Incentives For Cleaner Production In Indonesia – Promising Concepts For Small and Medium Industries

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Abbreviations

AMDAL	Analisis Mengenai Dampak Lingkungan
BAPPEDAL	Badan Pengelolaan dan Pengendalian Dampak Lingkungan
BDS	Business Development Sector
BNI	Bank Negara Indonesia
BPPT	Badan Pengkajian dan Penerapan Teknologi
BPR	Bank Perkreditan Rakyat
BSM	Bank Syariah Mandiri
CEFE	Competency based Economies through Formation of Enterprise
CSR	Corporate Social Responsibility
DNS	Debt for Nature Swap
ESL	Environmental Soft Loan
FI	Financial Institution
FISSETOM	Financing scheme for subsidized environmental technology on the micro level
ICPC	Indonesian Center for Cleaner Production
KIW	Kawasan Industri Wijayakusuma
KLH	Kementrian Lingkungan Hidup
KUR	Kredit Usaha Rakyat
LIK	Lingkungan Industri Kecil
MAC	Marginal Abatement Cost
MEP	Marginal Expected Penalty
MFI	Micro Finance Institution
MPR	Monitoring cost per Pollution unit Ratio
P3BD	Pusat Pengembangan Produksi Bersih Daerah
ProLH	Program Lingkungan Hidup
PROPER	Program for Pollution Control, Evaluation and Rating
SME	Small and Medium Enterprise
VCA	Value Chain Approach

Introduction

The aim of this paper is to develop and suggest a number of promising concepts to the national and provincial government providing incentives for cleaner production of small and medium enterprises in Indonesian industry. Implications from theoretical research and success stories are evaluated by emphasizing the peculiarities of the Indonesian setting. This shall contribute to the practicability of the concepts. Depending on whether the concepts build up on policies that are already applied, or if new approaches are introduced, the discussion of each concept varies and provides a different level in terms of detail and readiness for application. Additional to the assessment, special attention is put to the modes of operation, the success factors and the costs arising from the concepts.

Besides a literature review, field research has contributed information about the conditions in Indonesia. Therefore, a survey among twenty micro, small and medium enterprises in Semarang, Pekalongan and Tegal has been conducted.[1] Although some attention is put to quantitative tendencies, the low number of informants shows that the survey was not meant to deliver representative results. Instead, by using qualitative methods, the focus was on the opportunities of achieving more in-depth information. By switching to the use of personal pronouns in the paper, it shall become clear when the reasoning is based on the research conducted by the author of this paper. Besides the industries, interviews were conducted with three bank managers (Bank Mandiri, Bank Syariah Mandiri and Bank Perkreditan Rakyat). There is also made use of non-scientific source in order to attain information on matters not covered by research papers. Furthermore, direct insights from the German-Indonesian environmental program ProLH, in which this work has been developed, are contributing to the assessment and conceptualization of incentive mechanisms.

Section 1 starts with clarifying the meaning of *incentive*. The use of the term in different contexts has caused much confusion and is hence being defined to its meaning in this paper. Then the MAC-MEP model will be introduced. It represents an explanation of the factors determining the decision of an entrepreneur on the pollution level of his industry. It is a crucial analytical tool to understand the working mechanism of the suggested concepts and also the need of combining measures. The last part of section 1 introduces the theoretical criteria upon which the performance of environmental policies is generally evaluated.

[1] The industries of Pekalongan and Tegal, two medium-sized cities in Central Java, are micro and small industries in terms of home-businesses. They are part of typical regional clusters of mono-structured industries. In the case of Tegal, they produce Tofu and in Pekalongan they produce Batik. The small and medium industries interviewed in Semarang (capital of Central Java) were located in two different industrial estates (Kawasan Industri Wijayakusuma – KIW, and Lingkungan Industri Kecil - LIK) and were engaged in varying industrial sectors.

Section 2 discusses the peculiarities of the Indonesian setting, by analyzing the three crucial agents, governments, markets and communities.

Section 3 represents the main part, in which the selected promising concepts are explained in reference to the decisive factors introduced in section 1 and 2. The presentation of the concepts strongly varies in its emphasis on assessment and mode of operation. This is owed to the characteristics of the concepts, and if they are already applied in Indonesia, the current as well as past experiences with it. The *Greening Campaign* concept demands a thorough assessment due to its new role - both, in general and for Indonesia - within instruments for pollution reduction. Its mode of operation is not the major challenge, but the relevance of the tool in regard to Indonesian peculiarities requires more attention. The *PROPER daerah* is in large parts built upon an already existing instrument. Experiences in the past have assessed the successful performance of its core mechanism. As the new modified version is quite complex, the focus is on the mode of operation. *Environmental Soft Loans* are also part of the existing policies in Indonesia. However, the performance is rather ambiguous. Therefore the paragraph mainly assesses the present operation and points to the crucial issues constricting the current practice. The discussion on the mode of operation is restricted to the success factors in jeopardy. *FISSETOM* is a new concept, which demands a thorough assessment. As its mode of operation is rather complex, too, a detailed explanation is also required. Same is valid for the concept of *Greening Financial Institutions*. *Environmental Advisory Services* are part of existing instruments in Indonesia. As it is still quite new and the performance is ambiguous, the paragraph assesses the tool with focus on the present operation. The mode of operation is restricted to the success factors at risk.

The six concepts are grouped into *information instruments*, *finance instruments* and *education instruments*.

The conclusion stresses the interdependencies of the concepts and addresses the governments to challenge the concepts.

1.1. Incentive definition

The term *incentive* has been applied to a number of different contexts. In its basic understanding it is simply “something that incites to action“ (Oxford English Dictionary 2008). Therefore *providing an incentive* is just another term for “encouraging” (Oxford English Dictionary 2008).

It is not surprising that scholars engaged in behavioral science extensively use a term of that central meaning. But it becomes confusing when the appliance is narrowed to specific

concepts. In environmental economics literature *incentives* are often used to refer to the group of market-based or economic instruments, representing the counterpart to Command-and-Control approaches, which apply means of legal norms and standards (Cropper and Oates 1992, Hahn and Stavins 1992, Perman et al. 2003).[2] As the set of policies discussed in this paper will go beyond these two categories and in order to avoid further complications with the *incentive* term, it will not be pinned down to a single concept or special policy tool, but closer to its original meaning: Encouraging entrepreneurs to pollute less. By influencing the determinants of entrepreneur's behavior, this paper shows how policies in Indonesia generally can create incentives through governments, markets and communities to obtain a cleaner production.

1.2. The MAC-MEP model

To explore promising opportunities that encourage entrepreneurs towards a cleaner production it is necessary to first identify the major determinants of their behavior. As utility maximizers they are strongly concerned about minimizing their costs. The relevant cost factors in respect to their environmental performance are thus of crucial importance and will be at the basis of evaluating different policy instruments. In reference to World Bank (2000: 31) these costs can be grouped into two different categories: Penalty costs and abatement costs.

Penalty costs not only reflect fines and pollution charges collected by regulators enforcing environmental standards. They also need to be seen in the range of fewer sales to customers caring about the environment, credit refusals from banks afraid of credit failures due to liability claims or a pollution related devaluation of the collateral. Furthermore the various ways of formal and informal protests by communities against the pollution of their living environment result in profit diminishing penalty costs. (World Bank 2000: 28)

In response to these penalty costs, caused by pollution, an entrepreneur will engage to a certain degree in reducing pollution to cut the costs. However, reducing pollution bears its own costs, the abatement costs. Abatement costs are related to as different factors as the size or sector of the enterprise, but also education of workers and the existence and performance of an environmental management. (World Bank 2000: 32)

[2] Moreover, in discourse among Indonesian entrepreneurs *incentive* denotes a subsidy. This seems to have its roots back in the Suharto era, when farmers or entrepreneurs were supported by subsidized seeds or raw materials labeled as "insentif".

For illustrating the mechanism of how these cost factors interact and finally determine the pollution level of an enterprise as a result of the optimization by the entrepreneur, a model suggested by World Bank (2000) provides an instructive approach.

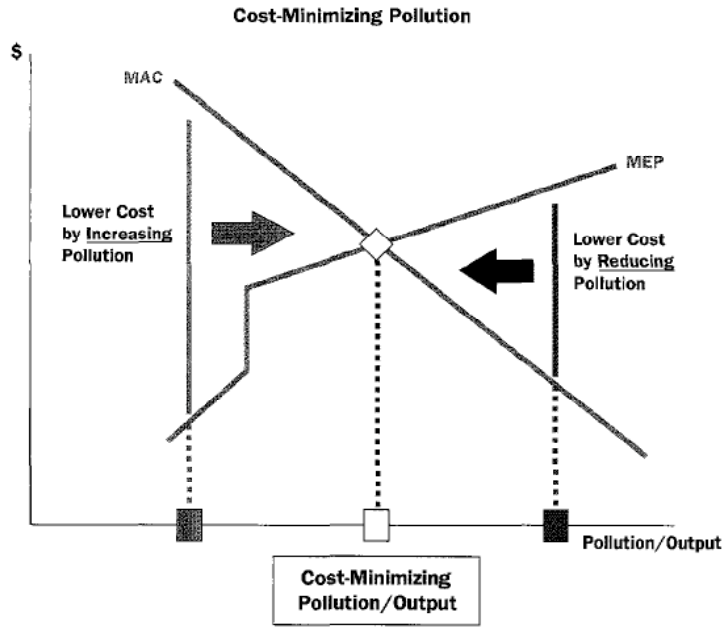


Figure 1 : The MAC-MEP model (World Bank 2000: 33)

In Figure 1 the vertical axis indicates the costs of the enterprise, while the horizontal axis measures the pollution intensity (pollution/output). Within this framework, the penalty costs are represented by the MEP (Marginal Expected Penalty) line. The upward slope of the MEP shows that penalty costs resulting from governments, communities and markets increase with higher pollution intensity. This is due to the fact that an intensively polluting enterprise is easier to identify, hence penalize. (World Bank 2000: 31)

The abatement costs depicted by the MAC (Marginal Abatement Costs) line decreases however towards higher pollution intensity levels. The logic becomes more comprehensive by following the MAC line from right to left, having in mind that each unit of pollution abatement costs more than the previous one (World Bank 2000: 30). This is based on the evidence that a starting effort of cleaning production has higher returns in terms of pollution abatement. Once a cleaner level of production has been achieved, any further abatement will become increasingly costly.

The point, where MAC and MEP cross, represents the cost minimum, thus the rational choice of the pollution level targeted by the entrepreneur.

When the different policies will be discussed in section 3, the MAC and MEP lines will be very useful to explain the policy's mechanism and so facilitate a judgment for the Indonesian situation.

1.3. Evaluating Incentives

In order to make useful suggestions for the environmental authorities on national and regional level, the essential conditions for the success of different policy tools will be elaborated and evaluated. There have been intensive discussions about the efficiency (maximizing net benefits) and cost-effectiveness (least costly method to achieve a goal) of different environmental policy approaches that are providing incentives for industries to produce cleaner. Being of central importance, these normative considerations will be included in the evaluation. Still, there is more to look out for. As Hahn and Stavins show, "overall effectiveness, ease of implementation, equity, information requirements, monitoring and enforcement capability, political feasibility and clarity to the general public" (1992: 464) will have to be taken into account. Table 1 provides a more complete overview of relevant criteria for the assessment of policy tools, besides Hahn and Stavins (1992) also drawn from Perman et al. (2003). It is essential to draw on the implications of all these factors, as they are powerful enough to decide upon whether a policy succeeds.

Table 1: Environmental policy assessment criteria
(Perman et alter 2003: 203; Hahn and Stavins 1992: 464)

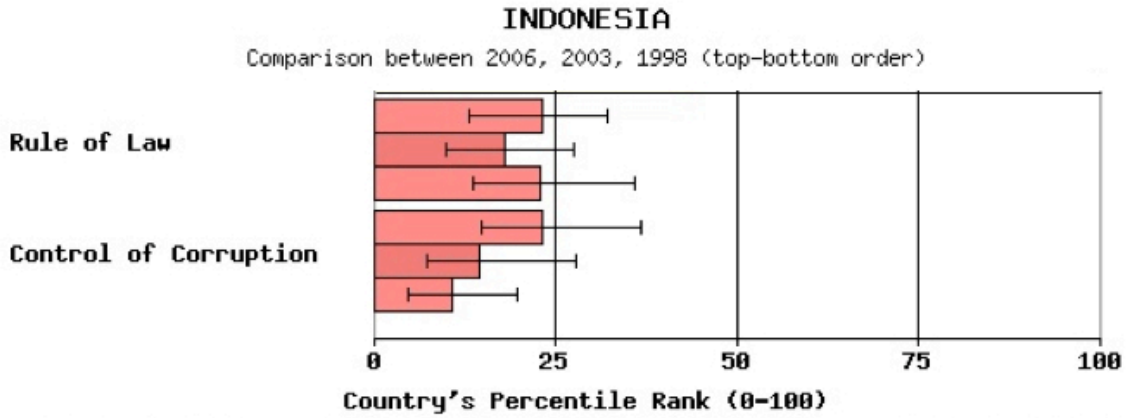
Overall effectiveness	Does the instrument attain the goal
Ease of implementation	How large is the effort required to implement the instrument
Equity	What implications does the use of the instrument have for the distribution of income or wealth
Political feasibility	To what extent are political consideration allowing for the use of the instrument
Clarity to the general public	Does the public understand the reason of the instrument
Long run effects	Influence of instrument increase, weaken or constant over time
Dynamic efficiency	Create continual incentives to improve
Dependability	To what extend can the instrument be relied upon to achieve the target
Flexibility	Is the instrument capable to be adapted quickly as new information arises
Low cost of use under uncertainty	How big are the efficiency losses when instrument is used with wrong information
Low information requirements	Is there big need for accessing and processing information
Low monitoring and enforcement requirements	Does the instrument heavily rely upon monitoring and enforcement

In the next section the characteristics of the Indonesian setting will be presented. This allows for a better understanding of the performance of relevant criteria introduced in this paragraph. Combining these insights will lead to the selection and setup of the concepts introduced in section 3.

2. Indonesian setting

2.1. Indonesian Governments

Indonesia, just as the majority of developing countries, lacks institutional capabilities necessary for the application of a number of policy instruments. Especially policies relying in its implementation on governmental bodies and based on strict law enforcement, a functioning judiciary system and low corruption levels need to be put off the list of promising paths.



Source: Kaufmann D., A. Kraay, and M. Mastruzzi 2007: Governance Matters VI: Governance Indicators for 1996-2006
Note: The governance indicators presented here aggregate the views on the quality of governance provided by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries. These data are gathered from a number of survey institutes, think tanks, non-governmental organizations, and international organizations.

Figure 2: Indonesian Governance Indicators (http://info.worldbank.org: 04.2008)

The governance indicators of the World Bank presented in Figure 2 show Indonesia's low performance in relation to other nations, finding itself ranked in the bottom quartile. In the *Environmental Monitor 2003* of the World Bank the authors comment „Enforcement of existing environmental laws is weak due to inadequate coordination among various agencies, low technical capability for proving violations, failure of the judicial process to convict and penalize violators, and limited access to information." (2003: 31)

My experiences in the field confirm these formal findings. Out of the random selection of entrepreneurs that we have interviewed throughout the field research, none reported inspections by local environmental agencies. Insights into the provincial environmental agency of Central Java (BAPPEDAL) were confirming that to their experience there have not been any cases, in which industries have been brought to court due to violating environmental standards. Depending on location, size of the industry and probably the peculiarities of the respective local police administration, industries reported to us about visits by the national police. These visits often include bribes. If payments take place and the amount of it is mainly determined by factors such as personal contacts to "influential officials", the police's

perception of the profitability of the company and the entrepreneur's estimation about the credibility of threats by the police, such as the withdrawal of business license. But informants have also reported that the police consider pollution issues as reasons for demanding fees. It is hard to estimate the effect of these environmental considerations by the police towards the entrepreneur, thus to which degree this shifts up the MEP (Marginal Expected Penalties) line. It is certain, however, that because the police lacks the know-how of an environmental agency in terms of assessing the pollution, only easily observable pollution matters are considered. It has to be kept in mind, that although in theory the environmental agency is the right institution for monitoring, in Indonesia we have experienced that agencies' monitoring capacities fall short of the requirements by different policies.

The activities of BAPPEDAL appear to be limited to scattered activities of public awareness raising concerning environmental issues, measurements in response to complaints by the public and its major task of processing the environmental impact assessment - AMDAL. The AMDAL is mandatory for receiving the permit to operate a business. It analyzes the expected impact on the environment by a business, possibly imposing measures to prevent violating standards. However, in reality AMDAL has not been able to prevent heavy pollution from most SMEs. BAPPEDAL is also supporting PROPER a national public disclosure program on the environmental performance of the biggest industries in Indonesia. BAPPEDAL investigates those industries located in its region. PROPER has been going on for several years and actually gained international attention (World Bank 2000) due to successful reductions of pollution levels in the selected industries. It appears to be the policy with most effective results and will therefore play an important role in the discussion of promising concepts in section 3. Besides the success of PROPER, most other efforts of environmental agencies in Indonesia to reduce pollution from industries have yet to show significant and sustaining contributions.

BAPPEDAL is the environmental agency on sub-national, provincial level. Below, there are further institutions on district/city level and sub-district. Especially on the sub-district level they lack a common organizational structure and differ by its integration into local governmental designs. Formally its area of jurisdiction determines the responsibility of an environmental agency. Whenever an environmentally related issue bears effects beyond the limits of its jurisdiction the agency of the higher-level jurisdiction is supposed to step in. In practice, this explains only to a certain extend the actual involvements of the agencies in different matters. Often, varying reasons beyond formal assignments account for their activities.

On the highest level, The State Ministry of the Environment (KLH) represents the central environmental authority. Decentralization in Indonesia naturally has restricted the outreach of KLH. Especially monitoring and enforcement efforts are restricted to trans-provincial related cases. Nevertheless, important responsibilities of KLH include environmental strategy, legislation, policy formulation and establishing environmental quality standards (World Bank 2003: 44). In a recent publication, PEACE comments on the status of KLH as follows: "The distribution of environmental budget has confirmed the traditional role of the Ministry of Environment as the advocate of sustainable development among members of the cabinet and not the one that has the personnel and budget to implement it" (2007: 56).

It has become clear that the regional agencies as well as the ministry itself are struggling with difficulties from outside as well as within its institutions. The consequences of this condition imply a large reduction of available policy instruments and a careful set up of concepts in which government institutions are involved. An official from the KLH commented on the design of an economic policy instrument to support cleaner production, that they use banks because they were one of the healthiest institutions in Indonesia. The limited potential of government institutions thus demands even stronger considerations of the possibilities of markets and communities.

2.2. Indonesian Markets

There are few empirical data on the effects of green consumers and investors on reducing pollution of industries in Indonesia. A case study by Aden and Rock finds that 2% of their sample of plants in Semarang (Central Java) experienced direct pressure from buyers (1998: 13). This reflects the findings of our research. Only one respondent expressed that his buyers pushed him towards reducing pollution by fulfilling certain standards. It is important to note that his buyers were intermediaries on the way of selling his products to the European market. Green consumers within the Indonesian market appear to be too few in order to provoke significant effects. But green consumers from overseas take influence on those industries in Indonesia involved in the supply chain of the products exported. It is this international dimension of the business activities that creates incentives for the industries to engage in cleaner production. The adoption of ISO 14001 certification, which includes norms for environmental management, gives some proof for this. Data from the end of 2006 provided on the webpage of KLH indicates that around 400 industries across Indonesia have adopted the ISO 14001 (webpage KLH, 2008). Only a small share of these enterprises is

SMEs, but rather big national or even international enterprises. Nevertheless, there is certain pressure passed through to their suppliers, which eventually are SMEs.

In regard to incentives for cleaner production created by investors, similar implications are true. As the study by Dasgupta, Laplant and Mamingi (1997) shows, news about environmental performances have a significant effect on the stock prices of an enterprise, even in countries known for weak environmental regulations such as Mexico and the Philippines. This mechanism is playing an important role in the success of PROPER, too. Not only stock markets, but also banks like Bank Negara Indonesia (BNI) uses PROPER as a factor in considering loan applications made by firms. This is due to the increased vulnerability of highly polluting industries towards liability claims, not necessarily exerted through legal authorities but also via direct pressure from communities. Another useful information for investors resulting from PROPER relates to the implication that cleaner firms are also more productive firms. Studies, such as Pargal and Wheeler (1996) provide evidence for this assumption in the case of Indonesia.[3] Again, PROPER mainly captures the big industries. By mid 2007 more than 500 companies were included, 1000 more were to follow within this year (The Jakarta Post 04.07.2007: 9). Banks investing in SMEs not monitored by PROPER, do not seem to consider environment related risks in their loan assessments. Bank managers from Bank Mandiri, Bank Syariah Mandiri and a local BPR, who we have interviewed, confirmed the irrelevance of the matter in their processes. Hence, incentives to reduce pollution by SMEs in Indonesia, spurred by market forces, currently are limited to those involved in export business.

2.3. Indonesian Communities

If the governments' agencies and means of the market do not succeed to reduce pollution sufficiently, communities eventually take action themselves. Their channels comprise NGOs, religious institutions, social organizations, citizens' movements and politicians (World Bank 2000: 59). Confronted with "threats of social, political or physical sanctions" (World Bank 2000: 59) the industries negotiate directly with the community actors. In the study about plants in Semarang, Aden and Rock (1998) found that 72% of the industries were exposed to community pressures, 13% experienced direct pressure, however, none showed significant statistic effects on reducing pollution in response to that. Cribb

[3] „ ...an old, unproductive plant (seventy-fifth percentile age, twenty-fifth percentile value added per worker) is about 2.4 times more water pollution-intensive than a young, productive facility (twenty-fifth percentile age, seventy-fifth percentile value added per worker)." (Pargal and Wheeler 1996: 1325)

(1990) documents cases in Indonesia where local farmers because of the pollution to the area burned down respective industries, other polluting industries responding to the pressure with compensation payments. In our research we recently found out about a pharmaceutical industry polluting the nearby paddies. Local farmers were complaining about the unsellable rice due to the bad quality resulting from the pollution. With the mediation by the local environmental agency the industry agreed to compensate the local farmers at an equivalent of six harvests. All other industries included in our research did not report any complaints by the community to them. For the enterprises in the industrial estate this may be explained by their location within an official industrial estate area, protected to a certain degree by the industrial estate management, and also their location being at sufficient distance away from community settlements. Furthermore, the pollution by the industries may be below the critical threshold[4], which triggers community action. For the mono-structured clusters in terms of home-industries (microenterprises) in Pekalongan[5] there is no complain by the community because the entrepreneurs are actually the fathers of the families in the communities, already living for several generations in this condition accepting it as it is.

Although the influence of communities are not always solving the pollution problems, the literature and own experiences confirm that they can be an important factor to raise the MEP line. Consequently they are influencing the cost minimizing choices of the entrepreneur in benefit for less pollution. The increase in Marginal Expected Penalty results form the cost of compensation payments and irregularities provoked by the community protests. In informal talks with informants, who are differently involved in the industries in Indonesia, they affirmed to me that the incentive created by community pressure to them seems to be the most powerful tool for pollution abatement.

3. Promising concepts

Section 2 has portrayed the crucial characteristics of the Indonesian setting and provides the basis for why many of the conventional environmental policy instruments are not further regarded in this paper. Some of the most prominent instruments, such as regulatory instruments (Norms and Standards, Environmental Liability) or economic instruments (Environmental Taxes, Fees and User-Charges or Certificate Trading) have all been excluded due to their strong dependency on either capacious monitoring requirements, strict enforcements measures on behalf of government institutions or an effective judiciary. The

[4] Similar to the shortcoming in police inspections, without information about all relevant pollutants, it leaves the communities in the weak situation of only considering the small share of pollutants easily detectable.
[5] Medium sized city in Central Java

selection of instruments in this section hence represents the most promising concepts out of the commonly known and discussed tools.

3.1. Information Instruments

3.1.1. Greening Campaigns

Public campaigns with the goal to effectively communicate environmental awareness (Greening Campaigns) to citizens are seldom found on the agenda of policy makers concerned with pollution reduction. Although this can be partly attributed to political reasoning[6], it rather appears to be a major shortcoming if one considers the huge potential public campaigning offers. The effectiveness of Greening Campaigns is estimated to show diminishing returns on higher levels of awareness. But especially in countries like Indonesia, where the awareness of pollution matters is relatively low, initial efforts can be expected to show high returns. Reconsidering the mechanisms of governments, markets and communities in reducing pollution it becomes clear that the environmental concerns of citizens are at the core. The higher the awareness, the stronger the concerns and thus the more effective the channels for changes can be used.

The regulating mechanism of the communities is characterized by their understanding about the negative impacts of the pollution to their lives. The proliferation of this knowledge directly fortifies the bargaining power of the communities in the negotiations with the polluting industries. As long as the people have limited knowledge they are kept from realizing the potential the bear.

The pollution reducing potential of the market also highly depends on the environmental awareness of the citizens. As we found in our research, considering environmental management practices largely depends on whether an industry is involved in the supply chain for export products. This can chiefly be attributed to the green consumers in the product's destination country. Creating green consumers in Indonesia thus provides the basis for using the regulating power of the market for the large share of Indonesia's industry not involved in exports. Another benefit of green citizens enabled through the market is the increased threat of liability claims by them. Financial Markets but also regular banks sensitively react to these threats in their investment decisions. This pressure by the investor provides an incentive to the industry to reduce pollution in order to attract investments.

[6] Campaigns bear the methodological difficulty to precisely quantify its direct benefits. Faced with tight monitoring by political opponents, tax-payers and budget laws, this weakness of the tool may explain some of the reluctance on behalf of the policy makers. However, this pressure is rather characteristic for countries with a long record of democracy. Indonesia's political landscape can eventually be regarded as more beneficial towards an integration of Greening campaigns into the set of policies.

The government, as the representative of the citizens, reflects citizen priorities or at least to say it reacts to the demand of the electorate. Sensitizing the citizens on pollution matters thus strengthens the political influence of the Ministry of Environment and the sub-national environmental agencies. This eventually leads to an improved performance of these institutions. Increased budgets or pressure from stronger direct citizens demands are examples for achieving such.

The MAP-MEC model shows the mechanism of how Greening Campaigns work. Increasing awareness among citizens by Greening Campaigns affects the MEP line. Because higher community pressure and larger effect of green consumers increase the penalty costs of polluting, the MEP line shifts upwards. Through cost minimization, the pollution intensity eventually drops.

To this point only some scattered activities have taken place. BAPPEDAL gave me the example of them selecting a specific community as a target for one year and then inform the community about issues like composting. It is clear that the impact of such activities is quite limited and much potential remaining to improve the effectiveness of activities targeting the public awareness on environmental matters. A Greening Campaign is not the most reliable instrument. If managed badly it may be completely worthless. On the other hand, it bears the potential to produce effects larger than most instruments can offer and at a lower cost, too. The documentary "An inconvenient truth"[7], which has won an Oscar and also contributed to awarding the Nobel Peace Prize to former US vice president Al Gore who presented the documentary, has surely contributed a large part to a more sensitive public on environmental issues. Leaving aside all the other direct and indirect effects on reducing pollution, it is likely that the film enhanced the relevance of environmental matters in the current presidential election campaign in the United States, finally affecting the political priorities in favor of environmental concerns. As mentioned before, it is methodologically challenging to prove these effects, but methodological weakness should not result in total ignorance of an instrument whose benefits we can to certain degree perceive by common sense.

Initiating a documentary can be part of a public campaign, but the appropriateness of the type of communication strategy strongly differs with cultural varieties. One needs to carefully and creatively assess the opportunities Indonesia provides. A recent study by Chong et al. (2008) indicates the strong impact of specific Brazilian soap operas on the birthrate of

[7] A documentary film about Global Warming directed by Davis Guggenheim (2005)

Brazilian women[8]. The preference for TV soap operas as a major information channel can be expected to have a similar large meaning in Indonesia. To get TV directors involved to join the efforts of reducing pollution is just one example within the scope of a committed environmental agency and is beneficial for the target itself but also to the environmental agencies own public standing. Coordinating a national and regional platform for different societal actors, initiating, supporting and realizing Greening Campaigns, is a promising chance creating incentives to reduce pollution.

Just as for other policy instruments, in order to set up a Greening Campaign it is necessary to understand what factors it relies upon, the so called success factors. Therefore the mode of operation will be presented, indicating the measures to be taken by the ministry or agency, the strengths and weaknesses to be considered throughout the planning and implementation and opportunities on how to cover the costs of a campaign are suggested. As Greening Campaigns have not yet been effectively included into the set of policies of pollution reduction, no previous research assessing the tool by the selected criteria could be accessed. Table 2 below thus solely reflects own estimations.

Table 2: Strengths and weaknesses of Greening Campaigns

Strengths	Weaknesses
Targets multiplying factor Green Citizens are at the core of conditions on which the success of a number of incentive mechanism rely (very good *overall effectiveness* and high *dynamic efficiency*)	**Difficulty in proving direct impact** (limiting *political feasibility*)
Activates the power of the market Creates green consumers. Hence supporting a crucial factor for using the incentive power of the market (very good *overall effectiveness* and high *dynamic efficiency*)	**Possible interference by industry lobbies** Industry lobbies may try to work against the campaign by preventing the use of influential medias (limiting *ease of implementation*)
Activates the power of communities Strengthens the regulatory power of communities (very good *overall effectiveness*, high *dynamic efficiency*, very good *equity*)	**Inner political Resistance** Possible Resistance on behalf of politicians from other political sectors who scare a negative influence to their sector (limiting *political feasibility*)
Increases political weight and capacity of environmental agency Strengthens the relevance and political weight of KLH and regional environmental agencies (supporting *political feasibility*)	

[8] Empirical analysis of census and other data showed the fertility rate drop in Brazil from 6.3 children per woman in 1960 to just 2.3 children in 2000 was partly the result of not just watching television, but specifically Globo's family dramas, in which the size of the family represented is very small. (Chong et al. 2008)

Triggers own efforts from society. Awareness triggers citizens' own creativity to find alternative ways to reduce pollution. (very good *dynamic efficiency*)

The success of the concept almost exclusively depends on the quality of communication strategy (low *dependability*, high *flexibility*, high *information requirements*)

Mode of operation

There is an excellent guide developed by the UNEP and futerra (2005) "Communicating Sustainability – How to produce effective public campaigns" which assists the policy maker from the first thought about making a public campaign to realizing it. It gives advice on the necessary steps to take, including on obstacles national and local authorities face and on how to select a communications agency. It also provides inspiration through a large number of case studies from around the world. Table 3 summarizes the key points of setting up a plan hence represents the success factors and is in great parts based on the guide. Note that points on top are the main responsibilities of the environmental ministry or agency. For the issues on the bottom of the table it should seek support from a communications agency.

Table 3: Success factors for Greening Campaigns (UNEP 2005: 16-19)

Environmental agency	
Assuring political support	Coordination among administration, other ministries and departments assures political feasibility
Accessing funds	The opportunities of various funding sources (internal and external) should be assessed
Setting specific objectives	Communication should not be started before setting key objectives
Management and Implementation	The campaign will succeed or fail depending on the quality of its implementation
Measurement and evaluation	Measurements and evaluation records whether the planned activities took place and whether the objectives were achieved
Communications agency	
Understanding the situation	An initial research phase will give a better chance of success. This is particularly relevant for large scale campaigns
Audience research	Researching the audience helps to ensure that they absorb the information and act upon it
Deciding on strategic approach	Each step of how the objective will be achieved needs to be elaborated
Developing the message	The message needs to be carefully selected so it appeals to the audience
Channels	The impact of the message will depend on the communication channels used

Costs

To finance a campaign various options are available. First, the environmental agency can include it in the application for budget money from the government. This is relevant especially for the first steps of outlining the strategy and elaborating a specific concept. Using own funds is also crucial to proof commitment. Expert advice is an important option to reduce the risk of making an ineffective campaign. The cost for contracting a communication agency and the use of channels (media) will be the largest expenses for the campaign. To finance these, external financing may be considered. The government budget is certainly an option, but bi- and multilateral donors as well as big international NGOs could also be approached. The private sector is another opportunity. Especially large international or national corporations increasingly show interest in line with CSR efforts to show the public their environment friendly attitude. To sponsor a Greening Campaign can thus satisfy the needs of both sides.

3.1.2. PROPER daerah

Public disclosure of pollution is a powerful policy tool to reduce pollution. By providing information about the environmental performance of an industry it helps to reduce information gaps and thus enables the mechanism of markets and communities to reduce pollution. The information is the "raw material", which communities and markets need in order to unfold their potential to increase the penalty costs. In reference to the MAC-MEP model, it hence works by shifting up the MEP line.

After pioneer programs in the "developed" world, Indonesia is actually the country that can claim to have implemented the first large-scale program in the "developing" world - PROPER (Program for Pollution Control, Evaluation and Rating). It showed to be what can be called a success story. Soon after implementation in 1995 and first results indicated the effectiveness of the approach, replications of PROPER were introduced in the Philippines (1998) and China (1999). A recent study by López et al. (2004) eventually provides empirical evidence on the large pollution reducing effects that can be attributed to PROPER. Knowing about this proven success, which has also been outlined in section 2, it would be negligent to not further build on the opportunities implied by PROPER. As the management and implementation of the program, as well, is already known by the administration of environmental ministry and agencies, instead of assessing the public disclosure of pollution tool and discussing its strengths and weaknesses, this section will concentrate on how to extend it to also covering SMEs.

Mode of operation

The targeting of industries in the current national PROPER is based on a so-called ABC approach (World Bank 2000: 49, 67). ABC represents three groups according to the size of the industry. The largest industries, smallest in number of units, are part of the A group. The smallest industries, highest in number of units, constitute the C group. By moving down, according to the available budget, along the size of the industries, this approach makes sure to efficiently use the resources. This is achieved by capturing first industries with a more beneficial monitoring cost per pollution unit ratio (MPR). This efficiency criteria is an important factor for the success of PROPER and crucial to consider for extending PROPER to SMEs.

Due to the restricted monitoring capacities of Indonesia's environmental agencies there are somehow controversial assumptions on the contributions to overall industrial pollution by small, medium and large industries. The World Bank (2000) states that by including 2000 large and medium sized plants, PROPER can cover 90% of the overall water pollution (2000: 67). Another graph in the report relates the 2000 plants to 80% of pollution, apparently in pollution's more general understanding[9] (World Bank 2000: 68). ProLH on the other side works with the assumption that 90% of industrial pollution is caused by SMEs. Neither estimation seems to be based on solid empirical evidence. From own experiences in the field there is no doubt that SMEs especially in their accumulation in form of clusters and because of their proximity to communities as well as the large labor force employed, shows intensive pollution effects on people.

The difficulty for including the SMEs in PROPER is that the pollution source in terms of many units of SMEs is connected to a weak MPR. A possible solution offers the aggregation of SMEs into larger units. This is especially appealing for the mono-structured clusters characteristic for Java, and industrial estates. By publicly disclosing the pollution of a geographical restricted area, one captures a major pollution source, although defined by many industrial units, with low monitoring costs. The major concern with the approach, which could be called "PROPER daerah[10]", is that it does not provide reliable pollution data on a single small or medium enterprise. However, by being collectively addressed, it is expected that this instrument initiates beneficial internal processes within the ranked area.

If units contribute mainly equally to pollution (characteristic for mono-structured clusters), joint efforts of abating can be expected. The classification into one area already

[9] there is no further definition of "pollution" given
[10] "daerah" is the Indonesian term for "area".

attributes to the cohesiveness of the group. Confronted as a group with this shameful[11] situation of being possibly badly ranked and recognizing their social ties due to being part of the same community, diminishes the risks of and resulting from free-riding behavior.

Industrial areas, which often represent a heterogeneous accumulation of industries from different sectors and of different size, largely vary in their pollution patterns. A common rating will probably cause some conflict within an industrial area. A number of responses can be estimated, the most concerning one is that PROPER attributes relatively clean industries bad ratings, and strongly polluting industries may be attributed to be cleaner than they are. This can threaten the credibility of the rating. Another consequence may be that all industries will try to blame "the others" for the bad rating. It is therefore crucial to tackle this issue in the communication[12] of PROPER daerah. First it has to be made clear that pollution of the area *as a whole* is assessed. Second the collective environmental responsibility of the industries in an industrial area has to be emphasized. By avoiding a stagnant condition of blaming others and discrediting PROPER daerah, the increase of the MEP eventually triggers further supportive mechanism besides the ones already known from PROPER. One is that clean industries pressure polluting industries. Another one is that industrial area management pressures polluting industries and take other beneficial measures of pollution reduction in fear of loosing the appeal of its estate, which results from a possible third response: The relocation decision of industries. If the concern about the ranking is large enough, it can be expected to change the composition of industrial areas into more homogenous groups in terms of pollution characteristics. Although it is questionable if the pressure is high enough to outweigh the costs of relocation, this scenario would still have a beneficial outcome of being able to spot the heavy polluters easier, eventually offering to capture them with a regular individual PROPER scheme. The concern that a SME has a relatively weak MPR is correct on average, but once the heavy polluting SME can be targeted, which are the ones with the high number of pollution units, the monitoring cost per pollution unit ratio turns more efficient.

Another operational mode can be taken into account by reconsidering the situation of relatively clean SMEs located in a badly ranked area due to the poor performance of other industries. Although these clean SME play an important role as a pressuring factor, if the schemes keeps to be perceived as too unjust, the following option should be offered to the respective SMEs. They can participate in the conventional PROPER program, however, at

[11] Shame as a powerful motive for change in behaviour has played a major role in Nabiel Makharim's considerations conceiving PROPER. (Lòpez et al. 2004: 8)
[12] see the section on Greening Campaigns for more detail on communication instruments

their own expense[13]. Towards the SME these costs can to a certain degree be justified with evading the collective responsibility for the environmental performance of the area. If SMEs voluntarily participating in the conventional PROPER becomes a common practice, it continuously increases the relevance of PROPER and incites other industry to join, as the absence from a PROPER rating gets increasingly suspicious.

In reference to World Bank (2000) table 4 presents the success factor of PROPER daerah.

Table 4: Success factors for PROPER daerah (World Bank 2000)

Environmental agency	
Accessing funds	The success (proven effectiveness) of PROPER in the past is a strong argument for attracting funds from governments budget
Selecting areas	Identifying clusters of pollution intensive industry sectors and industrial estates with estimated high pollution
Adapting PROPER practices	The application of the PROPER methodology needs to be adapted to the requirements of areas
Informing targeted industries	Affected industries need to know about the "PROPER daerah" concept and the criteria it monitors
Offer support	In line with the conventional PROPER concept it is essential to support the industries in knowing how to receive a "good" rating (e.g. environmental soft loans, consultancy services)
Achieving reliable rankings	The reliability of the rankings should be assured by replicating the mechanism of the national PROPER program
Communicating "PROPER daerah"	The communication of the results and its implications is a challenge by itself and needs to be elaborated carefully
Self evaluation	Reflecting on the process, assessing lessons learnt, and adapt to the new situation it has created

(World Bank 2000)

Costs

One reason for the success of PROPER is the high efficiency of the mechanism. The relatively low costs of monitoring – US$ 350 per enterprise per year (Lòpez et al. 2004: 3) - and the large reduction in pollution - 32% (Lòpez et al. 2004: 25) - are powerful arguments for receiving further attention in governments' budget allocations.

Different actors of society already appreciate the information on PROPER ratings. Still, the strong support for the communication of the rankings and its implications, also in financial terms, is essential.

As outlined in the *mode of operation*, relatively clean SMEs in badly ranked areas may voluntarily seek participation in the conventional PROPER. Efficiency matters[13] imply that costs for including respective SMEs in the conventional PROPER, should be covered by the

[13] If the environmental agency conducting PROPER covers the expense, it would have the challenge to justify why it is monitoring an SME with an expected lower MPR instead of „the next one" along the most efficient way from larger to smaller industries (according to the ABC approach).

enterprise itself. Attention needs to be put on the actual payment channels of these costs, in order to secure the independence of the monitoring staff.

3.2. Finance instruments

3.2.1. Environmental Soft Loans

An Environmental Soft Loan (ESL) can be defined as a loan of more favorable conditions[14] than the conditions of the market, in its use restricted to measures beneficial to the environmental performance of the enterprise. An ESL provides an incentive for cleaner production by directly lowering the abatement costs (MAC) of pollution. However, there are a number of conditions that have to be fulfilled so it actually realizes the pollution reducing potential which theory and the Indonesian situation promise.

In Indonesia, there are currently four ESL schemes: JBIC-PAE, IEPC –KfW I, IEPC-KfW II and DNS. They differ by funding source, executing bank and have slightly different conditions. As the existence of the current schemes proves, the mode of operation is already practiced. Therefore, focus will be put on the critical performance of different success factors of ESLs, derived from experiences in the field. This contributes to assess the potential ESL offer in Indonesia and points to the required measures that need to be taken.

In a recent publication, Akihisa (2008) analyses the suitability of ESLs in various Asian countries, also for Indonesia. He points to experiences with the risks of misuse due to weak monitoring of the loan as well as due to ineffective environmental regulations. The fluctuations of domestic interest rates have had a further disturbing influence affecting the effectiveness of ESLs. For the Indonesian case, he concludes that the necessary conditions from theoretical arguments do not justify the use of environmental soft loans. (Akihisa 2008)

From our experiences and interviews in the field we can partly support theses findings. A technical consultant of the IEPC-KFW loans told us that the interest rate of those loans is effectively not 2% below the commercial rate, as indicated in the set-up of the loan. Commercial banks eventually offered loans 0.5% lower than the “soft-loan” rate of the IEPC-KFW II. Although no further research on the causes has been conducted, the fluctuation of the domestic interest rate may be a reason for that. Other sources blamed the banks to not fully pass on the beneficial interest margin to the debtor. However, we cannot confirm this. In addition we found rather more striking obstacles for the effectiveness of the current ESL.

To maintain their appeal, ESLs not only compete with commercial loan schemes, but also with other soft loans. Although three of the Indonesian ESLs formally target SMEs, the

[14] Such as interest rate, payback period, collateral requirements, etc.

set-up indicates that the Debt for Nature Swap (DNS) is most relevant for the smaller industries in clusters, part of the target group of ProLH. Therefore we interviewed the general manager of a Bank Syariah Mandiri (executing bank of DNS) branch in Central Java. We knew from KLH that the promotion of DNS is concentrated on other regions of Indonesia; however, it is supposed to be accessible everywhere within the country. So far the bank we visited had not processed any DNS loans. Besides the fact, that there has been no active socialization, we found out that the DNS scheme is being crowded out by other soft loans with more favorable conditions. The general manager specifically pointed to KUR, a recent soft loan initiated by the national president. He stressed that KUR was basically the only loan people were asking for. From KLH we got the information that the DNS does not require collateral and a two years business operation period to access the loan. In contrast, the bank manager, in reference to his documents, told us that there is 100% collateral as well as two years prior business operation required. We could not access the formal terms of the DNS to verify the actual conditions, but the manager argued that the low collateral for the KUR (30%) and the unrestricted use of it puts the DNS to be an irrelevant scheme in the market. In line with our results from interviews with entrepreneurs, who have no knowledge of the existence of any ESL schemes, the impact of the ESL seems to be limited to a small amount of enterprises, which attained special attention.

The experiences from ProLH and the insights gained through our research revealed an additional challenge in the context of soft loans. Small industries often lack basic entrepreneurial capabilities. Although structural issues are often in the way of developing the business, a lot of smaller industries are not able to properly identify the key obstacles of their business development. This condition bears the risk that external financing, just as a soft loan, worsens an enterprise's situation. If other serious problems, e.g. in production or sales, prevail, the entrepreneur may not be able to pay back the loan and end in a situation much worse than before. Although in theory it is the bank's task to assess the expected performance of a loan, in practice, especially if funds come from the government, these processes are not as reliable as they need to be, as occurrences from a city in Central Java indicate.

During the past months there has been a continuing effort by KLH to disburse the DNS to selected small industries in a Tofu cluster of that city. There were some proceedings, which called our attention. First, the set-up of DNS indicates that 80% of the loan is provided by KLH and 20% by Bank Syariah Mandiri (BSM). The share of BMS is believed to be an important feature to assure the reliability of the bank's tasks by putting their assets at stake. However in the recent case, KLH is planning to provide 100% of the loan. This threatens the

smooth operation of the DNS and there is no plausible technical reason to do so. Second, preliminary versions of the loan proposals elaborated by technical assistants of DNS (contracted by KLH) suggested controversial investments. In the recent past, ProLH consultants have conducted trainings with local entrepreneurs from that cluster, analyzing in further depth the challenges of their production processes. As the investments suggested by the DNS-technical-consultants were not developed in close cooperation with the entrepreneurs, it did not surprise that our consultants judged the investment plans to put the enterprises into high risks of not being able to pay back the loan.

The inclusion of technical assistants to the loan application process has been a very valuable part of the scheme; however it may fall short in properly assessing the overall economic condition of the enterprise, which is crucial for evaluating whether a soft loan is actually the appropriate response. Furthermore as the current practice documented above has shown, not only if but also the specific kinds of investments are key to a successful use of the loan. Besides overestimating the opportunities of a soft loan, in our interviews we also found proof for the other extreme – not appreciating the chance of external financing in general.

Mode of operation

Nurtured by theses insights, following measures may contribute to improve the effectiveness of the ESLs. Four main challenges need to be addressed. First, if there are no feasible measures to secure an interest rate below market level, the appeal of other favorable conditions of the ESL needs to be assured or it becomes totally ineffective. Second, if the ESL proves to perform well against other commercial loans, the interference from other soft loans has to be avoided. A possible solution is a common institution, in which the different initiators of soft loans plan and coordinate their schemes. Third, if the enterprises fail to know about the ESLs, of course no impact can be expected. Socializing the ESLs through effective communication about existence and opportunities of the ESL is decisive. Fourth, not all challenges of assuring an ESL's impact are matters of the design in terms of set-up, conditions and socialization. It is also essential to enable an enterprise to make best use of it. A promising way to achieve this can be by prior consultations in form of trainings or advisory services. Currently the technical consultants from DNS basically just react to loan applications and perform an abstract eligibility assessment. Using eco-efficiency trainings[15], entrepreneurs can be expected to understand their own economic needs better. Not only will they be more aware of the opportunities of external financing like ESLs, but also judge more

[15] see paragraph 3.3 for a discussion of eco efficiency training and their role in reducing pollution

qualified if such enhances their business development. Supporting consultations services will hence contribute to the effectiveness of ESLs and is another strategic element of bringing the policy tool of environmental soft loans to success in Indonesia. Table 5 below focus on the success factors, indicating the currently most striking shortcomings for a successful performance of ESL in Indonesia.

Table 5: Success factors for Environmental Soft Loans

KLH	
Interest rate below market level	If there are no feasible measures to secure an interest rate below market level, the appeal of other favorable conditions of the ESL needs to be assured or it becomes totally ineffective and is not suitable for the Indonesian case
Coordination among other soft loans	Interference from other soft loans has to be avoided. If it is not possible to rely on a common institution, in which the different initiators of soft loans plan and coordinate their schemes, ESLs will be ineffective.
Socialization	If the enterprises fail to know about the ESLs, no impact can be expected. Socializing the ESLs through effective communication about existence and opportunities of the ESL is decisive
Enable industries for effective use	Long term strategy should include support of consultancy services in form of trainings and advisory, e.g. eco-efficiency trainings to enable industry appreciate the potential of ESLs

Costs

In accordance to the success factors specified above, the government (KLH), and/or possibly the foreign donor who provides the ESL, has to cover the cost of securing the favorable conditions against developments on the market. Further research has to specify if this is feasible at a price the stakeholders are willing to pay. Other costs originate from socialization measures and the financial support of bringing consultancy services to the industries.

3.2.2. Financing scheme for subsidized environmental technology on the micro level (FISSETOM)

A main task of an environmental soft loan is supporting the financing of technology, which has beneficial effects on the environmental performance of the industry. Strength is its flexibility in variety of measures it can be used for, a weakness that the loan may even be used for something beyond its terms. If monitoring of the use of the loan is weak, as Akihisa (2008) has claimed for Indonesia, directly providing an environmental technology may be a relevant option to secure the designated use. Alike an ESL, direct provision of the technology

below acquisition costs improves the competitiveness and enhances the commercialization of environmental technologies. Thus, subsidized green technologies also work to reduce pollution by lowering the abatement costs (MAC). Table 6 on strengths and weaknesses of the concept assesses the characteristics of the concepts. The judgments related to subsidies are in large parts taken from GTZ (2006), the ones on the financial schemes are own estimations. To stay within the structure, the assessment table is put to this part of the paragraph, however, for a better understanding it is suggested to read *mode of operation*, where the complex operational details are being explained, first.

Table 6: Strengths and weaknesses of FISSETOM (GTZ 2006: II.33)

Strengths	Weaknesses
Uses financial interest of target groups Subsidies are a potent economic instrument to influence investment and purchasing decisions, as they directly reduce expenditures and increase income and profitability of the enterprise (good *overall effectiveness*)	**Unequal treatment of enterprises** Subsidies create a group of beneficiaries but also a group of disadvantaged (limiting *political feasibility,* bad *equity*)
Immediate effectiveness Subsidies act as soon as they are provided. The implementation of the scheme takes time, but once established, entrepreneurs can be expected to take immediate advantage of the subsidy (very good *overall effectiveness* and *ease of implementation*)	**Burden for public budget** Subsidies pose a high burden to the public budget and the reasoning may not be clear to the public (limiting *political feasibility,* bad *clarity to the general public*)
Low risk of financing The financing scheme is a safer process for the entrepreneur than a loan /or soft loan. Thus it is also feasible for Microentrepreneurs in difficult economic conditions. (good *overall effectiveness*, very good *ease of implementation*, very good *equity*	**Small scope of applicability** The use of the scheme is restricted to various criteria and thus limits the scope of applicability (bad *overall effectiveness*)
Known financial scheme As the entrepreneurs know the procedure of the financial scheme, they can be expected to be confident about it. (very good *ease of implementation*, high *dependability*)	**High information requirements** The selection of clusters and search for appropriate technology is costly and bears the risk of "wrong" choices (bad *Low cost of use under uncertainty,* bad *Low information requirements,* low *dependability*)
Support innovation at an early stage Subsidies facilitate the market launch of innovation at an early stage as they reduce the costs of pioneering products and increase knowledge among customers quickly (high *dynamic efficiency*)	
Low risk of abuse As the subsidy is "in kind" the subsidy can not be diverted from the intended use (very good *low monitoring and enforcement requirements*)	
Low information costs. As the appropriate technology will be provided, the entrepreneur benefits from the absence of search costs (high *dependability*)	

Mode of operation

At the heart of the concept of providing the technology is its specific financing scheme. It aims especially on the restrictions of small industries and makes use of the characteristics of mono-structured clusters. Inspired by the current practice of financing the purchase of motorbikes in Indonesia, the financial scheme consists of a down payment followed by equal monthly installments until full cost has been covered. The property right stays with the seller until last payment has been settled. If the buyer fails to pay the installments, the good is returned to the seller. The strength of this scheme is the low financial risk for the buyer in case he fails to pay the installments compared to the consequences of failing to pay back a loan. The seller has similar low concerns about the failure of payments, as he can resell the good. Due to the down payment and installments until the cancellation, he can cover the loss in value, which a lower price of a used good implies. A weakness of the scheme is its restricted applicability to goods of specific characteristics. Bringing the idea back to the field of environmental technologies, following issues have to be considered. From the point of economic theory the scheme requires technology, first not to be costly in installation, dismantling and transport. Second, the technology needs to be relevant for a sufficient high number of enterprises. Both assure low transaction costs for canceled purchases and resale, essential to the scheme. Additional to the requirements for the functioning of the financing concept, the technology has to fulfill other criteria to successfully achieve its goal in reducing pollution. These non-financial factors are not at the center of this paragraph, but will be included to complement the approach. It has to be made sure that the local entrepreneurs will accept the technology. Besides possible non-technical factors, an increased profitability and the easy use and maintenance are essential for that. Last, to achieve the beneficial environmental effects the technology should address most relevant pollution sources and types as well as the scope of potential pollution reduction. By finding the technological solutions in accordance to the criteria mentioned[16], the industries in clusters can also benefit from the absence of information cost, which the search for appropriate new technologies bears. Table 7 provides an overview of the success factors for bringing environmental technology to the micro level. Large parts of the table have been taken from an elaboration of GTZ (2006).

[16] This can be supported by BPPT, the Agency for the Assessment and Application of Technology (BPPT) – Indonesian governmental institution.

Table 7: Success factors for FISSETOM (GTZ 2006: IV.4)

Environmental agency	
Selecting industrial clusters and technology	According to the key aspects appropriate technological solutions have to be found. The expertise of BPPT[17] should be considered for support
Condition for financing scheme	- Low cost of installation, dismantling and transport of the technology - Relevance of the technology for a sufficient high number of enterprises
Acceptance by industries (trainings and campaigns can support the process)	- Resolving non-technical factors obstructing the introduction of new technology (trainings and campaigning can support the process) - Profitability increasing potential of technology - Easy use and maintenance of the technology
Assuring environmental impact	- Targeting most relevant pollution - Achieving high pollution reduction
Creating local markets for environmental technology	Governments can take action by reducing transaction costs, e.g. through campaigning and pooling of orders and activities to achieve economies of scale
Capacity building on demand side	Introduction of environmental technologies should be accompanied by efforts to build knowledge and skills on environmental technologies in local business, including capacities for assessing the environmental, financial and socio-cultural impacts of technologies. Governments can create support (trainings) and service center (ICPC, P3BD)[18] on environmental technologies
Creating incentives for adoption of environmental technology	Financial scheme of installments supported by subsidies
Balancing technological and social development	Balancing technical change and social adjustment using purely technical solutions is likely to fail. Promoting equal access to technologies so as not to reinforce economic and social inequalities will be important
Consider lessons learnt from other developing countries	Technology transfer between developing countries can harness the experience gained with environmental technology in a developing country context

Costs

Depending on the coverage of industries approached, and the individual subsidy of each technology the total amount of subsidies will vary, but can be expected to be the largest cost factor of the tool. Besides, costs for the government arise from research and studies on selecting industry sectors and appropriate technologies. Another source of costs originates from capacity building efforts on the demand side. (GTZ 2006: IV.3)

3.2.3. Greening Financial Institutions

FIs may be regarded as an agent often facilitating industry's activities causing heavy pollution. Although innumerous cases may show proof for that, FIs are not per se facilitators for pollution. Instead, their role concerning the environment depends on the setting in which

[17] Agency for the Assessment and Application of Technology (BPPT) – Indonesian governmental institution.
[18] ICPC is the already existing Indonesian Cleaner Production Center on national level and P3BD the respective institution for Central Java.

they operate. By looking at this setting and analyzing the determinants of FIs contribution towards industry's environmental performance, suggestions will be made on what governments can do to make FIs to partners in the struggle to reduce pollution.

Several issues facilitate FIs role as a greening agent. As pointed out in section 2 on Indonesian markets, Bank Negara Indonesia (BNI) welcomes the information provided by PROPER to assess the loan applications from respective industries. It does so, because pollution bears risks of liability claims and decreasing collateral value and further indicates inefficiencies. Judging the loan applicant by these factors indicates the FIs role of penalizing bad environmental performances. In reference to the MAC-MEP model, the FIs reduce pollution intensity by increasing the expected penalty (MEP) line. The FI itself is not concerned with its role of penalizing, but because all of these aspects affect the profitability of a financial institution. Hall and Lal (2006) focus in their paper on Microfinance Institutions (MFIs) and give further examples of how high environmental risks hamper the economic success of the institutions. Microentrepreneurs becoming sick from pollution are less productive and their ability to pay back loans or save decreases. Additionally, non-pollution environmental aspects like the depletion of natural resource further threaten the performance of MFIs. Inputs become scarcer, consequently more expensive and thus decrease their clients' capacity to pay back loans. Destroying the natural habitat of their area can also put the microentrepreneurs in danger of landslides or floods, possibly resulting in serious problems for the MFI's bottom line. (Hall and Lal 2006: 4-5)

The list is not complete, but the reasons presented indicate the relevance of considering environmental issues for financial institutions. The reasons are not based on moral considerations but directly target the profit concern of the institutions. As the case of BNI's considerations of PROPER ratings proves, these are good arguments to expect the appreciation from FIs once the government puts effort in supporting the introduction of environmental risk assessment methods for FIs. But even moral consideration may move FIs towards including environmental risk assessments in their processes. Moral reasoning[19] led FIs in Indonesia to create Syariah banks. By seeing the impact of moral based on religious concerns, in a interview with a Bank Syariah Mandiri manager we asked about environmental values in Islam and if these influence processes of the bank. On the one hand, the manager was enthusiastic about giving us quotations from the Koran, which were emphasizing the value of environmental aspects. On the other hand, environmental considerations have not been included in loan assessments or other processes of the bank. Nevertheless, the influence

[19] Depending on the specific definitions one may argue that it is still a profit-maximizing decision by the bank, only considering the moral of their clients.

of moral aspects can be strong and should be considered in approaching the FIs.

A last important driving force, which puts FIs into position for playing a major role in pollution reduction, is its need for additional portfolio funds. Especially MFIs often depend on foreign donor funding. International donors increasingly include environmental criteria into their lending conditions (Hall and Lal 2006: 6). However, additional portfolio funds are not relevant for MFIs only, but FIs in general. As the international investment community increasingly pays attention to environmental aspects in their investment decisions, FIs in Indonesia needs to be prepared to meet the requirements, hence access these funds. Even out of plain economic understanding, the Indonesian government should use its possibilities to support this process. Table 8 depicts the strengths and weaknesses of the instrument. As it is a rather new concept no research paper could be accessed. The table hence represents own estimations.

Table 8: Strengths and weaknesses of Greening Financial Institutions

Strengths	Weaknesses
Uses financial interest of bank Supporting profitability tackles main interest of the bank. (good *overall effectiveness*, high *dependability*)	**Risk of ineffective guidelines** The reliability of the guidelines passed to support the greening of financial institutions may be low (low *dependability,* bad *overall effectiveness,* bad low *monitoring and enforcement requirements*)
Uses moral orientation of bank Environmental concerns have moral implications As the creation of Syariah banks has shown, moral consideration can strongly influence bank's processes. (high *dependability*)	**Risk of high adoption costs** The additional cost for the bank to adopt the green processes may result to be too high to in order to be profitable. (bad *overall effectiveness,* low *dependability*)
Spill over effects When bank use environmental criteria for their process, it triggers environmental awareness for society at large, thus sets off other beneficial processes (high *dynamic efficiency*)	**Risk of weak monitoring** The reliability of the monitoring task force may be low (low *dependability,* bad *overall effectiveness,* bad low *monitoring and enforcement requirements*)
General benefit to national economy Attracting funds from international donors and investment community supports overall economic development. This also strengthens the relevance of the instrument over time (good *political feasibility*, very good *long run effects*, good *equity*)	**High information requirements** For theoretical basis and development of greening process tools much information is still required (bad *low information requirements*)
Reliable institutions Banks as an agent for change are expected to be more reliable than governmental institutions (good *overall effectiveness*, high *dependability*)	**Obstacles in implementation** The supporting measures by the government through the BDS market may perform weak due to recent experiences with mainstreaming environmental advisory services (bad *ease of implementation*)

Mode of operation

At the core of the operational mode is the following mechanism. Industries seek capital from financial institutions. Currently FIs lack sufficient funds to respond to the

demand. Hence the FIs are looking for additional funds in order to meet the demand. This situation spurs the cost of funds in general as they are highly demanded, and therefore restricts lending practices to the industries. International donors (rather relevant for MFIs) and the international investment community (relevant for FIs in general) increasingly attach environmental criteria to the use of their funds. FIs are very interested to access funds, hence will try to qualify for them. But there is a cost to qualify, which is defined through the effort to include environmental criteria into the FI's processes. It is crucial that these costs are kept low, low enough to be able to compete against the regular non-green funds of the market. If the costs of adapting to green practices are comparatively higher, FIs will opt to rather pay the high prices for regular funds[20]. This is why the government needs to support the adoptions of green practices of banks, hence reduce the cost for qualifying. So when the industry needs further capital, they will be faced to comply to certain environmental criteria in order to receive capital from the FI.

A detailed concept still needs to be elaborated, but a few central ideas are straightforward. The government can decide on laws of environmental guidelines, which have to be incorporated into FIs processes. Although in general, law enforcement is not very reliable in Indonesia, for the banking sector, due to its structural composition, it can be expected to be more effective. Still more important is the support in terms of advisory for FIs and especially MFIs, as this favorably changes the opportunity costs in between regular funds and green funds. These institutions need the support on how they can meet the requirements environmental criteria impose. By using the opportunities of the Business Development Service (BDS) sector, the government can initiate and process a program, which penetrates the FI sector. International investor will have their own monitoring tools to assure the compliance of FIs once they have been selected for investments. Nevertheless, the government may facilitate the eligibility of Indonesian FIs by setting up a special monitoring task force. Achieving reliable and credible reports on the green performance of the FIs will be an appealing message to the international investment community.

Table 9 shows the success factor for setting up the concept of Greening FIs.

[20] The cost of a regular fund is in large parts represented by its interest rate

Table 9: Success factors for Greening financial institutions

Ministry of Environment and Ministry of Finance	
Provide the theoretical basis	The ministries should build the case for the economic reasoning of including environmental risk assessments to FIs' processes
	Consider moral motivations of FIs
Promote opportunities of green funds	Assure communication of the promising potential of green international funds
Pass green FI guidelines	Pass laws of environmental guidelines, which have to be incorporated into FIs processes
Support adoptions	FIs and especially MFIs need strong support for the integration of environmental criteria to their processes. It is crucial to keep bank's adoption costs low, so "the price" for the green funds stay low.
	It is useful to build on existing structures of the BDS sector. The government should set up advisory services to FIs through BDS providers
Monitoring efforts	A reliable monitoring task force needs to check the compliance of FIs
	If the monitoring task force provides credible results it will be a facilitating tool for attracting international investments

Costs

Greening financial institutions is a relatively low cost endeavor. Providing the theoretical basis and passing green FI guidelines are expected to produce moderate costs. The cost of promoting the opportunities of green funds is hard to estimate. Green international investors may financially support the promotion. The most costly tasks are expected to be the support of FIs in terms of advisory services to facilitate the adoption of environmental criteria into their processes and the establishment and continuous financing of a reliable monitoring task force.

3.3. Educational Instruments

3.3.1. Environmental Advisory Service

Eco-efficiency training, a central part of environmental advisory services, is characterized by reducing pollution through improving the efficiency of an enterprise. Further, the increase in efficiency can improve the profitability of an enterprise, which represents the major concern of the entrepreneur. Considering the MAC-MEP model, eco-efficiency trainings work to reduce pollution by shifting down the MAC line, which means, it reduces the abatement costs.

Not only experiences from other countries, but also the current efforts of ProLH in Indonesia give proof that providing eco-efficiency trainings is a feasible instrument to reduce pollution. Although several industries have already used the trainings, local and national

authorities have not yet succeeded to fully incorporate eco-efficiency trainings into the BDS sector and significantly beyond the scope of ProLH's activities. There are mainly two reasons for that. On the one hand, industries are rather reluctant than enthusiastic about the training, on the other hand, the organizational development of ICPC and P3BD[21] has not yet achieved to provide the necessary institutional basis. In reference to the general criteria of policy instruments, the current condition implies that the "ease of implementation" -criteria does not perform well for providing environmental advisory services in Indonesia. Nevertheless, it is not the theoretical complexity that hampers the implementation but rather seems to be the low commitment of the responsible political actors. It is for the same reason that it has not shown to be a quite "dependable" tool to achieve pollution reduction.

Focusing again on theoretical propositions of assessing the instrument, environmental advisories in terms of eco-efficiency trainings show beneficial characteristics for a number of other criteria. Especially, the "overall effectiveness" is estimated to be high. As the eco-efficiency trainings contribute to profit gains, industries are expected to eventually pay for the advisory. Thus, once the advisory is recognized as a valuable service it does not require any financial support from the government anymore, but sustains itself. Another strength is the "dynamic efficiency". As soon as the trainings are penetrating the BDS market, involving experts and consultants who build up their business existence in this sector, a momentum for improving and expanding the services is established. Moreover, due to the profitability concerns of the service providers (once achieved), the "flexibility" of adapting quickly to new information is strong.

Mode of operation

Leaving the current difficulties of organizational matters aside, in the following some suggestions concerning the demand side of the advisory services will be presented. The aim is to increase the demand for the eco-efficiency trainings. To this point, the eco-efficiency trainings with the local industries restrict their view on efficiency matters. This is understandable as eco-efficiency is the obvious win-win situation in striving for environmental as well as economic goals. However, efficient production is a necessary condition, but not sufficient for economic progress (Kaplinksi and Morries 2001: 6). Thus, an assessment needs to show the major obstacles in enterprise development first. And only if

[21] Main objective of ICPC: „ICPC will facilitate, promote and catalyse the development and implementation of Cleaner Production in Indonesia . The main targets are small and medium enterprises in the industrial sector, agricultural sector and tourism sector. The core service of ICPC is to improve the capacity of CP service providers." (ICPC webpage). P3BD is the respective body on provincial level.

efficiency is perceived as such, eco-efficiency training will be an appropriate response. Tools like the Value Chain-Analysis (VCA), provides a more holistic approach to identify these key obstacles and thus facilitates realizing the opportunities of the businesses more effective. By looking at the productive processes from the provision of specific inputs for a particular product to its primary production, transformation, marketing and distribution, and final consumption, VCA can tell if eco-efficiency training meets the needs of the enterprise in its current situation, or if other trainings (e.g. CEFE) need to be conducted first. This matters not only because it is a waste of resources to direct the training to entrepreneurs who will not benefit as much as others may[22], but it is also a decisive factor in keeping the entrepreneurs committed throughout the different phases of training. By tackling their major concerns, improvements in the entrepreneur's situation can be achieved faster and to a larger extent, hence keep up his motivation or even raise it. It is therefore suggested to consider the assessment capabilities of other trainings like VCA and direct the eco-efficiency trainings subsequent to it. This will increase the efficiency and effectiveness of eco-efficiency trainings. It is also promising to put more effort into more intensive promotion of the environmental services. Strong communication, e.g. through campaigns, should use the efficiency gains as main message.

As outlined in the paragraph 3.2.1.on environmental soft loans the capacity building effects due to eco-efficiency trainings contribute to the effectiveness of ESL as well. Just as the eco-efficiency training has its most effective spot on the way of a well-balanced path of business growth, so does an ESL. The assessment potential of eco-efficiency trainings support a solid judgement for when capital for an investment is the appropriate answer to the needs of an enterprise.

In the table 10 the complementary success factors discussed in this section are summed up

Table 10: Success factors for Environmental Advisory Services

Environmental agency	
Enhancing organizational development of ICPC and P3BD	To achieve mainstreaming advisory services such as eco-efficiency trainings, it is decisive to build up the platform from which it operates. Current organizational problems need to be confronted with strong commitment
Improve effectiveness and efficiency	By positioning the eco-efficiency trainings through improved targeting, more effective results can be achieved. This increases relevance and is expected to attract more industries. Efficiency will also rise due to improved targeting.

[22] As the eco-efficiency trainings have not accomplished to be self-sustaining, yet, the provision is still based on government funding.

Communicate benefit of environmental advisory	Just as any other service, the marketing of the service is essential to penetrate the market. As eco-efficiency increases profitability, it can rely on a strong message
Improve impact by connecting it to ESLs	Eco-efficiency trainings support the entrepreneur in assessing the appropriateness of using a loan in general and an ESL specifically. This contributes to a better performance of ESLs and indirectly also the environmental performance of the enterprise.

Costs

The cost of Environmental Advisory Services are rather moderate. The organizational development of ICPC and P3BD will require further resources. Its continuous operation in the future may also regularly require financing. Although after successful implementation of the eco-efficiency training its operation is expected to work on a self-sustaining basis, other Environmental Advisory Services may demand ongoing funding. The current implementation however will raise costs especially due to socialization efforts (communication of benefits) and minor administrative costs for strategic endeavors.

Conclusion

Experiences from "developed" countries with a long history in the field of abating pollution, together with the scholarly research on different policies setups, offer a number of potential instruments to encourage industries become cleaner. But to assess this potential for the restrictive reality of the Indonesian setting bears its own challenge. Inspired on the one hand by conventional policy instruments and on the other hand by the opportunities of governments, markets and communities in Indonesia, this paper has suggested a number of promising incentives for cleaner production. Some are well-known instruments customized to the Indonesian setting (Environmental Advisory Services, Environmental Soft Loans), others are exploring rather new concepts (FISSETOM, Greening Financial Institutions, Greening Campaigns) and one is somewhere in between (PROPER daerah).

Although most instruments are expected to show a certain contribution by itself, substantial progress will only be reached, if the instruments go hand in hand. First, abatement costs (MAC) reducing instruments, like Environmental Soft Loans and FISSETOM, are very costly to the government budget. Not so much the setup of the instruments, but the continuous flow of subsidies to each industry unit represents high variable cost factors. Achieving pollution reduction exclusively on the cost of the government will cause serious problems in terms of justifying the national budget allocation. Second, if a decent level of penalty costs (MEP) exists, but no efforts are put to lower the abatement cost (MAC), it is not just a lost opportunity for a promising setting, but intense resistance from entrepreneurs and severe

disturbances of their economic performance will threaten the implementation of environmental policies and programs as well as their overall political feasibility. The reason for the obstructive behavior of the entrepreneurs are the high total costs resulting from high penalty as well as abatement costs, which they have to face. It is essential for political feasibility that governments and industries share the costs for reducing pollution.

This decisive factor of moving parallel in efforts of increasing the MEP and decreasing the MAC has also been pointed out in the success factors discussed for each instrument in the main part of this paper. There the interconnectedness and interdependence of the tools becomes obvious.

On the way to cleaner production, Indonesia is currently closer to the situation of a low level of penalty cost. This becomes clear not only from the indications of section 2 on the Indonesian setting in this paper, but also through our experience of a rather reluctant appreciation by the industries of pollution abating measures such as eco-efficiency trainings. This implies the relevance of the tools using the incentive mechanisms of increasing the MEP line: Greening Financial Institutions, PROPER daerah and Greening Campaigns.

It is now the Indonesian governmental institutions, which need to assess the practicability of the concepts. Addressing the shortcomings to continually improve the concepts and eventually introduce the new measures, which encourage industries to produce cleaner and thus contribute their part to improve the lives of the people in Indonesia.

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The Jakarta Post 04.07.2007, p. 9.

Interviews

Informant	Date	Location
Bank Mandiri	28/01/08	Semarang
BPR Ceper	28/02/08	Ceper, Klaten
Bank Syariah Mandiri	03/03/08	Central Java
Industry No.T1	08/03/08	Tegal
Industry No. P1, P2	08/03/08	Pekalongan
Industry No. P3, P4, P5	09/03/08	Pekalongan
Industry No. K1	27/03/08	Semarang
Industry No. K2	31/03/08	Semarang
Industry No. L1	01/04/08	Semarang
Industry No. L2	02/04/08	Semarang
Industry No. K3, L3	03/04/08	Semarang
Industry No. L4	04/04/08	Semarang
Industry No. L5	07/04/08	Semarang
Industry No. K4	10/04/08	Semarang
Industry No. K5	15/04/08	Semarang
Industry No. T2, T3, T4, T5	26/04/08	Tegal