

Sustainable remediation, gaps in legislation, examples from Denmark and the Netherlands

Arthur de Groof¹ Senior Consultant & Kristian Kirkebjerg² Chief Consultant

¹Grontmij The Netherlands, ²Grontmij | Carlbros, Granskoven 8, 2600 Glostrup Denmark, kki@gmcb.dk

Abstract

Sustainability, mitigating climate change, the trend towards the application of actual solutions is definitely there. Activities in the environmental field itself are becoming more and more sustainable, and there are examples of sustainable remediation projects in several countries. As always, the field is there first, and policy follows. The first decision making support tools have been developed, most notably SURF in the UK and in the US, and there is as yet very limited experimenting with compulsory measures. It is safe to assume the existing tools will develop further, become more refined and are likely to be adapted for use in other countries. With this in mind, now is a good moment to start the generic discussion on the shape the total package of legislation, tools and instruments could take. Questions that arise are what part of the package could be applicable, irrespective of location, and what are the aspects that would have to be considered at a national, regional or local level? Taking Denmark and the Netherlands as examples, this paper looks into some successfully applied sustainability measures in soil remediation projects. Then, we examine to what extent SURF-UK and SURF-US could be applied in either country. We conclude by proposing measures that could be considered, and we welcome the use of these as input for discussion.

INTRODUCTION

Remediation projects in the European Community have reached a very high level regarding spending and political attention. Thus, the management of contaminated land has become an important issue, more recently expanded with the assessment of the impacts on environment, economy and society, in short, with the sustainability issue. However, while it could contribute to a smoother process for incorporating sustainable choices in our decision making, we believe the current legislation is by no means ready for this task.

The need for a more holistic approach is apparent, but the legislation is as yet not advanced enough to form the basis of such holistic assessments. There are several noteworthy initiatives going on at the moment, as several papers elsewhere in these Proceedings will show.

This paper reviews how recognition of gaps in legislation in the Netherlands and Denmark could stimulate the actual application of sustainable remediation efforts. We describe how the current procedures of remediation project approval lack emphasis on sustainability and how risk based land management is still the reigning method for remediation strategies. We have taken the proposed methods from the framework Sustainable Remediation Forum in the UK (CL:AIRE, 2009), into account, and have tried to see how these ideas match the current gaps in legislation in the two countries in question.

We have also analysed some of the stakeholder's interests in sustainable solutions, and made some proposals as to how eventual extra costs could be financed by national funding, originating from CO₂ quotas.

The question could be posed whether sustainability is really an issue in remediation. The examples of remediation projects that have successfully incorporated elements of sustainability suggest that it is. In Eindhoven, the Netherlands, waste water of a groundwater remediation at an industrial site is being reused in the production process of the industry itself, thereby significantly reducing the intake of drinking water by the industrial plant. Two remediation projects that are being combined with underground heat and cold storage in the Netherlands (in Utrecht and in Eindhoven) have attracted visible political and media attention. The next question that then comes up is whether we need legislative measures to support sustainable remediation.

PRESENT APPROVAL PROCEDURES IN DENMARK AND THE NETHERLANDS

Denmark

In Denmark, the general approval procedure comprises of a mix of risk based and financial optimisation, without an incentive for sustainable considerations. Public servants are more or less realizing that sustainable considerations could be helpful in preserving the environment. But they lack any legal instrument to demand a sustainable solution in cases where the direct economic impact favours a less sustainable alternative.

In Denmark the legislative complex comprises, as in all EU countries, an obligation in the planning process to include environmental issues. However, this looks more or less only at the impact side, counting impacts at the different trophic levels. There are planning procedures at the national, regional, city and local level, but none of these levels requires a specific sustainability assessment in the planning. We are sure the process does comprise many thoughts and priorities that could be described as sustainable, but there are no obligations.

The Netherlands

The approval procedure in the Netherlands nowadays is, as in Denmark, a mix of risk based and financial considerations. While there is no formal obligation for sustainable considerations, the national authorities have not held back in showing support for notable initiatives. Both the combined remediation and cold and heat storage facility 'Strijp S' in Eindhoven, and the 'Bio washing machine' in Utrecht were visited by the Minister of the Environment. Current policy developments are rooted in two key ministerial letters. The Ministerial Letter on Soil (2003) described a clear intention to turn away from sector specific soil policy towards integrating, in a sustainable way, soil management in neighbouring sectors, among which spatial planning and water management. The Ministerial Letter on Underground Spatial Planning, which followed less than a year later, described a path towards an integrated approach of underground planning.

While it did take some time to actually become visible, both trends are now firmly embedded in today's policy developments. A key moment was July, 2009, when the Covenant on Soil development policy and strategy for urgent sites was signed by national, regional and local authorities.

The national authorities' position on the codification of sustainable considerations follows logically from these developments. In brief: it is not necessary to develop legislation specifically aimed at stimulating sustainability in soil remediation, because we now see soil as integrated in spatial development. So, if we are to develop legislation to stimulate sustainability, it will be aimed at a broader spectrum of sectors.

TOOLS ARE AVAILABLE: HIGHLIGHTS OF SURF-UK AND SURF IN THE US

SuRF-UK

The framework developed by SuRF-UK is based on the idea that, to evaluate the sustainability of a remediation project, we need indicators to describe the impact on the three elements of sustainability, i.e. environment, society and economy. Examples of these Headline Indicator Categories are (in the environmental category) impacts on ecology, (in the social category) impacts on neighbourhoods, and (in the economic category) employment. Normally, the environmental and social categories are not taken into account on a broader basis, and the economics are only taken into account where direct costs and benefits are calculated. In SuRF-UK it is foreseen that a wider project design can be undertaken before the remediation implementation strategy has to be decided. This could be especially interesting for the Dutch authorities, given their explicit view of the soil aspect, integrated in the spatial planning process. See CL:AIRE, 2009, for more detail. This report goes on to show that aspects of sustainability have to be embedded in the decision making process in at least the regional level, in order to be applied effectively.

Sustainable remediation in the US

The Sustainable Remediation Forum (SURF) in the US is a rapidly growing network of individual members, cooperating to stimulate sustainable remediation. Just last summer it published a white paper, concluding that sustainability does matter in the remediation business. SURF proposes a framework, consisting of a set of best practices, but the forum advocates the development of metrics to assess sustainable measures in remediation. The proposed framework, at this point in its development, is aimed at the choice of remediation procedure. This means the framework recommendations are applicable at the local level, more so than the framework put forward by SuRF-UK.

EPA is examining the development of a voluntary standards and verification system that recognises efforts towards sustainable remediation. It is expected that this instrument will significantly stimulate sustainable remediation. EPA's Office of Solid Waste and Emergency Response (OSWER) has published a framework for such a system (<http://www.epa.gov/oswer/greencleanups/principles.html>). The elements in these checklists may also form the framework for a new ASTM Guide, the development of which is scheduled to start in October 2009.

Examples of compulsory measures are as yet few and far between. Possibly the best example is the 'Clean & Green' policy, implemented by EPA Region 2, broadly serving the states of New York and New Jersey. This policy is 'to enhance the the environmental benefits of

Superfund cleanups by promoting technologies and practices that are sustainable' (http://www.epa.gov/region02/superfund/green_remediation). In general it means that all Superfund cleanups must be carried out using one of the specified touchstone technologies, unless this is impracticable or a better alternative green approach is proposed. By measuring cost differentials and environmental benefits information for the development future requirements is being gathered.

PROPOSALS TO STIMULATE SUSTAINABLE REMEDIATION

At **the national level** we support the US-EPA position that a procedure assessing the sustainability of proposed remediation activities would be helpful, both in terms of economy as well as in environmental impact (*proposal 1*). The social impacts should also be included at this level to optimise the effectiveness of the procedure. Change of land use usually has quite a bit of impact on the environment, so this aspect should be given special attention. At this early stage of development it could easily be argued that there are still no agreed tools for sustainable decision making. However, we believe there are enough proposed and adequately developed tools that, after modification with country specific elements, could be implemented at a national planning level as a tool for screening sustainability. Including a checklist usually helps acceptance and thereby implementation of any tool, so this merits serious consideration.

The question that remains, as far as we are concerned, is whether tools and instruments are sufficient. Or do we also need regulatory measures that result in compulsory action? We believe discussion on this point would be very interesting at this stage, when in fact no relevant regulation is as yet in place, but tools are developing rapidly (*proposal 2*).

At **the regional level** broadly the same applies as for the national level, and usually a tool would be the most useful. At this level we are facing the practical development of site specific remediation projects. We find that the incentives generally are of economic interest, as these projects are dealing with stakeholders with the strongest incentive to save money and less so to give benefits to society.

At **the local level** we are looking at approvals for individual remediation schemes. Here it is clear that choice of land use is not a very big option, but the location of buildings will have significant impact on the risk based assessment of impacts. At this level we can propose several incentives that could drive the decision making towards new sustainable proposals. The question is how many stakeholders will be willing to pay extra or will listen to reason, if “my house has to face west located here in the site”?

Following the example set by EPA, at the local level we can implement all kinds of “need to do”. If implemented in regulatory statements or mandatory guidance, they would provide civil servants with more options to demand sustainable ideas or cleanup methods.

To solve the problem of **financing** the green approach, we imagine that it should be a routine procedure to calculate how much extra financial effort comes into the sustainable remediation option, and the difference to the cheapest solution. If the national funding scheme then has the

possibility to sponsor the difference after approval, this could function as an incentive (*proposal 3*).

Thus:

Cost of sustainable alternative – cost of cheapest alternative = funding for sustainable remediation

In Denmark the incentives to leave the contamination in place are very few, and the price of delivering soil to treatment facilities is very low compared to the neighbouring countries. We do think that the price for transporting should consider the total impact on the environment, seen in relation to the possibility to leave the soil on site and reduce environmental risk to an acceptable level there. If the tax on soil treatment off site would be graduated, this could form the basis for the funding of more sustainable solutions (*proposal 4*). Furthermore it could be seen as a reduction of CO₂ emissions and thus subject to a reduced demand to buy quotas. In a more general sense, in Denmark the power is mainly based on coal combustion, but if the energy consumption would be based exclusively on renewable resources it should be taxed at a lower level. This could also be incorporated in the approval procedure as an incentive for sustainability (*proposal 5*).

Apart from financial incentives, the local civil servants could also be given more options to bring the sustainable aspect into account when more than one remediation technique is proposed. In practice this could be shaped as explicitly including sustainability considerations in the site specific risk assessment. In such a system, the smaller impact of sustainable measures on several indicators would be included in matching the actual situation to the numeric remediation targets. While this procedure will always involve case specific factors, the procedure itself should be standardised and the civil servants' option to grant **dispensations** should be followed by formal approval from the central authorities (*proposal 6*).

SUSTAINABLE DEVELOPMENT BASED ON GUIDANCE AND BMP

In general, all the above proposals have been based on changes in legislation, as the current regulatory system is not fit for sustainable priorities. There is however a very easy way to encourage more sustainable remediation: a national guidance. The guidance should be implemented as a “need to have” with all applications for approval of remedial actions. Thus we see an application that comprises the need for a comparison of two or more different remedial solutions, with the description of all environmental impacts. The final choice of the remedial scheme to be applied should be a matter between the authorities and the landowner, where each can propose one or more methods for comparison (*proposal 7*). The procedure could be linked to general procedures for reducing greenhouse gases and there could be a limit to how much environmental impact per financial unit could be accepted.

We believe that this simple tool will encourage more sustainable solutions to be carried out, and the general awareness of the environmental impacts will be increased.

In a more general view, it would be helpful if the Environmental Departments and Agencies in the European Union could produce best management practices (BMP). These BMP should then be integrated in all decisions regarding remediation projects (*proposal 8*). In SuRF-UK it has been proposed to start with simple checklists that could form the basis for more sophisticated tools later on, when the practise has been going on for some time.

DISCUSSION

Partly based on the ideas out of the SURF's in the UK and in the US we have proposed to implement some of these ideas, perhaps in a modified form, in the legislation of Denmark and the Netherlands. We expect some of these will relatively easy meet with consensus, but others will certainly generate discussion.

As a first step, we believe that firm guidance and authority demand for sustainability elements in remediation approval will already lead to a much reduced impact on the environment. However, only a regulatory basis for civil servants to approve more sustainable remediation projects will structurally move the existing approval procedures towards more sustainable decision making.

The proposed fund for financing extra costs in sustainable solutions will certainly be a very political issue. On the other hand, comparable methods have pushed other areas into more environmentally sound planning, e.g. the funding of insulation for private houses, subsidy of wind mills and so on.

REFERENCES

CL:AIRE, 2009 - A Framework for Assessing the Sustainability of Soil and Groundwater Remediation, draft report for public consultation, ISBN 978-1-905046-19-5

Ellis, D.E., P.W. Hadley et.al., 2009 - Sustainable Remediation White Paper. Integrating Sustainable Principles, Practices, and Metrics Into Remediation Projects, Remediation DOI: 10.1002.rem