. Performance quality is how well the production process have succeeded to comply with the products or/and services specification quality.

Sandholm (2001, p. 11) defines quality as *suitability for use*. Even though, several attempts of finding one unified definition of quality have been made, all have fallen into incoherent results. Attempts have been made to address the definition of internal quality in a context of public service institutions. In mind are UK's environmental regulators. Quality could mean different things to different institutions. Quality in a governmental role could be both internal and external. However, internal and external quality is integrated in each other and is not favourably separated. Quality of regulators could depend on several different factors, factors which they both can and cannot influence. The general movement of deregulation in society is one of the factors that cannot be influenced by the regulator while the internal resource allocation is possible to affect. So, what is internal quality for environmental regulators? Is the decision made, the correct one? Is it to put the correct amount of efforts on different operators or to have systems in place which brings up and manage mistakes? This should be kept in mind in further reading.

The old Greeks, such as Socrates, Plato and Aristotle connected quality with excellence (Reeves and Bednar, 1994). Quality depends on a number of interactions among different variables. To achieve quality these variables cannot be in continuous change. This could be referred to and scrutinised against today's pace of lifecycles, for industrial operators, which are getting an approach of a more flexible environment where continuously development and improvement are important parts in the organisation.

### 1.1.2 The history of quality assurance

Quality assurance is a phenomenon that has been used during centuries (Burrill and Ledolter, 1999). From the beginning, when products were produced by individuals, quality assurance was a way of securing the company owner and his employees' livelihood. During the industrialisation, a master craftsman educated and ensured the quality of the products. This assurance approach was totally focused on products. An inspection based view emerged.

Bell Telephone Laboratories introduced a quality assurance which was based on processes instead of the end product (Staton-Reinstein, 2005a). The founder's name was Walter Shewhart and he created a wheel which symbolised a continual improvement through Plan-Do-Check-Act. The company's process-based quality assurance became an even bigger contribution to quality management than their product; the transistor (Burrill and Ledolter, 1999). The new approach required a more organised structure of data collection and management. As a result it became more common to implement special groups and units, addressed with this task. It was not until the 1950s, when a man named Walter Edwards Deming, became one of the fathers of modern perceptions of quality management through his work in Japan which reformed Japanese quality and efficiency (Gitlow and Gitlow, 1987). The reforming process had greatly contributions of the Shewhart cycle (Plan-Do-Check-Act) (Staton-Reinstein, 2005a).

The influence of quality assurance has spread to other industries which included both public and private as well as product and service organisations. For example, both Jeliazkova and Westerheijden (2002) discuss the development of quality assurance in higher education, where both external and internal dynamics influence. The view covers both public and private institutions which contribute with a service. The expansion of the idea how to manage quality within different sectors, excludes neither environmental quality nor the government's concerns to keep a high environmental quality with help of tools which secure the compliance.

During the 1960s quality management became more comprehensive and now was the quality assurance included into the entire production chain, the production process (Burrill and Ledolter, 1999). The new approach was called TQC (Total Quality Control). However, the movement has not yet been implemented in sectors such as service and information. Both TQM (Total Quality Management) and ISO 9000 was developed from TQC's foundation.

Deming's theory was created with products in mind; it turned out to become one of the most fundamental theories for quality assurance and improvement (Schoengrund, 1996). The fundamentability could be connected to the theory's applicability to different types of organisations, companies and sectors. The model has been academically scrutinised, implemented in a wide scope of different organisations and provided the fundamental characteristics for different quality approaches and awards, such as TQM.

The governmental toolbox for securing external outcomes has changed during the last decades. In this paper *"toolbox"* refers to the broad variety of methods regulators have in their possession to use as an enforcement of operators' compliance with environmental law and policy, but also to implement a value and culture-based view of increased environmental quality in every unit within operators. The tools in the toolbox operate in different ways but with common objectives. The possible differences in validity and reliability of outcomes depend on to what extent the regulators have succeeded to manage the choice of applicable tool and its implementation. The toolbox will be further discussed in *Section 1.2 Quality in a governmental agency* and in *Section 4 Empirics - A literature review*.

## 1.2 The change in the way of how to regulate

Gunningham (2005, p. 182) notice that "command and control" regulation was a popular approach for Anglo-Saxon countries during the 1970s. Command represented a limit that was settled by the government. Control stood for the penalties, which were given when companies lacked of compliance. Control does also stand for the inspection-based way of overviewing

operators compliance. This form of regulation was added with a "direct control" approach where an environmental standard was set on a specific industry. Critics against this type of regulation were announced during the 1980s. It was called 'inflexible' and 'excessively costly' for businesses (Gunningham, 2005). However, some businesses did still prefer this system because of the prediction the system had, e.g. set levels of emission, and the clear rules it provided businesses to operate within. These approaches are more applicable when regulation is about point-source pollution of homogeneous industrial facilities with a single juridification, but becomes frail when the situation includes heterogeneous establishments such as agriculture production (Gunningham, 2005).

Businesses constrained by the 'inflexible regulation','started to raise their voices how the existing system lead to increased financial burdens for them and how this could result in capital movements to countries with both lower taxes and lower environmental regulations (Gunningham, 2005). With a growing public concern for the environment and with environmental problems that not seemed to disappear, maxium emission levels for specific industries were introduced (Gunningham, 2005). This movement, from a general set emission level to a total emission level for a certain industry where emission tonnes were connected to a cost for trade permits, was supposed to give incentives for the industry to reduce emissions and implement BAT (Best Available Technology). This also allowed the industry to trade permits with each other. In the same period the businesses got fond of voluntary agreements. Voluntary agreements contain self-regulation, voluntary codes, environmental charters, co-regulation, covenants and negotiated environmental agreements (*Ibid*). The new types of regulation became more management-based.

As have been noticed above, regulatory agencies have boosted the toolbox to match requirements of today and which complement inspection-based regulation (Gibson *et al.*, 2010). There exist a broad agreement of how the mixed toolbox provides both better effectiveness and efficiency in compliance to and optimisation of environmental deliveries. There is a continuous need for evaluation of intervention and its outcomes.

As the regulation has changed from an inspection-based regulation towards a more self-regulating view, UK's (United Kingdom's) government has also been influenced to change their own way of operating (Yapp, 2006). One of the contributions that have supported that approach is the work from BRTF (Better Regulation Task Force) in 1997, which was aimed to develop advice to the Government for better regulation. In the budget for 2004 Philip Hampton was assigned to overview the scope of administrative burdens (The National Archives, 2004). The review was following BRTF's work from 1997. From that report, five established principles were developed and these principles have since been used throughout several institutions and regulators, e.g. HSE (Health and Safety Executive) (HSE, approx. 2011), GPhC (General Pharmaceutical Council) (GPhC, 2011) and RPA (Rural Payment Agency) (RPA, 2008). The basic principles state (BIS, 2005a); focus on targeted outcomes, consistency, accountability, proportionate/risk-based management, and transparency. In some cases have the institution or/and regulator have added some principles or changed them slightly to be more applicability to the particular operation.

The original five principles and the Hampton report 2005, call for regulators' consideration how to manage their internal and external operation according to the publications just mentioned, but also the regulators' thoughtfulness how they comply; where they put their capital and to what cost. However, as Yapp (2006) noticed empirical evidence where non-specific and untargeted information such as brochures and industry meetings is the most preferred approach for regulators enforcement of operators' compliance. In the same time is

the approach the least effective method. The more resource intensive and more effective way appeared to be inspections, personal meetings, meeting in reality and not through mediums such as telephones or computers. Yapp (2006) continues to notice how important these "less cost effective" inspections are for the operations. Inspections act both as a motivating cause and as a factor which secure employees healthy and safety and their well-being. This would probably be a neglected area with fewer inspections.

In UK did also the House of Lords scrutinise the principles from a judicial perspective. As Minogue and Cariño (2006) observe, the principles of good regulation could give more room for interpretation. The authors highlight how the House of Lords declares in their report (House of Lords, 2004, § 44);

> Government does not believe it is necessary to enshrine the principles of good regulation in statute, as a general rule for all sector regulators. Whilst the Government is entirely supportive of the 5 principles of good regulation, as noted in response to the BRTF's Independent Regulators Report, the principles are not defined in law, so are open to interpretation and potential challenge by judicial review. However, where Government Departments taking forward amendments to sector legislation consider it appropriate, in particular circumstances, to enshrine the principles within legislation, they will be free to do so.

The Government's standpoint could be interpreted as an easy path to avoid any further costs to formulate and implement the principles into law. If the implementation is realised, governmental resources are needed, e.g. time and it could be a costly process. Since the principles can imply different things for different operators and within different sectors, the efforts to judge the different shapes of operators' compliance to the law will become greater. However, the broad framework legislation and law consist of give a general view of what is aloud and not allowed in an operation, while regulation gives specific boundaries for different types of braches, businesses and operations. Since the principles must be interpreted from the aspect of every individual operation, the Government could just as well statue them in law to show their standpoint of best practice. Smith and Crotty (2006) notice in their research of the legislations impact of sustainable innovation in the automotive industry, that legislation unlikely will contribute to operations' approach of more sustainable practices. Traceable evidence also showed that the industry's innovation was promoted by regulation.

A well-founded question would be what divergence this gives rise to in judicial circumstances. Minogue and Cariño (2006) argue that this is a weak argument against the principles. Even though, it should be kept in mind that this is only recognized principles which are not well defined, the individual institutions need to implement the principles in their own context.

White *et al.* (2010) observe that risk-based approaches have taken an important role in regulatory settings. In affected regulated areas, where a more effective regulation is supposed to be implemented, a risk-based approach will be one of the corner-stones. This paper explains risk as the possibility that human actions harm aspects of things that human beings appreciates. This possibility needs to be evaluated and managed which is made through different risk-based approaches (Klinke and Renn, 2002). From a regulatory point of view, the regulator needs to handle the level of risks contradicted to their constrained resources, where the risk is based both on processes (internal aspects) and the outcomes (external aspects). Yapp (2006) notices how the risk-based approach will have elements of risk-based decision making and risk assessments. He continues to raise some issues that could arise for a regulating institution, e.g. institutions are not only supposed to implement risk-based

inspections. They are also supposed with guidance from principles and a risk-based approach to overcome the issues of implementing enforcement structure.

## 1.3 Problem

When sectors in society are provided with extended liability, a demand of more extensive risk management systems grows. Njå and Solberg (2010) presented an example where the Norwegian government was influenced by the Deregulation and Contracting Out Act 1994 and deregulated the aviation sector in Norway. Risk was not mentioned in contexts. There were no safety and risk assessments made before the deregulation. An operation where extended liability is given, new ways to manage risk must be implemented.

Environmental agencies use a number of different tools, both internal and external for regulatory interventions (Gibson *et al.*, 2010). The range of applicable external tools reaches from actions such as advice and guidance, e.g. NetRegs, which is a web-based information site to the National Customer Contact Center, which provides a single point of contact through a call centre. Internal tools such as Regulatory Scrutiny Panel and OPRA are also used. The Regulatory Scrutiny Panel consists of senior people to help manage the agency's work and development of legislations and policies, while OPRA assesses risk in a particular activity (NAO, 2008).

A wide range of possible tools for quality control is associated with numerous management challenges. As seen in both *Effective inspection and enforcement: implementing the Hampton vision in the Environment Agency* (*Ibid*) and *The Environment Agency – A review of progress since its Hampton Implementation Review* (BIS, 2010), the EA has come a long way in their efforts of increasing the effectiveness of their operation. However continuously improving needs a way of measuring it, as the expression; "What gets measured gets managed". New types of regulation, shapes procedures to become more precise to the certain risk level of both operator and operation through extended or reduced resources (measured in time and money). This new method of regulating gives incentives to the need for a tool which justifies regulators risk-based decisions, procedures and quality in different situation and levels within the organisation. Environmental agencies' employees, such as inspectors and line managers need to be educated in the new way of regulating and feel that they are secure in their role and in their daily work, have reliance from senior manager, support when complicated arises and openness when mistakes have been made. The measuring and the tool need to state and illustrate the complex situations and how well the regulator manages the state.

An environmental regulator has both internal and external quality levels to cope with. External quality is connected with to what extent they make regulates to comply with law and policies, but also how they imply the compliance. Regulators internal quality is bonded to; for the first how effective they are and in the second how efficient they are in their operation. The internal quality is just as the external quality limited by the regulator's availability of resources where they want to get the most out of the least. One important condition for the ability to analyse the quality variables and its outcome, is the implementation of measurement systems.

## 1.4 Aim, objectives and research questions

The aim of this paper is to highlight the features and processes that could influence quality in regulators' management settings. The research offers a foundation for further research within the area of regulators internal quality assurance.

The objectives are to provide a common and general understanding of quality in public-service settings, especially explore what quality means for the environmental regulator according to their chosen regulatory approach. Enablers for quality factors are to some extent explored. The objectives emphasise an evidence-based approach which further research for development of a benchmarking tool of risk-based decisions making could be based on. It is a necessity for the benchmarking tool to help environmental agencies in an accessible and applicable way maintain and enhance the quality of management.

This research is focused on UK's environmental regulators, EA (Environment Agency), NIEA (Northen Ireland Environment Agency) and SEPA (Scotland Environment Protection Agency), and their requirements to assure the internal quality, especially their capability to make risk-based decisions. Motivation for this study's focus grows from a limited number of contributions of the academic literature about the area of internal quality assurance of different regulating approaches in UK, and therefore are the gaps needed to be covered. Another source of inspiration is also the intention to let this study be a pre-stage to an MSc-thesis which will be performed within a program at Cranfield University, UK.

The paper is concerned with these research questions:
- What does quality mean for UK's environmental regulators?
- How could UK's environmental regulators develop their regulatory tools to assess the highest level of internal quality?
- Could an evidence-based benchmarking tool be developed and have its foundation in the literature about quality assurance in an environmental regulatory setting?

## 1.5 Delimitations

Since this report is structured as a literature review, clear delimitations are needed to limit the scope. The limitations are divided in geographical-, theoretical- and literature based.

### 1.5.1 Geographical delimitations

This paper is limited to the geographical area of UK. That includes England & Wales, Scotland and Northern Ireland. The cause of this deliberate choice is based on new initiatives from UK's government to impose new ways of regulating. The new methods are needed to be scrutinized, where an internal quality assurance is one of them. The new approaches of how to regulate are taking in several countries but are implemented into different extents.

UK's attempts to modernise regulation and improve quality through tracing evidence for effectiveness and efficiency in their interventions (Swan and Boruch, 2004), could be of interest for countries with similar structure and obstacles, especially in mind are countries that acting below European Union legislation because of common directives which are supposed to be implemented in every individual country. Countries are through a common legislation, directives and international agreements trying to attain common goals in a non-competitive environment and therefore are sharing of methods, procedures and processes towards best achievable results more likely.

There is a limited contribution within the academic literature about the area of internal quality assurance of different regulating approaches in UK and therefore is the gaps needed to be covered.

### 1.5.2 Theoretical- and empirical delimitations

The theories used in this paper are theories that cover internal quality assurance. The theories are narrowed down in several aspects to be applicable to this research. The theories only deal with internal quality of services within non-competitive public regulating organisations.

The objectives provide a process where the structural designs of the regulatory approaches are examined. There is, however, a risk that the process will be too generalised, winnowed and biased. This could imply the same risk as with models of the reality. The risk of letting the research process be too generalised, winnowed and biased has also Gunningham (2009) realised. The development of different approaches and how to manage the compliance to them could perhaps be understood as it occurred in stages but in reality there have been more of an overlapping development.

### 1.5.3 Delimitations of literature and source material

There is a significant absence of literature that regarding the core concern of this paper, while there is a wide contribution in adjacent areas. Therefore, the search of relevant literature is needed to be extended from academic journals to also include governmental reports and reports from other institutions and commissions which having high level of trustworthiness.

This study has to a wider extent excluded books and preferred academically journals as a result of the high level of credibility. Academic journals are going through a long process where the articles are getting reviewed and scrutinised by several independent academics all over the world.

Smaller academic search engines have been excluded in this research process. The research process expected to find works with the best applicability and reliability collected in the bigger search engines.

Since this paper is a literature review, where the research process is provided in *Chapter 3 Method,* all kind of primary information and facts are excluded.

## 1.6 Ethical reasoning

Given that this paper is a review, there are no greater ethical issues within the execution of the paper, but since the paper are dealing with internal quality and continuous improvement which have an unexpressed requirement of measurement, there is a need to at least highlight aspects of ethical issues.

To manage internal quality improvement could also give instantly outcomes that are less good, for example, could both additional costs and conflicts arise (Lynn *et al.*, 2007). Conducting quality improvements requires resources, e.g. money for investments in education and training. This puts the improvement process in a view where a lot of issues must be raised. Has the company already come a long way in internal quality strategies? Then would the benefit per £ be less. A circumstance like that could to its extent look like waste of scare resources and be questioned from an ethical perspective. If the company leaves a great deal to be desired, a small amount of money would make big difference. It is, among others, an ethical valuation since a regulator is a public service organisation, how much efforts that should/could/must be put into internal quality improvement. There could be conflicts both in the financial terms and how improvements are performed. The case also opens up for blame

within the organisation when satisfied levels are not reached. The cost of internal quality improvement from an ethical perspective must also be put in a perspective where the internal quality and its efforts will be mirrored in regulators external quality which is to some extent interlinked with the outcomes from regulated operators. Lynn *et al.* (2007) continue to argue that if employees are involved in the quality improvement process they will deepen their understanding and the organisation's culture would change. Ethical obstacles would become less common in that case. The authors continue to suggest that quality improvement is heading to a long-term state where the culture engaging employees in continuously quality improvement and where areas of less good quality are not affecting an individual employee in a negative way but rather as opportunity.

Quality for an organisation which produces products is often measured in quantitative units. It could e.g. be about time for different parts of the process or a whole processes itself, amount of concerned labour, durability or customers' view of the products. The measurement feedback is concerned with obstacles that come from a machine or process where the individual is not responsibly for the outcomes. When it comes to service organisations the measurement of quality will give much more individual and personal feedback where the individual employee is to a wider extent responsible for a specific performance.

Communication, transparency and the internal interaction through the organisation are issues that should be scrutinized in the organisation. The objective feedback should be looped back to the organisation; but this phase could be done in several shapes. To make the measurement worth while, the organisation must have the capabilities to use the feedback material. If respondents do not feel comfortable enough to communicate the real status and their perception of internal quality, the measurement will not contribute to improvement. To be honest and give negative feedback can be connected to risks of negative treatment, both from colleagues and from managers. Even if a survey is made in confidence where nine out of ten employees are satisfied with a variable, it could be easy to figure out who the unsatisfied employee is.

An approach to increase the knowledge of effectiveness and performance could be the 360 degree feedback technique (Sillup and Klimberg, 2008). This technique is a multi-rate tool which gives an employee 360 degree feedback of his/hers performance contribution. This technique, among others could be used in reviewing internal quality within environmental regulators. The technique's contribution of average or negative feedback could rather prevent good and improved performance instead of encourage it. Individuals have different preferences and an average score. There are four principles drawn from Winstanley (1980) article of ethical issues in performance appraisals; respects for individuals, respect between the evaluators and the evaluated, a fair evaluation system and respect of the effects it could have on the evaluated and transparency (Sillup and Klimberg, 2008). However, these four principles could also be decomposed for further ethical obstacles such as to what extent respect for individuals should be taken. Could this kind of issues be solved with an ethical code? Ball and Osborne (2011) notice how ethical codes deal with the interest conflicts between and within professional relationships. That definition is applicable to an evaluation of the organisation's internal quality and in that case could a public service organisation prevent issues with a well-defined ethical structure to prevent conflicts of interest.

The concerns raised above, could perhaps be reduced by the involvement of a third party, e.g. consultants. Implemented measurement systems are of high importance for an organisation and should be implied, followed up and improved regularly. Questions could be raised if the

internal (and external) environment is too complex and therefore if the most applicable way to carry out an assurance is with a third independent part?

# 2 Theoretical perspectives

Chapter 2 starts with a navigation of different kind of social institutions to implicate internal and external quality assurance upon. This navigation will in a natural way narrow the scope of possible theories applicable for this papers objectives and research questions. The chapter will end up with four suitable theories, which will be explained in detail. The theories will then be connected to the environmental regulators in *Section 4 Empirics - A literature review.*

## 2.1 Navigation among different quality concepts

Internal quality is a wide area and needs therefore be narrowed down. Quality assurance has become vital matter as a result of its connections with cost (Buttle, 1995) and has spread, and exists nowadays in all sorts of branches.

*Figure 1* shows how the big area of quality is narrowed down to become suitable and applicable to the core concern of this paper.
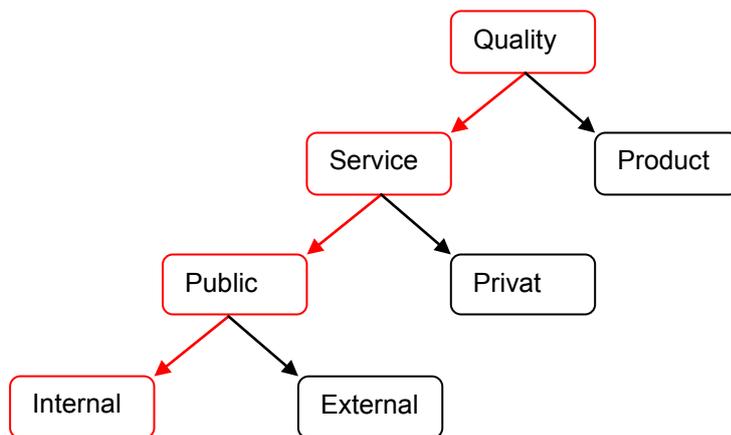


*Figure 1 Navigation and applicability of different quality concepts*

The tree diagram, in *Figure 1*, is first divided in production of services or products, where an environmental agency provides services. Further are services divided between public services and private services, were public services are the most applicable in this study. In the last step is quality in public service divided in internal and external. This study discusses the internal quality view within environmental regulators, and put in the context of environmental regulators internal quality where control is implemented and one of the bigger stakeholders is the society provides a very complicated and complex image of reality.

Deming's fundamental approach of quality improvement within the production of products will be further discussed in *Section 2.2. Deming's cycle.*

Constructive insight is also gained with QFD (Quality Function Deployment) (Lynch *et al.*, 1994). This method was developed in the late 70s and got a strong position when it got further developed in the Japanese industry (Chan and Wu, 2002). It enforces customers' preferences of quality should be considered and built in, in the product from the beginning to the end in production process. That means from the stage of design to the sales. From the

implementation area of industry and production of tangible commodities the practice and theory have been transferred to intangible fields such as: management and public schools.

The service area is managed by several different theories that have been exposed for scrutinisation. The C-SO-P (capabilities-service quality- performance) theory is one of the used theories (Mukherjee *et al.*, 2003). The theory is managed from a concept of service-profit chain concept. The model imposes a chain where the organisation uses their resources (mostly technical qualifications) to "deliver service and knowable" (Mukherjee *et al.*, 2003, p. 724) to staff. This level of quality is reflected in the staff's contribution to their customers which result with higher loyalty from the customers. This in its turn means higher profits to the organisation.

SERVQUAL is another used method which was developed during the 1980s to explore the gaps between by the customer; expected and experienced quality (Fränneby and Henriksson, 2008). The method has been used widely in different areas (Buttle, 1995). It has covered both service and product branches as well as private and public organizations. However, since the tool investigates the gap of customers view of to what extent they gain the quality they expected to gain it becomes a tool for assess external variables. The customers view are analysed from five different essential dimensions; tangibility, responsiveness, reliability, assurance and empathy (Mukherjee *et al.*, 2003).

The existence of theories are getting very limited when it comes to theories for internal quality assurance within public service organisations, as environmental regulators are recognised as. A reason could be that organisations integrate internal quality in their management or implementing a theory which are developed for external practices and then change it slightly to be applicable to the internal context.

Particular three important dimensions should be taken into account when quality is referred to areas such as public service organisations (Curry and Herbert, 1998). The three dimensions are:

- Client quality which refers to the customers' expectations of what they will get. This attribute is often measured through surveys of customer satisfaction.

- Professional quality requires appropriate processes and procedures in place to meet stakeholders need. Professional quality is measured through standard settings and audit procedures of assurance.

- Management quality contributes with the most productive and efficient way of enabled resources within the organisation. This spectrum is indication to what extent and how well values of quality are integrated and used as a driver in the organisation.

To succeed with the delivering of the three dimensions, audits and internal health checks need to be implemented where both hard and soft indicators are getting measured. The organisation's units need to be integrated with each other to be able to deliver the highest level of quality. The soft indicators should enable the view of personal relations while the hard are dealing with if and how procedures and systems are in place to contribute to a fully range.

There is a perception that customers are equivalent to the end customer. This is a perception which should considerate to be broaden in this research since this paper deals with

environmental regulators as the core objects which are heavy affected by the Government's imposed guidelines and operators activities. The regulators services are not something operators demand but are something that is done for the best of the earth and for societal benefit.

## 2.2. Deming's cycle

"Never-ending improvements" is a well emphasised phrase within quality improvement theory (Gitlow and Gitlow, 1987). Is seems like Deming's approach can provide the organisation with all the "tasty bits". Bits like; lower unit cost, higher quality and productivity, a secured position in its environment, ability and resources to implement education and training, and incentives to innovate. This will all lead to a higher satisfaction among customer and employees, but it should be in the whole organisation's clientele's interest to enhance the quality.

Deming's theory is based on evidence in form of data or/and information (Beckford, 2002). Because of his inclination of statistics, the theory took a quantitative view. He developed a four-step process of continuously improvement. The process is known both as Deming, Shewhart and PDCA cycle. See *Figure 2*.
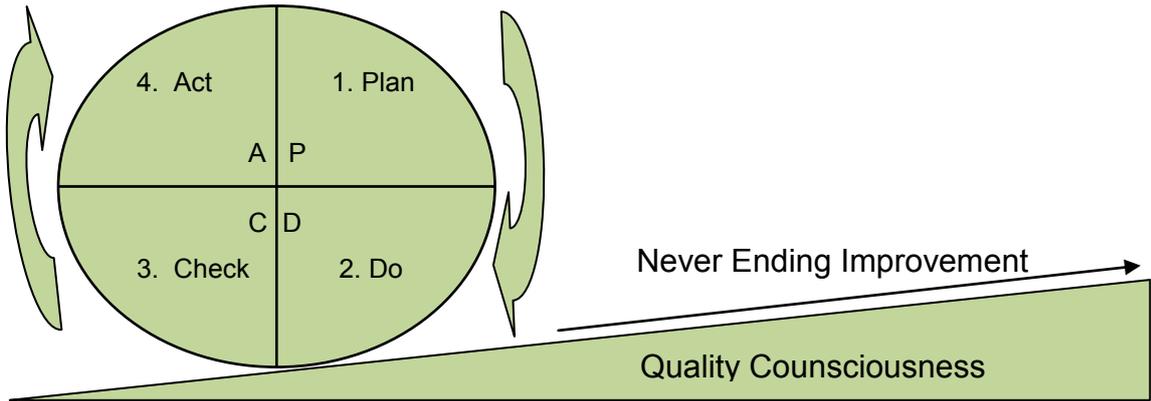


*Figure 2 The Shewhart Cycle* (*Gitlow and Gitlow, 1987, p. 79*)

*Figure 2* depicts how the organisation in the first step [1] needs to gather information of the required variables which acts as important and crucial for the organisation (Gitlow and Gitlow, 1987). Magd and Curry (2003) notice that processes with characteristics as: bothersome, significant, giving fulfilment to stakeholders and under-performing are the one that should be included in data collecting. Gitlow and Gitlow (1987) continue to notice how plans are set up after contribution of the collected and analysed data. The plans communicate time frames and what actions that needs to be taken. As a second step [2] the planned actions from step one are executed. To know if the plan and the action have succeeded applicable measurement must have been implemented. This gives a "check-step" [3] which falls into a stage [4] where actions are taken to making the changes which are needed to realize a higher level of quality and satisfaction. Even if stakeholders and the organisation are satisfied the "ball" will continue rolling to keep the stakeholder in the same mode or even in a better satisfaction level. If dissatisfaction exists it is an evident action to continue the ball's rolling of quality improvement. This gives a circle of never-ending improvement and the consciousness of quality in the organisation is increasing (Gitlow and Gitlow, 1987).

However, even if Deming's approach was aimed and developed for the private industry of products, some parts of the method works as a platform and take-off for internal quality assurance in public service organisations. A base in Deming's research is an approach of continuously improvement which is depicted in *Figure 2*. The Shewhart and PDCA cycle; plan, act, do and check the quality assessment process is the same for internal as external quality interpretation. The cycle views how the organisation should deal with the process of quality assessment with links to a time perspective.

Deming continued to illustrate how he thought an organisation could reach a level of higher quality on its path to optimize its operation, see *Figure 3*.
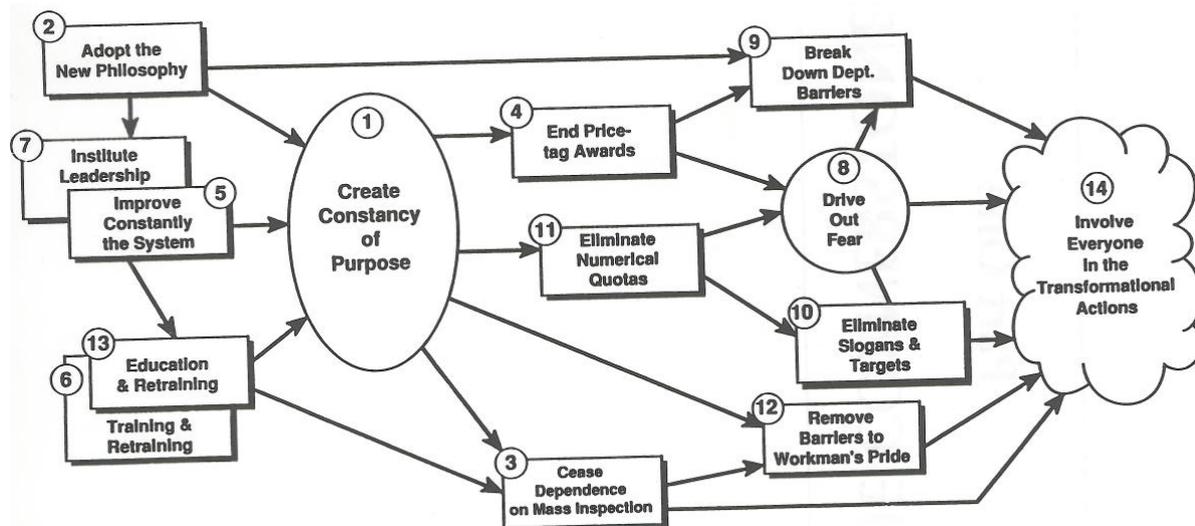


*Figure 3 Deming's Fourteen Points System Diagram* (Voehl, 1995, p. 5.)

Principle 1 - 3 tries to create a system of where reliability of purpose and adoption of new philosophies were established. The same action was supposed to come to an end with mass inspection. The principles are aiming towards to unite the organisation to towards common goals. Culture within the organisational environment should support joint working towards better quality with contribution of a never-ending improvement system (Beckford, 2002). Principle 3 especially seeks to build in quality from the beginning so the traditional mass inspection will become unnecessary (Gautschi, 1992), but also to broaden the variety tools and the approaches of how to use them (Staton-Reinstein, 2005b). Principle 4 seeks to change the view of how to award businesses. Deming saw practice of "price-tag awards" and he wanted the award depend on a bigger portion of quality together with price (Gitlow and Gitlow, 1987). The next two principles [5 and 6] emphasise the continual improvement process and it is applicable just as much to people as to processes. The process continues to notice the importance of the leadership's well implemented vision of the new way of view quality [7]. To be a great leader with quality as a driving factor to success, the best management is needed to be compiled with a portion of courage and fearlessness [8]. True quality is built upon maximum contribution from all areas in the company, therefore is there a need to eliminate the feeling of "we and you" in the company. Barriers between areas should be broken down and an understanding environment built up [9]. The organisational system needs educate the staff to look for root causes and not for people to blame [10]. To be able to find problems and causes is a well-managed measurements and tracking systems needed, and asking ourselves; "where does the production not meeting the targets?" [11] (Staton-Reinstein, 2005b). Better processes leads to more effective allocation of human resources,

such as characteristic of employees, their role and their education. "Is means removal of barriers to pride of workmanship" [12] (Deming, 2000, p. 51). Never slow down the development pace. If all the staff has been trained, take the education to a higher level [13]. Be always aware of the importance of the roles wherever in the process they are and always evaluate if it is bringing you closer the vision [14] (Staton-Reinstein, 2005b).

## 2.3. SERVQUAL

The model determines service quality as the gap between customers' expectation and what the customer really get (Curry and Herbert, 1998). It evaluates the service operation in five different angles; tangibles, reliability, responsiveness, assurance (competence – credibility - courtesy) and empathy (access – communication – understanding the customer). However, the model does also evaluate the operation with help of five different gap statements;

(1) Customers' expectations versus management perception→ (2) Management perception versus service specification → (3) Service specification versus service delivery → (4) Service delivery versus external communications (5) Inconsistency between customers' expectations and delivered service.

## 2.4. Quality Function Deployment

As *Section 2.1 Navigation among different quality concepts* notices, is QFD (quality function deployment) and process where the organisation tries to implement their customers' references of quality within the service from the first step to the last before it customers' satisfaction (Chan and Wu, 2002). The model implements the term *"wants"* as the customers' requests and *"hows"* as the service indicators (Curry and Herbert, 1998). It is a useful model wherever there is a relationship between a supplier and a demander. There is a range of different components that are divided in a basic level and a higher level, where some of the components could be absence in an application.

The basic level are the organisation supposed to identify the *"wants"* – weight and rank their importance – view the specific service indicators, the *"hows",* - set up the relationship between the *"wants"* and *"hows"* and rank the *"hows"* in relation to earlier information. This gives a ranking of *"hows"* which gives the maximum customer satisfaction. The higher level is dealing mostly with the *"hows"*. How could they be improved? Compare both the *"wants"* and the *"hows"* through implementation of benchmarking analysis.

Curry and Herbert (1998) claims that there is a connection between QFD and the SERVQUAL theory. The connection is viewed in the first step and second step in the basic level where the identification and ranking of the *"wants"* are done. SERVQUAL can help to define the *"wants"* in a vigorous way. They suggest that multidisciplinary teams are set up to recognise what the customer's needs, generate and chose approaches to meet the needs and put in practices in order to meet the needs.

## 2.5. The Capability-Service Quality-Performance theory

The C-S Q-P (Capability-Service Quality-Performance) theory are widely used and scrutinized within the financial sector. E.g. of contribution within the area are; Chen's (2004) highlighting of the relationship between different capabilities and efficiency in Taiwan's banks, Palvia *et al.'s (2010)* investigation within the service area of information systems and their offshore vendors in India and China from a C-Q-P (Capability- Quality-Performance)

theory angle, Mukherjee *et al.'s* (2002) scrutinisation of the capability to create a bank operation as a strong and competitive unit and Roth and Jackson's (1995) well quoted article which provide a discussion about what kind of common capabilities that influence quality, if service quality affects performance and if there is any connections between the C-S Q-P and the reality.

There are a wide supply of anecdotes within the linkage between an organisation's quality and performance (Mukherjee *et al.*, 2003). Their relations impose that a high level of quality will contribute to better organisational performance. Assumptions are therefore taken that the organisation needs to explore and raise their capabilities to achieve and improve service quality. A triad of C-S Q- P theory is therefore developed. The theory are based on the organisation's usage of capabilities, its multidisciplinary resources, to create an organisational environment which maximize the environment and tools for employees which contribute to a higher level of service quality (Mukherjee *et al.*, 2003, p. 724). The service quality is creating satisfaction for the customers which are supplied with what they require. When customers are satisfied, it results in loyalty. The loyalty loops back and gaining the organisation. The theory is based on a competitive environment where one driving force is the competitive environment and the desire to succeed (Roth and Jackson, 1995). Excellent performance is achieved through high quality and high quality is establish of investment in resources such as traditional technical attributes but also in a applicable knowledge base among employees and capability of processes. The authors continue to distinguish between competitive capability and core capability. The competitive capability is the characteristics of the external performance while the core capability is more focused on the internal contribution through knowledge and well developed processes. Core capabilities are describing how competitive capabilities are earned and delivered. The theory constitute of four different operation capabilities; the ability to make the most of technical improvement, to develop and take advantage of individual capital of knowledge, to integrate organisational processes and procedure and to reach factor productivity. The article highlight that the greater knowledge and competence the employees possesses, the higher quality is performed and custom satisfaction is created.

## 2.6. Quality theories in regulatory approaches

It is argued within the theory of public choice that the need of market pressures is essential to enhance both quality and efficiency (Lam, 2007). Private organisations are naturally exposed for competition and pressure. If a profit-driven organisation not keeping satisfied level of quality the profit will decrease. The organisation will in worst case be forced to close. A public organisation is still providing customers (the public) with services but they are in a monopoly situation and do not get faced with a situation where they are forced to close down as a result of customers satisfaction. Public organisations are also founded of the government and are therefore theirs productivity are not being scrutinized to the same extent.

The theory suggests that monopolised services supply an inefficiency and oversupply. The public sector has as one attempt to manage more constrained resources and improve both quality and costs, started to outsource services. However, the theory is not applicable to environmental regulators core concern of regulate and overlook compliance, especial when it comes to internal assurance how good they are and their capability of making risk-based decision making. However, gives the theory a view of the problems that exist in internal quality assessments within public service organizations. Lam (2007) notice that there are strong correlations between quality management activities and performance delivery.

1997 did OECD report that regulatory costs were the least controlled cost within the governmental area (BRTF, 2005). Regulators costs are in the end paid by the tax-payers and the regulated operators and the BRTF did express their concern for better regulation that decreased the administrative burdens. Environmental regulators are through these incentives from BRTF and Philip Hamptons trying to manage their services and cost in a better way. This imposes also a need of internal quality management and quality assurance. There exists a broad range of different approach of how to regulate and overlook operators' compliance, see *Section 4 Empirics - A literature review,* where one of the most popular debated and imposed approaches are a risk-based view. The view proposes that risk-based decision making should be implemented and permeates the organisations operation and values.

# 3 Method

The research's strategy has a flexible approach, where the design is developed through the process (Robson, 2002). The flexible approach contributed to a qualitative study. A qualitative study rely upon the written word and not calculations and statistics. The study implied an evaluationary approach where the objective and the research questions were scrutinised to generate the true environment of internal quality of environmental regulator in UK. A flexible evaluation indicates a focus on the process and not the outcome, which is also the case for this study. Robson (2002, p. 205) noticed "*evaluation is often concerned not only with assessing worth or value but also with seeking to assist in the improvement of whatever is being evaluate* ". This emphases and underlines the continuous improvement theories' importance. In academically literature, the viewed processes of internal quality management are in need of evaluation since accountability has become an important keyword of public services. An evaluationary study approach strives to view the ineffectiveness in a process or the other way around, areas with abcense of effectiveness. The problem with the approach is the ongoing change in the world. Evaluation is likely to aim towards processes which have shorter durations which give obstacles with an environment which always is in a changing process.

The evaluation of internal quality should be seen as a formative evaluation, where the conclusion remarks are aimed as a contribution to the development of the management of internal quality (Robson, 2002). To be able to contribute with trustworthy conclusion remarks, features as utility, feasibility, propriety and technical adequacy must be integrated through the whole process which is heavily dependent on the method - a literature review.

## 3.1 Literature review

This is a pre-stage for a larger research (MSc) where the way of how UK's environmental regulators approach of risk-based decision-making is quality assured within the organisation. Therefore this paper will provide a foundation of applicable quality theories and how they could be connected to the approaches regulators can take, especially risk-based decision making.

The area of quality is broad and there is a need to narrow down the area to what is seen as the core concern within this research. *Figure 1* depicts how quality is divided in broad terms. The research started to look at a theory which applies to quality and could act as a fundamental theory and cornerstone in the development of quality assurance. Different theories were then provided in the area of quality assurance in public service organisations. It should be emphasized that this study has taken an internal approach which evaluates and highlights internal circumstances and processes and excludes relations to and objectives for external stakeholders.

Mostly used search databases were SpringerLink, Scopus and Business Source Complete (EBSCO), but when there was a lack of relevant results, Google Scholar was used. Several academic journals are specialised within the area of management (e.g. leadership management, quality management and process management) and numerous journals are specialised on law and regulation. Together these journals contribute to a comprehensive view of the background and the problems. Unfortunately the numbers of relevant academic articles

decrease the more narrowed the concept gets, e.g. a search for: internal theories +service +public, in the abstract, gave six sources during 2001-2009 at EBSCO. Since the amount of publications was not at a satisfying level, the year duration needed to be left open.

Ethical issues should be raised already in this pre-stage. Internal quality assurance enforces a process of assurance. It is especially this process that raises ethical issues. To collect information from employees within different areas and processes, both in horizontal and vertical directions, require as honest answers as possible if the quality assurance will make it worthwile. The organisation is seeking areas of improvement, but it could also be broken down to find to what extent the organisation has capabilities to provide a high level of quality in different areas of their operating environment. Employees must feel that there is an environmental acceptance to criticise the management, the way they operate and/or the tools they are provided with. To criticise does not mean to blame. To criticise are used in the meaning of be able to raise issues in a constructive way. There are different levels of openness and acceptance within an organisation. The bigger openness and acceptance the organisation is in hold of, the fewer amounts of ethical issues can arise. If the organisation has a blame culture or a culture where there are problems with communication between managers and employees of some reason, the bigger are the incentives to keep the integrity of the respondents' individual answers. This creates a good management of how the questions are written, how the survey is performed, how the answers are managed and analysed, and how the result is used.

## 3.2 Analysis

The analysis content relied on secondary data from the literature review (Robson, 2002). Particular contexts, in this case a regulatory setting of internal quality in public-service organisations, produce different types of documents. The secondary data was in this case academic literature, governmental information and stakeholders' reports. Three research questions were highlighted and from that foundation were areas and headings of interest developed. Content analysis offers both advantages and disadvantages. The strongest advantage is the contribution of permanent sources. This gives opponents and researchers of further study to be able to reanalyse and review it. Another positive feature is a low cost of the study. Disadvantages could be reflected in the secondary data where some may have been written for a certain reason, it could be limited or /and partial and foremost, and it could be influenced by a certain point of view or lobbyists.

## 3.3 Quality in the research process

The quality in a qualitative study, performed as a literature review based on secondary data, is to a large extent depending on the researcher's awareness (Robson, 2002). There are several obstacles that the study needs to navigate among, e.g. data could (as been noticed in *Section 3.2 Analysis*) be both partial and/or limited. This kind of obstacles could be minimised with help of the author's self-perception and neutrality. However, if the area shows a lack of data, the situation could be interpreted as an area in need of research.

Another occasion could be data overload (Robson, 2002). An occasion of data overload has both negative and positive characteristics, e.g. a negative feature of data overload is the lack of possibility to analyse all the data to a satisfactory level. Overload of data could show, has been mentioned above, that the area has already been well academically scrutinised. Pros with data overload are that the amount of academic contribution could provide trends and well-founded analyses could be done.

The research could also be influenced by the researcher's preferences and culture (Robson, 2002). First impression and data availability can contribute to an incorrect data collection and interpretation. This is in a process where neutrality is watchword. One of the objectives with research or a new study is the author's capability of objectivity. This objective interprets the ability to neither ignore information and data that are conflicting with assumptions, hypotheses and personal preferences or data and information that emphasises them, nor exclude the unusual and remarkable.

# 4 Empirics - A literature review

This chapter contributes with a review of the theories chosen in *Chapter 2 Theoretical perspectives*. It scrutinises the theories, shows how these are interacting with each other and could be referred back to the environmental regulators' internal operation. The chapter continues to provide different types of regulating theories which UK's environmental regulators can chose between. These elements give a story line and encircle the relatively new regulation approach of risk-based decision-making.

## 4.1 The empirical outline

Governmental and regulatory operations could easily be seen as complex and complicated areas. To present an empirical outline as a figure, see *Figure 4*, could make it easier for readers to grasp the bigger picture and in the same time be able to navigate in more detailed issues.
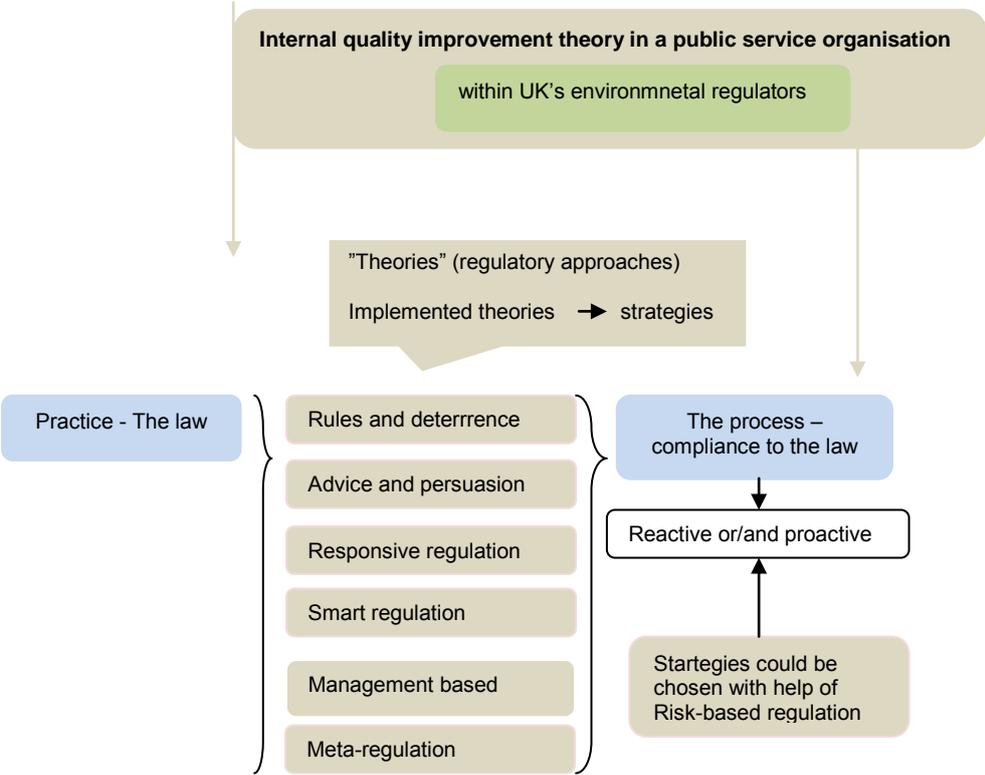


*Figure 4 A Model of the Theoretical Outline*

*Figure 4* shows an overview of how a continuously quality assurance theory, chosen in this research, is connected to approaches of how to regulate operators. Continuously quality improvement is usually acting as a foundation in organisations' operation. Organisations can use different theories, and particular this research will use Edward Williams Deming's theory as a proposed platform for UK's environmental regulators' operations. Deming's theory and e.g. its broad scope of implementation in different industries could be found in *Section 2.2. Deming's cycle* and *Section*. There are two main activities for an environmental regulator; first the choice of and implementation of the chosen theory for their practice and strategy,

where the law is a self-evident cornerstone. These practices and strategies could both act alone and in combination with other theories. The other activity is to manage the operators' compliance to the law and practices. The law is taking a reactive approach while the selections among the different approaches often take a more proactive approach. In the priorities of where to put scare resources such as labour, thoroughly analyses and inspections, an approach of risk-based decision making can be taken. This approach is applicable to a different extent to every of the theories. Risk-based decision making is the core concept in this paper.

## 4.2 Regulators need of internal quality

Governmental agencies in the UK experience increased expectations from the Government and stakeholders to review their approach of regulating operators. The request is especially emphasised by BRTF, who was assigned by the Government to investigate the quality of regulation and to suggest changes which would enhance the public interest (Haskins, 1999). Motivations for higher quality embrace a mix of external and internal factors. One external factor consists of pressure which requests an implication of more regulation for some interest and less for others (Haskins, 1998). The main interest was to protect health and safety to an affordable cost and with a framework of openness (Haskins, 1999). The research started to define what "the public interest" because different stakeholders have different views. Five principles were presented which the regulations were going to be scrutinised against; consistency, transparency, targeting, accountable and proportionally. The main objectives were to improve the quality and raise the issue with the number of regulations (Haskins, 1998).

Consistency, transparency, targeting, accountable and proportionally became five watchwords and UK's definition of quality. In the Pre-Budget Report 2004 (HM Treasury, 2004a), did Hampton Review Consulting reviewed the present system of regulatory inspections and the enforcement to reduce administrative burdens on operators. Philip Hampton has a record as a coveted chairman and has among others served corporations such as RBS (Royal Bank of Scotland) and Sainsbury plc (INSEAD, 2009). In the interim report Hampton highlighted several areas of improvement; implementation of a widespread risk assessment, more customized interaction with operators, balancing inspections and advice, increase the joint working, consolidate both information such as different forms and regulatory bodies, and more efficient incentives for compliance (HM Treasury, 2004a). In the interim report; *Reducing administrative burdens – effective inspection and enforcement* did Hampton recognise an accountability gap in the way regulators realise their objectives (HM Treasury, 2004b). Hampton also noticed a greater need for central guidance on matters such as; "profiling, conflicting regulation and reducing administrative burdens" (HM Treasury, 2004b, p. 50) and demand for "*better central benchmarking of regulators*" (HM Treasury, 2004b, p. 49) where the followed report stated that benchmarking arrangements for local authorities were supposed to be put in place (HM Treasury, 2005). These reports resulted in the watchwords which became implemented in all different kinds of public organisations.

The approach, of quality improvement through a benchmarking tool has been the only articulated approach in Philip Hampton's review and his recommendations. The measurement processes is implemented in the regulators environment according *Figure 5*. *Figure 5* provides a developed version of *Figure 1*, where also this paper's core concern is depicted.
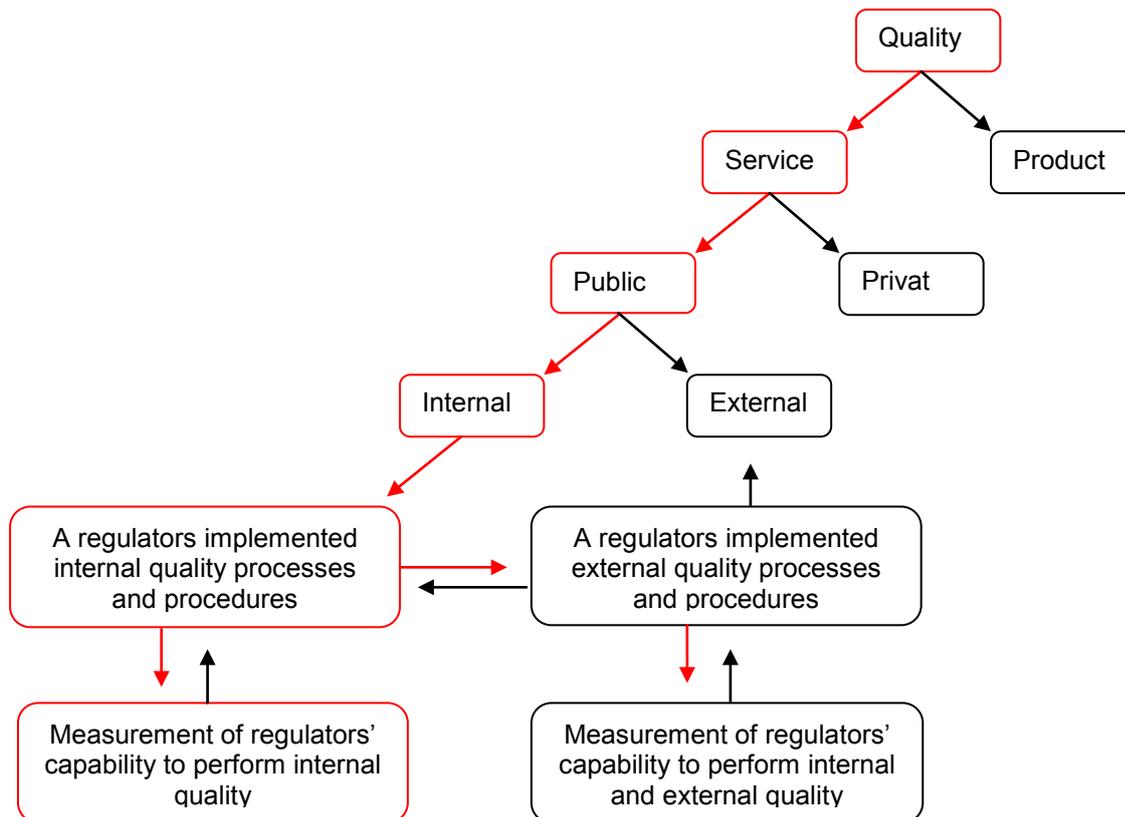
*Figure 5 Illustration of this research's core concern*

*Figure 5* shows how to navigate in a wealth of different areas within the internal approach of quality improvement in public service organisations. When the research has scrutinised the core, the capability can be improved and quality processes and procedure will contribute to higher score in a quality assurance and better reputation in society.

Regulating operators are, in this paper, divided in public and private actors. An example of public actors is the UK government and its agencies. An example of private operators within a regulatory regime could be regulatory units that have become outsourced. Public operators could operate in two different environments, either with goods or with services. Since regulators are managing and overlooking regulatory compliance, they fit into the service segment. Quality in service organisations could be divided in external and internal terms. Internal quality (of regulatory systems) is highlighted in the Hampton report (BIS, 2005a) as an area that needs improvement. Higher quality within a British regulator is perceived as e.g. excellence in regulatory systems by implementation and use of risk assessment to its extent in all regulatory activity. Usage of qualitative input information is a very important factor to create a correct and trustworthy outcome. Desired features of the risk-assessment are (BIS, 2005a, p. 33);

"- be open to scrutiny
- be balanced in including past performance and potential future risk
- use all available good quality data
- be implemented uniformly and impartially
- be expressed simply, preferably mathematically
- be dynamic not static
- be carried through into funding decisions
- incorporate deterrent effects

- always include a small element of random inspection"

The risk assessment procedure has a clear-sighted how subjective judgements are put in the picture but not dominating the process. The main quality aspects have been summarised in five principles; transparency, accountability, legitimacy, efficiency and policy coherence. These five sacrosanct principles permeate the external operating environment, but since the external regulatory operation originate in internal operating, the same watch-words exist in the internal environment (The Parliament, 2004).

The Hampton report (BIS, 2005a) promotes benchmarking as an internal and external quality measurement, while it is hard to find trace at EA's homepage of internal quality document which neither state their internal quality policy nor how to measure it. SEPA has in some area specific documents noticed the need of internal control systems as a result of new regulatory schemes for operators (SEPA, 2010). Beyond SEPA's realising of the need of securing external outcomes with internal audits, has SEPA's boarder established an audit committee which audits the regulator's risks, "control and corporate governance. It will operate independently and report to the Agency Board" (SEPA, 2011). NIEA has also a lack of hint of how they manage their internal quality.

## 4.3 Deming's model in practice

Deming's structure is a process which is divided in steps. They constitute integrated phases in a process that is aimed at achievements. It assumes agreed leadership approach, where the hard work of implement a learning organisation and ambition to achieve an appropriate level of cooperation, leads to an efficient development of the operation. The Shewhart cycle is applicable to all kind of organisations, public as well as private, services as well as products and internal as well as an taken external vies. However, Deming's Fourteen Point System Diagram developed to be applicable for organisations which provide products and gain profits.

Deming's theory has been applied to a wide variety of industries and setups. Khan and Jinnah (2010) highlighted to what extent TQM, with its foundation in Deming's theory, contributed to Pakistan's telecommunication industry. The study's conclusion compiled the contributions Deming's theory could do to service operations. It underpins also the enhanced level of effectiveness that the model could give. However does Wolf (1992) state that TQM, and by that is Deming's theory included, are both implemented in private and public sectors. The Shewhart process and Deming's framework have been examined in relation among HR (Human resources) departments in USA (Langbert, 2000) which gives a context of how Deming obliged the "merit pay" as a sin and how the fear was supposed to be driven out from the workplace (Langbert, 2000, p. 98). Conclusions were drawn that the theory showed lack of rational arrangements where employees' preferences could been viewed and better recognised. The dialogue (communication) has even been compared with a midwife who gives birth to quality processes and procedures (Langbert, 2000, p. 98).

## 4.4 Continuous improvement within environmental agencies

Quality improvement assume that quality are features of the operation and the operations approach can help the individual employee to understand and see connections between different relationships and functions (Lynn *et al.*, 2007). *Figure 6* illustrates how an improvement loop of a risk-based decision making approach could be depicted.

*Quality improvement cycle*
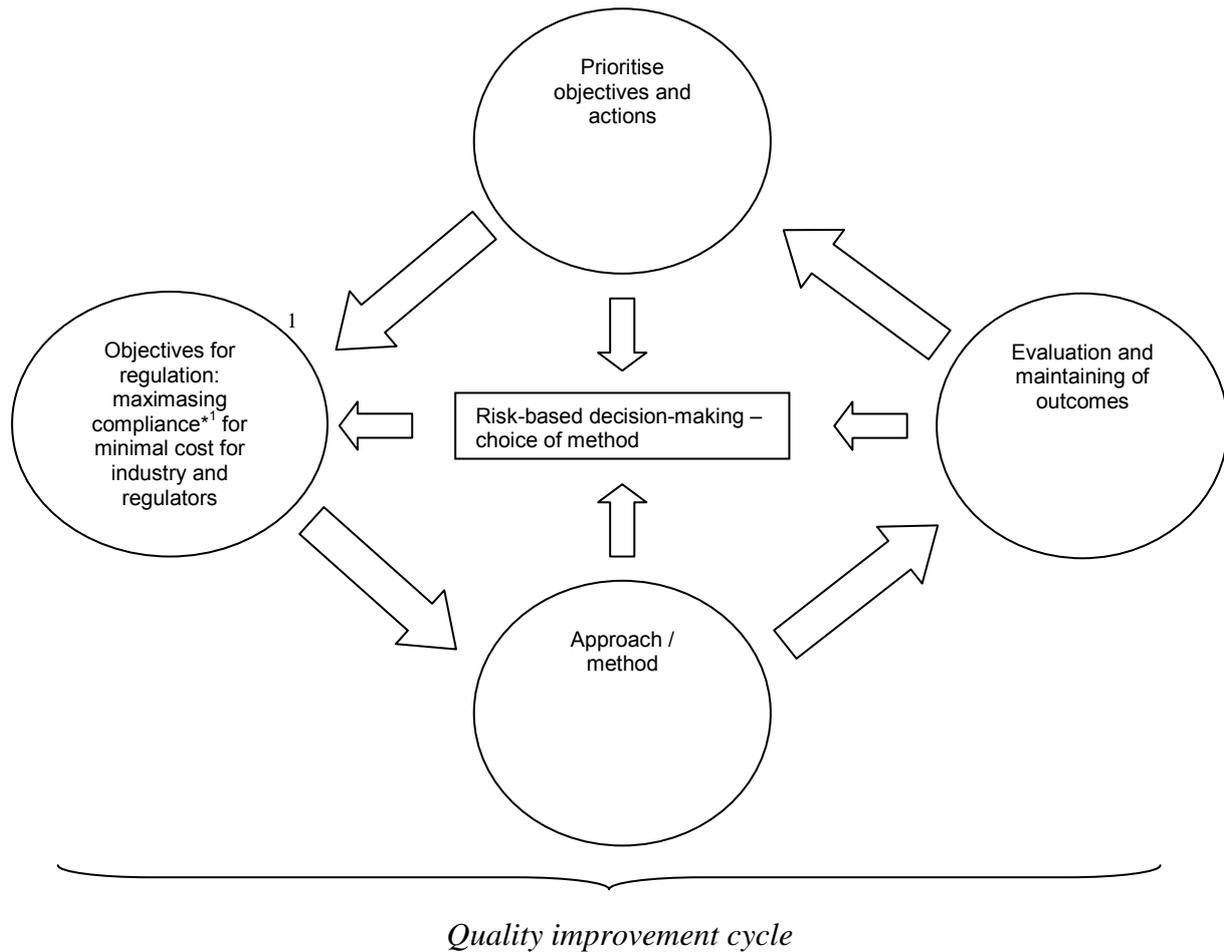
*Figure 6 Continuous improvements for an environmental regulator*

*Figure 6* show the objectives and/or guidelines are often set to a certain extent by the government, but also by the regulator itself. That depends on how independent the regulator is relative to the government. These objective and/or guidelines are implemented through a choice of regulating theories. One of these theories (see different quality concepts; *2.1 Navigation among different quality concepts*) could be implemented as the main or be combined with other. Risk-based decision making is contributing in the process of choosing and implementing correct theory in different in the most applicable situation.

Internal quality is a wide area and needs therefore be narrowed down. *Figure 1.* showed how the big area of quality is narrowed down to become suitable and applicable to the core concern of this paper. *Figure 1* has also a role of a backbone in this study and it is developed in *Figure 5*. Quality assurance has become vital matter as a result of its connections with cost (Buttle, 1995) and has spread, and exists nowadays in all sorts of branches. The tree diagram is first being divided in production services or products, where William Edward Deming (Deming, 2000) was one of the ancestors to quality improvement within the production of products. Different approaches have been developed from this theory; one is the TQM (Total Quality Management).

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[1]  In this perspective does compliance mean:
  - Meeting of legal requirements, i.e. an reactive approach towards non-compliance
  - Precautionary action and advice to the operators affected by environmental regulation, i.e. a proactive approach towards non-compliance

Constructive insight is also gained with QFD (Quality Function Deployment) (Lynch *et al.*, 1994). This method was developed in the late 70s and got a strong position when it got further developed in the Japanese industry (Chan and Wu, 2002). It enforces customers' preferences of quality should be considered and built in, in the product from the beginning to the end in production process. That means from the stage of design to the sales. From the implementation area of industry and production of tangible commodities the practice and theory have been transferred to intangible fields such as: management and public schools.

The service area is managed by several different theories that have been exposed for cutinisation. The C-SO-P (capabilities-service quality- performance) theory is one of the used theories (Mukherjee *et al.*, 2003). The theory is managed from a concept of service-profit chain concept. The model imposes a chain where the organisation uses their resources (mostly technical qualifications) to "deliver service and knowable" (Mukherjee *et al.*, 2003, p. 724) to staff. This level of quality is reflected in the staff's contribution to their customers which result with higher loyalty from the customers. This in its turn means higher profits to the organisation.

SERVQUAL is another used method which was developed during the 1980s to explore the gaps between by the customer; expected and experienced quality (Fränneby and Henriksson, 2008). The method has been used widely in different areas (Buttle, 1995). It has covered both service and product branches as well as private and public organizations. However, since the tool investigates the gap of customers view of to what extent they gain the quality they expected to gain it becomes a tool for assess external variables. The customers view are analysed from five different essential dimensions; tangibility, responsiveness, reliability, assurance and empathy (Mukherjee *et al.*, 2003).

The existence of theories are getting very limited when it comes to theories for internal quality assurance within public service organisations, as environmental regulators are recognised as. A reason could be that organisations integrate internal quality in their management or implementing a theory which are developed for external practices and then change it slightly to be applicable to the internal context.

Three important dimensions should be taken into account when quality is referred to areas such as public service organisations (Curry and Herbert, 1998). The three dimensions are:

- Client quality which refers to the customers' expectations of what they will get. This attribute is often measured through surveys of customer satisfaction.

- Professional quality requires appropriate processes and procedures in place to meet stakeholders need. Professional quality is measured through standard settings and audit procedures of assurance.

- Management quality contributes with the most productive and efficient way of enabled resources within the organisation. This spectrum is indication to what extent and how well values of quality are integrated and used as a driver in the organisation.

To succeed with the delivering of the three dimensions, audits and internal health checks need to be implemented where both hard and soft indicators are getting measured. The organisation's units need to be integrated with each other to be able to deliver the highest level of quality. The soft indicators should enable the view of personal relations while the

hard are dealing with if and how procedures and systems are in place to contribute to a fully range.

There is a perception that customers are equivalent to the end customer. This is a perception which should considerate to be broaden in this research since this paper deals with environmental regulators as the core objects which are heavy affected by the Government's imposed guidelines and operators activities. The regulators services are not something operators demand but are something that is done for the best of the earth and for societal benefit.

## 4.5 Regulators' practice – The law

The objectives for legislation are to minimize pollution from industries (Fineman, 2000). As a member state of EU (European Union), are UK's legislation and regulation influenced by EC (European Commission) directives to a wider extent. EC directives try to harmonise standards across several environmental areas among several countries (Bishop *et al.*, 2005). Legislative objectives aim towards minimizing pollution from industries (Fineman, 2000). However, courts have so far only contributed with a low involvement in developing environmental regulations (Bishop *et al.*, 2005). Instead legislators have given regulators a special empowerment role where they got a role in the middle of the crucible and are held responsible from several different stakeholders (Fineman, 2000). Regulators are accountable for the Government in occasions of legislation, operators address them with economical issues and the public raises questions about environmental and health protection. Legislators' low involvement in regulators' empowerment of operators give regulators a greater amount of freedom to define proper rules.

## 4.6 Theories of regulation

Regulatory theories aim to describe and prescribe operators behaviour. Different attributes motivate different organisations to comply or not comply with law and policies in different circumstances and the same organisation could even have "multiple, potentially conflicting, motivations for compliance" in the same time (Lehmann – Nielsen and Parker, 2009, p. 278). Motivations for compliance or not could be divided in three wider groups, economical, social and normative motive. The acts and the motivation of the operators permeate governmental- and regulators approach towards operators (*ibid*). The structure of operators' obligation and responsibility could be viewed as a pyramid, see *Figure 7*.

Personal Responsi-bility

This level is not formulated in any formal document. The level gives the operator freedom (Führ and Bizer, 2005, p. 329) to take a philianthropcal approach to reach above and beyond, with contribution from e.g. CSR and voluntary management systems.

Basic responsibility – Operators must show how they will manage the obligations – *self-responsibility*

Strict obligations
Lack in compliance is punished witch direct sanctions - *strict responsibility*

*Figure 7 The responsibility pyramid* (Führ and Bizer, 2005, p.329)

*Figure 7* depicts circumstance where the most basal obligations, such as law implementation, function as the foundation (Führ and Bizer, 2005). Here, the law should be interpreted in its most basic and broadest shape, it could e.g. imply the obligation to not harm the environment or the necessity to operate with required permission (*ibid*, p. 329). The level above, is less restricted by legal requirements and are more designed and implied by regulators own strategic management. This stage implies the different approaches which will further on be developed in this chapter. The pyramids' top level is founded on the operators own incentives to contribute to a more sustainable future and to imply a propitiate management system which develop, implement and control the objectives of self-responsibility. The self-responsibility incentive should not be interpreted as a reallocation of decisions-making and responsibility from the governmental agencies' to the operators.

This chapter continues to provide awareness about different regulatory approaches. It starts with the most traditional approach, *section 4.6.1 Rules and deterrence* and ends with the newer and more debated approaches such as *section 4.6.7 Risk-based regulation.* The order of the sections is depict in order of development of the approaches. However, this is based on the academically literature and it must be highlighted that it exists a wide variation depending on e.g. governmental views, political influences, geographical areas, culture, the country's degree of development and financial conditions.

### 4.6.1 Rules and deterrence

Rules and deterrence is the approach that has been practiced from the beginning of regulation implications (Führ and Bizer, 2005). This approach is comparable with command and control/ direct regulation. Regulators identify targets and non-compliance is punished with different types of penalties. (Gunningham, 2009). Riles and deterrence is incorporated as states intervening through prescribed policies which clearly state allowed and not allowed actions (Führ and Bizer, 2005). Forbidden actions are getting punished by fines, prison or social contempts. This way of intervening creates problems for the environmental agency in their role to overview compliance. E.g. within the chemical industry, mainly three problematic situations have occurred with the way of regulate. The regulator does not know what substances that is hazardous and they will not know without co-operation with the industry, the impact of the substances may be impacted by the process and some of the substances will be of high importance and a substitute does not exist. The situation offers an example of the criticisms the common features these approaches got. Gunningham (2009, p.183) noticed some of the disadvantaged as, costs for business, inflexible and centralised. However, did some businesses continue to support rules and deterrence/command and control/ direct regulation since it gave them clear (and easily understood and managed criteria) rules.

### 4.6.2 Advice and persuasion

Advice and persuasion is an improved strategy developed from the rule and deterrence strategy. This approach is more based on command and control method. The approach implies persuasion to achieve compliance through advice and information rather by sanctions (Pearce and Tombs, 1990).However, the article is also highlighting how "Oxford Centre for Socio-Legal Studies, argue that regulatory agencies should thus act as consultants rather than policemen" (*ibid, p. 424*). This would imply (as far back as 1990) an underlying need and demand of a way of regulate that would consist of a more open systems, where flexibility is a common feature. This way of regulate succeeds in a greater extent if the regulator is seen as competent and trustworthy (Winter and May, 2002).

### 4.6.3 Responsive regulation

According to Balck and Baldwin (2010) responsive regulation is the implementation and use of a wide scope of different regulatory tools while Führ and Bizer (2005) are stressing self-responsibility as an attribute that acts as a cornerstone in responsive regulation and facilitates for agencies in complicated environmental circumstances. Braithwaite *et al.* (2007) illustrated responsive regulation with key words such as; motivational attitudes, co-operation, collaborative, engaging actions and dialogue, at the same time as Lehmann – Nielsen and Parker (2009) stress the effective, efficient and legitimate features of responsive regulation to "take neither a solely deterrent nor a solely cooperative approach" (*ibid*, p. 376). Responsive regulation takes a middle course where both a number of theories of compliance and enforcement. Several other regulatory theories have progressed from responsive regulation and characteristics could be found especially in smart regulation.
Responsive regulation regards regulation as a pyramid where the broad base are about co-operative and more open regulation approaches and more punitive approaches higher up in the pyramid (*ibid*). When an operator does not want to communicate and collaborate, it gets moved down in the pyramid to more punitive actions. Occasion could raise when the punitive actions do not work and the moving upwards continuous. The approach also implies a forgiving attitude towards organisations that have earlier not complied with policies and laws. However, this pyramid could imply greater incentives for motivations based on financial

aspects than on social aspects, since punitive actions are mostly connected with fines and others sorts of capital costs.

### 4.6.4 Smart regulation

Smart regulation could also be recognised as regulatory pluralism focusing on how regulation could shape behavior by a broad range of regulatory mechanisms such as international standards, supply chain demands, stakeholders and internal environment management systems (Gunningham, 2009). The foundation of smart regulation rests on eight principles (Possum, 2010, p. 248);
"1. Avoid ''perverse'' or adverse effects of adjoining policies.
2. Choose policy mixes that incorporate a broad range of instruments. This implies a careful selection of the most cost-effective regulatory combinations.
3. Choose policy mixes incorporating a broad range of institutions. This implies a careful selection of the most appropriate institutions to regulate the policy.
4. Develop or use new environmental policy instruments (NEPI's), when ''traditional'' instruments fail.
5. Invoke motivational and informative instruments. This ensures that the policy is capable of shaping the behavior of regulates;
6. Prefer less interventionist measures; it is important that these measures are still capable of delivering the identified policy outcome.
7. Use instrument sequencing, unless in situations that involves a serious risk of irreversible loss or catastrophic damage.
8. Maximize opportunities for win-win outcomes."

This theory has been criticised for lacking of applicable type-unique compliance responses (Possum, 2010). An improvement, such as a more active choice of regulatory strategy that depends of the general behaviour of the sector and the individual operator, has been suggested (*Ibid*). However, the approach of smart regulation which implies the eight principles could be seen as recommendation for how a new way of regulate could be managed. The principles show logical and rational arguments in the development to find applicable regulatory approaches for operators, but it will probably be easier to imply these within operators that already have a high level of self-regulation since they already have a good foundation of knowledge, ideas and systems to manage these kinds of "soft" principles. A certain amount of risk and risk judgement are implemented and integrated in the processes of strategy decision-making. Sectors, areas and individual operators will be evaluated according to the significant risk. Principle six and seven will automatically be covered by a risk-based regulatory approach.

### 4.6.5 Meta-regulation

One of the earlier shifts towards meta-regulation was the Three Mile Island's accident where the nuclear power plant was close to a meltdown (Braithwaite, 2003). The employees acted more as robots that were following rules, rather than logic equipped individual with a strategic thinking. When there was a lack of connection between situations and external or/and internal rules, there were no wisdom of system. However, what does authors in the academically press mean with meta-regulation?

Meta-regulation is seen as an approach where the regulator taking advantage of operators' internal management, risk assessment and control strategies (Ojo, 2010). The regulator uses evaluation and monitoring as a tool for measure to what extent risk awareness exists and how

well it is managed. Regulators could take advantage of this method particular in an environment that is characterised as complex, fast altering and with a high speed of technology and knowledge development. Regulators are able in occasions like this to use the knowledge and the expertise of the operators within the area. This give the regulators a possibility to act in a more proactive way than reactive way which they could be forced to do when they cannot be ahead of development to regulate.

Scott (2003) suggests implementing and using an audit as a meta-regulatory instrument. Regulators in Australia have developed audit methodologies as a tool in their regulatory toolkit but for the governmental audit office. This approach will aim towards a long-term perspective to improve regulators' achievement of objectives while ministers see it as a measurement in a short-term period.

To use audits may be effective even if the auditing does not speak the language of punishment from non-compliance (*Ibid*). This becomes practically obvious when the audit is measuring the operation within a regulator. In the contrary to private organisations, where the most favoured stakeholders are the primary, this practice contributing to the public society in whole, both primary stakeholders as well as secondary and tertiary stakeholders.

Governments, such as the government in Australia and UK (HM Treasury, 2005 and Scott 2003), put a lot of effort in develop and implement new regulatory strategies, but also to evaluate their outcomes. It should be considered and kept in mind how big impact ministers, prevailing political environment and economical climate should have and have on the short-term measurements.

New science and technological development shapes the operating environment to be a conglomeration of new relationships between all kinds of stakeholders, the supply chain, societal interconnections and new ways to operate gives reasons for governments and regulators to overhaul and make the operating more effective and efficient through joint working, amongst others (Ojo, 2010 and HM Treasury, 2005).

### 4.6.6 Management-based regulation

Management-based regulation requires every regulated unit to be engaged in its own processes of planning, execute, measuring compliance and manage continuously improvement within risk in the operation (Snyder - Bennear, 2007). Compared to rules and deterrence is management-based regulation regulating neither the used means nor the end objectives. Management-based regulation does instead involve the entity's own capability to develop and implement goal and objectives which are both coherent, and beyond and above the law. The entity's goals and objectives are supposed to be evaluated and reviewed by themselves, both with and within their own operating environment. Management-based regulation could have simple requirements such as strategic statements to more advanced requirements where the operating unit must have comprehensive management processes in place to deal with risk handling. A requirement could also be to have this processes proved by the regulator. The approach is a popular theory when complex and changing environment are supposed to be regulated but Snyder Bennear (2007, p. 329) raises the concern how effective the approach is and if it really reduces risk and if so, to what extent and cost? However, the author did find measurable contribution as a result of management-based regulation in chemical management and achieving goals and objectives, within manufacturing plants in United State of America.

Management-based regulation could also deal with social issues which are against the law and policies. Harvard Law Review (2007) notice how management-based regulation implies structural changes that battle discrimination. The discrimination was to be beaten through the internal management review that management-based regulation mandates. The article continues to notice how the management-based approach (in the context of law schools) of regulating would have positive effects even without sanctions. However, this is one of few academically resources that emphasise the internal contribution such as internal review.

### 4.6.7 Risk-based regulation

Several different approaches of how to regulate have been popular during the past and right now are different angled of risk-based regulation a discussed subject (Balck and Baldwin, 2010). Governments have and also are implementing a risk-based approach how to regulate. The importance of risk management has aroused from changes of the societal structure, where political and socio-economic circumstances have been the main reasons (Oja, 2010). Lacks of faith in organisations' way of operate and their consciousness of the limits and risk connected to new research and development of technology. Ideological changes in politic have also played a role.3 Changes have provided a growth of liberalists and neo-liberalists, which analyses and explores how risk and risk management could be used as a tool to influence behavior.

As been mentioned earlier in this paper UK is a country where regulators and institutions have been recommended by the Government to implement a risk-based regulatory approach. The foundation in a risk-based regulatory approach is with logical sense and record from the past analyse what kind of risk that could occur and how severe the risk could be (Balck and Baldwin, 2010). Both costs and benefits, along with scarce resources must be tied up in the analyses.

## 4.7 Regulatory compliance

Regulation consists of two pillars; the approach of the regulation and how the regulators overlook compliance of it. The ways regulators overlook compliance are an outcome of an integrated internal and external performance. Former regulatory approaches, such as rules and deterrence/command and control/ direct regulation, have been blamed for ineffectiveness which has become more visible the more complex environment the operator operates. Recognitions have been made how regulators are having constrained ability to perform and manage their authorization. Lack of resources and external causes can affect regulators beyond their own control (Gunningham, 2009).

The theory of smart regulation covers the pillars of how regulators overlook compliance. *Section 4.6.4 Smart regulation* contribution of eight principles which provide the foundation of smart regulation, shows some of the main features from the Hampton report (BIS, 2005a). Below are the eight principles more thoroughly examined and what they could imply.

- Principle one, avoiding "perverse" and adverse effects of adjoining policies, reflects both effectiveness and efficiency objectives. The Hampton report emphasising joint working and compiling rather like policies.

- Principle two notices how incorporation of a broad range of regulatory approaches contribution to a cost-effective management. Parallels ought to be drawn to the risk-based decision approach. A risk-based approach is based on cost-effectiveness. One of the main

thoughts is to make a risk-based judgement on each case and just put just as much effort as the regulator needs to on it. The method uses a mixture of regulatory approaches. In some case could command and control act as a foundation where the regulator in a later stage introduces a management-based regulation.

- Principle three embraces the incorporation of several institutions in the regulatory approach, this was stated to contribute to a situation where the most applicable institution manages the regulation and its compliance. This strategy, which implies several institutions, is just the opposite of the Hampton report (BIS, 2005a). The report suggests more of joint working and a reduced number of regulators to a more subject related classification.

- Principle four recommends the use (and the mixture of different instruments) and development of NEPI's (New Environmental Policy Instrument). The NEPI's include instruments such as, subsidies, tradable permits, eco-taxes and eco-labels. UK has been one of the countries that is keen of examine those alternatives (Jordan *et al.*, 2003). International anxiety and recession have made NEPI's to a cost-effective policy tool. NEPIs could imply to push the cost to the business. The result could be more cost for the business or that the businesses carry on the cost onto the customer.

- Principle five promotes the creation of initiatives and stimulus which shape behaviours. This principle is closely connected to principle eight which highlights the importance of win-win situations. In a business environment that turns harder and harder because of a severe economical climate, becomes a win-win situation a premises.

- Principle six promotes a move toward less interventionistic compliance methods. Although cannot the methods become too non-interventionistic. To keep a balance of just right amount of needable interference could once more connect to a risk-based approach. Chosen level of interference does still need to deliver the identified policy outcome.

- Principle seven notices how instruments should sequencing, unless in situations that involves a serious risk of irreversible loss or catastrophic damage. Since the inward sense is to put the right amount of resources in respect to the situation and the involved operator, there is a strong link to judgement made with contribution of risk-based decision-making.

These principles show a great connection with a risk-based approach where also smaller features from a cost-benefit analysis affect the outcomes. However, to define smart regulation as an approach rather than the bridge between the approach and the way of overlook compliance could be discussed.

*Section 4.6.1 Rules and deterrence* to *Section 4.6.7 Risk-based regulation* contribution of the most common approaches for regulators to regulate operators' compliance shows a broad variety. As seen in *Figure 7.*, is there a progress of (self-) responsibility levels. These responsibility levels could also be illustrated in the combination of Gilad's (2010) two tables that explain how the regulatory approaches are integrated to each other in the view of tiers, see *Figure 8* below.

Management-based regulation
Meta-regulation
Enforced self-regulation
New Governmental principle-based regulation

"The operator's core prod-uction". "Regulated by pre-scribed actions, output spec-ifications, or principles that conrol and constitute firm's production processes." (Gilad, 2010, p.490)

Process-oriented

*Self-responsibility*

Performance-based
Standards-based
Principles-based

Control-based

*Basic responsibility*

Effective alternative to each other

Outcome-oriented                    Prescriptive

*Strict responsibility*

*Figure 8 Typology and tier of regulation, adapted from Gilad (*Gilad, 2010, p. 487/p. 490*)*

The different methods of regulation are categorized in the pyramid but as a common objective are they all trying to make it easier for regulators obligation of regulate in an environment that could be more and more describe with words such as; flexible, dynamic, globalised and heterogeneous (Gilad, 2010). Occasion's does more often occur where the regulator has incomplete information. To give more responsibility to the operator himself, facilitates for the regulator which instead creating a relationship that looks more like co-operation.

The tiers in *Figure 8* depict where the focus is in the regulatory approach (Gilad 2010). Since all three tier levels and all four types manifest themselves as distinct institutions, the pyramid illustrates how these approaches (in real life) are both combined, to some extent based on each other, collaborative and bridge over the boarders. In the lowest and first level does the operator's core production has been put in focus. Here is it common with outcome related standards. These kinds of standards could be common in the chemical industry. This layer could also be defined as strict responsibility (from *Figure 7.*). The second tier emphasise the requirement of implemented processes of structure and control in the operating environment. Are measurement tools, such as audits and reviews, put in place to secure compliance with tier one? Parallels from the second tier cold been drawn to the basic responsibility in *Figure 7*. The third and last tier is the most engaged phase of regulatory approach. The tire is connected with a high level of responsibility and here can the operator (in collaboration with the regulator) be able to shape tier one and tier two. If the regulator uses a risk-based approach and the operator have proved record of an excellent behaviour, the regulator could decide to erase the operator's obligation to tier one and two. The third layer's different approaches are more blurry in there distinctions.

Gilad's (2010) article gives deeper knowledge how these different approaches are integrated with each other and how they effect operations. The article is a good complementary reading to this paper.

# 5 Analytical discussion

This chapter starts to highlight the role, models have in research. This study is not an exception from biases. The theoretical foundation of this paper was to review and discuss the internal quality theories, which were used by environmental regulators in UK, while the empirical chapter provides an exposition of different regulatory approaches. This chapter's first part (*Section 5.2 Deming's theory and the Shewhart cycle – Section 5.5 The theories in an regulatory perspective and approaches*) conduct an analytical discussion about how the quality theories are reflected in environmental regulators internal operation. The result of the research became poor as a result of the lack of research in the area which affects a literature review. Internal quality improvement could even though be performed to a great extent within regulators internal operation, however if that is the case, it has not become fairly reflected in the academically literature.

The second part of the chapter from *Section 5.6 Regulatory approaches and the regulators internal quality – Section 5.8 Risk-based decision making,* discuss how the chosen regulatory approaches which are taken by the regulators, are reflecting the development, implementation or/and performed internal quality achievement.

*Section 5.9 The academically process and ethical reasoning* discuss the research process of this paper and here are the ethical aspects also brought up for analyse and discussion.

## 5.1 Use of models

The more complex our reality gets, the more grows the need to use models to help us understand and illustrate relationships. What should not be forgotten is how models just are simplifications of the real world or a complex concept and that a model erases minor details to make it more understandable. A simplified version of a concept gets also more applicable to a wider amount of circumstances. That version could also in the opposite way get too simplified to give any major substance to research.

## 5.2 Deming's theory and the Shewhart cycle

Deming's theory is developed for a profit-oriented and private owned organisation and as Gitlow and Gitlow (1987) stressed the theory can give advantages as cost reduction, ability and resources to implement education and training, and incentives to innovation. In a short-term could quality improvement be an expensive burden since it cost to implement processes and procedures from both a material and a labour view. In a long run, when the new requirements, processes and procedures are implemented and start to be managed in a more effective and efficient way, areas of less good quality performance will found and corrected and contribute to both cost reduction and higher profit.

The theory was founded several decades ago and therefore could its applicability level be questioned. Globalisation has during those decades moved the society from a product driven market to a service based, and the movement has given quality other characteristics. Deming's theory was based on data/information, evidence that is good in itself, but in a process where qualitative information is supposed to be measured, it can provide issues in implementation and compliance. The more human activity that are involved, the more obstacles could appear. That would mean that operations based on service would provide a

35

more difficult environment to measure. Measuring qualitative data are more based on human observation and are depending on individuals' background, preferences and culture. Observation from one employee could be different from another within exactly the same role, therefore is it important to understand employees' references and point of views. What does quality mean? What is the perceived best achievable level of quality? Could quality even be about the organisation's capabilities - internal capabilities?

The theory provides lower cost per unit as one of the benefits of implementation of the theory (Gitlow and Gitlow, 1987). This variable have in the present been less important since the governments financial awareness have grow dramatically the recent years. Gitlow and Gitlow, 1987 stated then how quality improvement gives then incentives to lower the costs. It could be questioned if it is possible to generalise that every quality improvement would low units cost. It is more logic that organisations that only do one audit with or without follow-ups, are ending up with more costs than benefits. If the organisation have a long-term plan which includes continuity issues such as individual, protruding result. In a long-term could trends become more visible and chances excluded in a wider extent. A long-term management are more demanding of the culture. The requirement of a risk-based approach intrude on regulators own mandate. The risk-based approach was demanded as cost reducing tool, where the regulator (the inspector) has the last and most important authorisation to choose outcomes and structure for compliance for the operators. It is the inspector's responsibility to judge how much effort they need to put on the operator. If the inspector make the wrong decision and oblige the operator to be self-regulated and the operator are getting responsible of negative interference with the surrounding environment, the regulator will have a big share of the blame of it. When inspectors manage what kind of regulatory approach a certain operator need to comply with, the inspector will need to have an organised communication and joint working with other regulator and other units within its own internal operation. In these environment internal processes, procedures, management, policies needs to be evaluated.

Deming's theory was mostly directed to external quality but since a higher level of external quality is integrated with internal quality, emphasis must be put on internal aspects. However, Deming brought up variables like education, training and incentives that are more focused on internal activity rather than consumers' view of attributes of the offered product or service. Even less did the theory bring up about quality improvement and quality assurance aspects in *public-service* organisations. This could be a result of a globalised society where inhabitants are more engaged in occurrences and wants a transparent system where private bodies are included as well as public bodies.

Deming's theory is also known for the Shewhart cycle, which provides cycle of steps of continuously quality improvement. Since the matter of quality has become more important the Shewhart cycle and it's continuously improvement of quality has become implemented as a matter of course. The steps, PDCA, could come in different shapes e.g. more steps that could be more detailed and slightly changed to be applicable to the particular organisation, but the majority of companies and organisation uses fundamental thought.

The environmental agencies in UK have shown a good work on continuously quality improvement processes for their external operation such as water quality and soil quality but continuous quality improvement in internal aspect are rarer. The pressure of rationalisation actions has grown from the Government through reports e.g. The Hampton report (HM Treasury, 2005) and BRTF report (BIS, 2005b). The BRTF report brings up the aspect of improving effectiveness of regulation, which will result in improvements in quality and efficiency, but to be able to increase the effectiveness of the regulation there is a need to know

the organisation's operating systems and the culture of the internal environment of the organisation. A process of external improvement in e.g. regulation should be preceded, or at least performed in a parallel process, to an internal quality improvement review. This would identify areas with issues or less good performance. The C-S Q- P theory which highlights the usage of the organisation's capabilities to enhance internal quality which almost automatically boost the organisation's performance (Mukherjee *et al.*, 2003, gives a hint of the internal operation and its quality as a step stone towards greater and external performance. The Hampton report brought up benchmarking as a good tool for measuring environmental agencies' performance, but did not provide any distinction between internal and external performance or declare the awareness of what variables that affected internal or/and external quality.

It is important to highlight the difference between quality assurances versus quality improvement. Quality assurance does not necessary point at a continuously action, as the PDCA cycle. To do assurance is good but to achieve long-term gains a more continuously approach will conduce to an excellent performance.

## 5.3 SERVQUAL and Quality Function Deployment (QFD)

Another quality improvement theory is SERVQUAL, which is a tool that measures the perception gaps between the organisation's perception of their quality and the customer's perception of the organisation's quality. QFD has its focus in the customers' references of quality. As Curry and Herbert (1998) allege, exist similar features in SERVQUAL and QFD. The first and second step in the basic level assumes identification and ranking of customers "wants". The process is then changing term to customers' "needs". Terms such as want and needs imply two dissimilar definitions. The definition of want implies "have a desire to possess or do (something); wish for" (Oxford Dictionaries, 2011a), while the definition of need is "because it is essential or very important rather than just desirable" (Oxford Dictionaries, 2011b). To fulfil customers' needs and wants are the main objective in a public organisation but it want be applicable for regulators to start execute operators' wants. Operators' wants could evolve situations where the environment is not put in a position of protection. Operator's own needs could also be hard for them to see, whereas the regulator acts as an all-embracing agency. The relationship between regulators and operators could be similar to a bond between a child and a parent.

Since the customers in both case of SERVQUAL and QFD not have the insight in the organisation's internal operation they could only evaluate external performance. Besides that could quality improvement theories that are based on customers' perception or references be seen as impropriate and unethical in areas where the reviewed organisation, regulate and verify compliance within their customers' operation. Occasions where the regulated contribute with inputs that are to their own advantage could occur. These two theories are however appropriate and applicable within external quality improvement in public or private service organisations but not helpful for an environmental regulator's internal quality improvement.

## 5.4 The Capability-Service Quality-Performance theory (C-SQ-P)

The C-S Q-P theory has mostly been used in the financial sector which is a service sector, but still a competitive environment. This is the most applicable theory in the view of internal quality improvement in service organisations. There exists however a gap in the view of what kind of attributes, e.g. attributes such as core values, employees and reputation, that motivates

a regulating organisation to make engagement within internal quality since. The theory is based on investigation of what kind of core capabilities the organisation has which could help them to improve their performance. The C-SQ-P theory scan the regulators environment for gaps between the genuine interest and force to perform in the same level as customers expect. To find and measure the magnitude of this gap is a surviving attribute if regulators have been operating in a competitive environment. A regulator operates as a normative unit who must to a much less extent make customers (regulated) satisfied. Governmental agencies have for a long time had fewer incentives for self-control and self-review since they are the regulating authority. When an organisation neither has an institution that pushes nor pulls them, they could easily decrease incentives to excellent quality and performance.

The approach of risk-based decision making as the tool to choose applicable regulatory approach contributes with incentives to actively use the C-SQ-P model within the regulatory environment. Since the risk-based decision-making tool stresses the importance of measuring internal performance, where the Hampton report (BIS, 2005a) contributed with its suggestion or maybe more like a requirement the use of benchmarking as a tool for measuring internal capability.

## 5.5 The theories in an regulatory perspective and approaches

Some of the theories have evidently shown how the internal quality is reflected in the external quality. With an operation that has integrated and well-developed processes and procedures and competent and knowledgeable employees, quality gets viewed as being on a satisfying level and contributes to performance satisfaction from customers/stakeholders. However, should the quality be highlighted as external quality since customer/stakeholders have no insight in internal circumstances and to be able to keep a high external quality in the long-term, a high level of internal quality measurement must be implemented. Awareness of the internal quality is made through different methods of measurement, where the Hampton report recommended environmental regulators in UK to use a benchmarking method. To use a benchmarking method as a measurement tool brings some of the agency's matters to a head. Attributes such as culture, blame culture, the dynamic of the operational both take and give constructive criticism will affect the outcome.

If measurement techniques are put in place, the best outcome would come from a review process that is implemented as the well accepted Shewhart cycle. This cycle could be implemented in internal as well as external environment. From an internal point of view, it is not enough to have a view of PDCA. PDCA is only notice that a process with four different steps should be put in place but it does not notice how the process should be developed and integrated within the internal environment. Roth and Jackson (1995) discussed that how the capacity in the C-S Q-P theory is depending, among other attributes, on the organisation's capacity to absorb new knowledge. A requirement for that capacity is the employees' present competences, their ability to use new technology and to absorb new competitive knowledge. To boost the amount of accumulated knowledge in the organisation, an environment of learning must be implemented. This condition would imply environmental agencies to have an open environment that are based on learning and incentives to eliminate a blame culture. However, since the environmental agencies are operating in an environment of monopoly is there no competitive force that contributes to the assimilation of competitive knowledge. An even more important attribute to service quality was the capability in organisational processes (Roth and Jackson, 1995). This implies the circumstance where individuals' competence is worth more integrated with colleges' competences and how good processes and procedures are conditions that meet that objective. The same study argues that improvement in service

quality could cost and how some maintenance cost could arise. This could be put in correlation with the financial economic situation the environmental agencies are operating in. The requirement of more effectiveness, efficiency and more restricted budgets give those limited possibilities. Agencies have therefore starting to do a sort of cost-benefit analysis shaped as risk-based decision making as a request from the Government. Within the frames of risk-based decision could it be possible to take on some costs in a legal way which also is seen as more ethical anchored.

## 5.6 Regulatory approaches and the regulators internal quality

Since this paper have not made any case-studies or quantitative data, but rather been relying on secondary resources, such as academically journals and books, it may not reflect the whole truth. The environmental regulators in UK may perform a top-notch internal quality work but it has just not yet been reflected in academically literature.

The C-SQ-P –theory highlighted the internal quality as a hotbed for better external performance. That would imply, in the context of environmental regulators, their way of manage their objectives. The means environmental regulators use to manage their objectives is the different regulatory approaches.

## 5.7 Responsive, - Smart, - Management-based and Meta-regulation

As Lehmann – Nielsen and Parker (2009) noticed have numerous similar regulatory theories and approaches been evolved from responsive regulation, despite notices of how academically contributions lack in their input of "general, empirically testable rules about being a "responsive" regulator" (*ibid*, p. 377). The main features of responsive regulation could, as seen in *Section 4.6.3 Responsive regulation*, be found in smart regulation, while management-based regulation is based on processes within the operator. Meta-regulation, on the other hand, could be seen as a development of the regulatory approach; responsive and management-based regulation since meta-regulation deals with the management of the risk and regulatory management (meta = self-referential).

Both governmental institutions as private put a lot of efforts in development and implementation of new regulatory approaches. The outcomes get both observed by institutions as well as researchers. Since the methods are fairly new and they have been developed to a large amount of differential siblings, the outcomes have mostly been evaluated in a short-term. HM Treasury (2005) and Scott (2003), highlights the extent of impact ministers, prevailing political environment and economical climate do have on the short-term measurements. Even though is the measurement of short-term important. This generates important inputs to trend analyses and regulatory actions in the long-term.

Responsive- and smart regulation's overall main feature are to be engaged in the regulatory process and to use the approach the gives the best outcome. This is a feature which not always contributes to an operators' internal quality management. The deeper and more overviewed self-responsibility an operator has, the more must the operator analyse the internal environment. This also implies regulators to manage their own internal environment with en new approach. The regulators get requirement from the Government to become more effective and efficient (BIS, 2005a). The lack of academically literature about regulators' management of internal quality could be an evidence of a less managed area. In that case could the new approaches of regulation be a starting (or increased) drive in the right direction

Another feature of responsive regulation is how the operator's history of non-compliance are forgiven and forgotten as fast as the operator turns co-operative and compliant. This could be compared with risk-based regulation which using an operators' history of compliance and level of risk toward its environment to decide applicable regulatory approach. This way of dealing with regulation and compliance require a much greater effort from the regulator. Regulators need to have better quality of their achievement of objectives, where e.g. the management of procedures, processes, communication, co-operation and tools are some of the influencing areas. In a more complicated and operator-individual approach the regulator need better internal communication between different inspector areas, e.g. where inspections are performed, the possibility of joint inspections should be considered in those kinds of cases. The operator-individual approach also implies regulatory services as call-centers to simplify e.g. license questions.

However, could this pyramid imply greater incentives for motivations based on financial aspects than on social aspects, since punitive actions are mostly connected with fines and others sorts of capital costs.

## 5.8 Risk-based decision making

To state risk-based decision-making as a regulatory approach is a twisted view. It would be wrong to define risk-based decision-making as a regulatory approach itself but rather as a tool to allocate applicable regulatory approaches towards individual operators. Since the tool deals with the regulator's core concern that is completely an internal concern.

The ongoing discussions about risk-based decision-making are hopefully more than a craze. Balck and Baldwin (2010) noticed that governments and regulators are "developing risk-based regulatory strategies as frameworks for the management of their resources and their reputations" (Balck and Baldwin, 2010, p. 181). It could be questioned why they need to these kind of risk-based strategies for their management of reputation. Good reputations usually comes with good or excellent operating methods, but then it is an assumption that they trying to reach good reputation.

By implementing risk-based decision making as a framework for the management (Balck and Baldwin, 2010), could sway and promote the regulator to revise internal conditions such as processes and the human capital. In such a review would also underlying effecting elements such as culture be relevant to treat. A regulatory risk-based approach is depending much more on the regulator's internal environment since the regulator possesses a greater responsibility. In comparison to rules and deterrence where command and control is more common, the regulator usually applies the same approach to every operator and the regulating process does not include any individual judgement. As soon as the regulating process becomes an art of judgement, attributes such as personal culture, organisational culture, personal preferences and personal valuation, play a bigger part of the outcome. The internal environment of the regulators gets more dependent on an open and dynamic environment without any trace of a blame culture. Communication and interaction between managers and employees need to be established on a well developed level. The environment needs to be inspired by a learning culture rather by a blame culture. The C-SQ-P theory emphasis that the perceived contribution of external performance is based on internal performance (Mukherjee *et al.*, 2003).

Interestingly did Balck and Baldwin (2010) mention how the regulatory reputation is enhanced through the implementation of a risk-based decision making approach. It is

important that the regulator has a good reputation and is seen as competent and trustworthy (Winter and May, 2002).

Hopefully is the ongoing discussion more than a craze. Balck and Baldwin (2010) noticed that governments and regulators are "developing risk-based regulatory strategies as frameworks for the management of their resources and their reputations" (Balck and Baldwin, 2010, p. 181). It could be questioned why they need to these kind of risk-based strategies for their management of reputation. Good reputations usually comes with good or excellent operating methods, but then it is an assumption that they trying to reach good reputation

## 5.9 The academic process and ethical reasoning

The ethical perspective is in this case an area of deep consideration. Implementation of a quality improvement system implies the finding of areas with less good performance. Since the operation is totally based on services, which are provided by employees, reviews can be perceived from the employees view as threat to the individual integrity. In this case could a third part be a chose, which perform a neutral, independent and anonymous audit until the internal environment and culture are capable to execute the audits by themselves. The existence of more co-operation and understanding of each other's tasks and decisions that are implemented within the regulator, the less conflicts and ethical issues will rise.

# 6 Concluding remarks

Several conclusions must be highlighted, either as a foundation or a contribution to further research or/and as a notification for the wider public crowd of the need to pay a bigger attention to the research area.

To examine what quality means for UK's environmental regulators is in one angle easy since the five watchwords (targeted out-comes, consistency, accountability, proportionate/risk-based, and transparency), are implemented from external stakeholders' recommendations. These watchwords are implied from the external quality view, but since this study show a close connection between external and internal quality, the watchwords must be seen as the core also in internal processes and procedures. However, are there no wider amount of transparency of the internal procedures and processes to measure the internal compliancy, development and internal improvements. Regulators state tools, regulatory approaches and programs to secure compliance with the five watchwords but exactly how the regulators assure that the internal management comply with it are not that obvious.

There is lack of research of public service organisations' internal quality management. Internal quality practices have grown and have been spread from traditional profit organisations and are now starting to be recognised in governmental settings through a mixed variation of factors. This phenomenon is following the global trend of transparency and consciousness. However, internal quality management has been more practised within the health and financial sectors, which could contribute to the environmental regulatory industry. Environmental regulators have only handful documents about their internal quality management published on their webpage and other state the need of internal control systems within implementation of new regulatory tools and approaches, but beyond that there are little evidence and transparency of the management. This could be an evidence of a way of manage that need to change. To gain social and agency related advantages, the agencies' trancparency and communication must be enhanced, both in amount and in quality. The enhanced level contributes to for example to better reputation which makes operators and the public more benevolent towards the agency. If they get more benevolent, it is likely that they comply and understand the importance of regulation and principles by themselves. Hopefully has a proactive approach been implemented.

Then, how could UK's environmental regulators improve their tools to assess internal quality? This paper has indetified justifying factors that affect processes and procedures that influence internal quality. Different regulatory approaches and tools give, and in some way force, the regulator to develop and implement different kinds of internal quality assurance systems. These regulatory approaches are enablers for internal quality factors. E.g. a command and control approach implies more a tick in a box while management-based approach demands regulators interference in a meta-perspective where both the level of internal quality and the quality of joint working (within the regulator and towards other regulatory institutions) make a difference. On top of that is the governmental requirement of implemented risk-based decision-making, a tool to decide applicable regulatory approach towards individual operators based on their history, risk level and co-operation, contributing to an even higher level of internal quality. This is because of the very high level of individual decision-making by the inspectors. The individual decision-making makes strong demand on very high requirements on the internal environment. There must be a learning environment where minimisation of a blame-culture is made. Inspectors' managers need to make an open

environment where transparency and where a dialogue easies the outcome. A risk-based regulatory approach may raise incentives to a wider extent for manage the internal quality.

Could an evidence-based benchmarking tool bee developed and have its foundation in the literature about quality assurance in an environmental regulatory setting? Since the objectives emphasised an evidence-based approach, where risk-based decision-making is measured with help of a benchmarking tool to maintain and enhance the quality of the regulatory internal management, and the study only could contribute with a limited amount of secondary resources of internal quality makes it therefore impossible to judge the benchmarking tool's applicability.

The objectives of this study were to provide a common and general understanding of quality in public-service settings, especially explore what quality means in different types of environmental regulation. Several quality theories were scrutinised and especially two theories support and provide evidence for public-service organisations to continuously improve internal quality. Deming's theory and the Shewhart cycle give a vigorous foundation and understanding of internal quality improvement for a public-service organisation such as environmental regulators. The foundation of the C-SQ-P theory is internal quality which the internal performance are based upon. This in its turn means better external performance and quality. However, further research would be appropriate where the C-SQ-P theory is scrutinised within an environmental regulator. The conclusions could contribute to some suggestions for further research. This area of research is in many ways an area up to date. Since environmental regulators' operations are financed by taxes, the public concern and awareness increase. Citizens want to know what they get for their money. This becomes especially evident in times of recession which puts extra financial press on them. It is logical that governmental agencies should obey some of the requirements of transparency, but how far should the society let it proceed? What is a healthy level of transparency? How much responsibility could we expect from individuals in a regulatory operation? If the environmental regulators find it most applicable to implement a learning-culture and decrease blame-culture and above that, communicate this in a transparent process to their citizens – could then the citizens contribute with the same mind-set as the regulatory operation itself or will it contribute to a witch-hunt of individual employees? What is an ethical way of measuring service quality and how low or high is a satisfying level of transparency to the external environment? These questions should be highlighted in further researches.

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