

TOWS

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1 Introduction

The transport managers and authorities face to the various problems which need to solve. There are various methods and approaches that determine the level and the way of problem analysing. For this purpose, the main objective of this chapter is focus on the specific method TOWS which comes from the more common SWOT method. This chapter will explain the difference from SWOT, how to use it for strategic planning and also implemented it on the particular case studies.

In the economics and company management or problem solving are using the various analytical methods which aimed to the good analysis of current status and possibilities for solving the problem. One of the most used methods is a SWOT analysis. It is a tool that identifies the strengths, weaknesses, opportunities and threats of an organization or areas need to solve. There is a plenty of application of SWOT analysis in various areas ((Damian, 2014); (Pai, September 2013); (Dana, 202)). Specifically, SWOT is a basic, straightforward model that assesses what an organization or problem can and cannot do as well as its potential opportunities and threats. The method of SWOT analysis is to take the information from an environmental analysis and separate it into internal (strengths and weaknesses) and external issues (opportunities and threats). Once this is completed, SWOT analysis determines what may assist the firm in accomplishing its objectives, and what obstacles must be overcome or minimized to achieve desired results. The SWOT analysis has a various application and also modification and variants. One of the modification or variant is TOWS. As we can see the basic change lays in different arrangements of the words Strengths, Weaknesses, Opportunities and Threats.

As the common SWOT analysis the focus is on the analysing of the external and internal environment. The **external environment** is represented by threats and opportunities, and the **internal environment** is represented by weaknesses and strengths. At a practical level, the only difference between TOWS and SWOT is that TOWS emphasizes the external environment whilst SWOT emphasizes the internal environment. In both cases, this analysis results in a SWOT (or TOWS) Matrix (Fig.1) like the one shown below:

Figure 8: The layout of SWOT matrix.

Strengths	Weaknesses
Opportunities	Threats

So we can take a look at how you can extend your use of SWOT and TOWS to think in detail about the strategic options open to you in the problem solving. While this approach can be used

just as well with SWOT as TOWS, it's most often associated with TOWS. Many organizations utilize a SWOT analysis to identify organizational strengths and weaknesses. SWOT analyses can be interesting, but what should you do with the resulting information? This is where the **TOWS matrix** becomes a useful tool. It is a simple but effective way to brainstorm specific strategies to address the results of your initial SWOT investigation. (www.mindtools.com, 2013)

Identification of Strategic Options

SWOT or TOWS analysis helps you get a better understanding of the strategic choices that you face. (Remember that "strategy" is the way of determining how you'll "win" in business and life.) It helps you ask, and answer, the following questions:

- How do you make the most of your strengths?
- How do you circumvent your weaknesses?
- How do you capitalize on your opportunities?
- How do you manage your threats?

A next step of analysis, usually associated with the externally-focused TOWS Matrix, helps you think about the options that you could pursue. To do this you match external opportunities and threats with your internal strengths and weaknesses, as illustrated in the matrix below:

Figure 9: The TOWS Strategic alternative matrix

	External Opportunities (O)	External (T) Threats
	1. 2. 3. 4.	1. 2. 3. 4.
Internal Strengths (S)	SO "Maxi-Maxi" Strategy Strategies that use strengths to maximize opportunities.	ST "Maxi-Mini" Strategy Strategies that use strengths to minimize threats.
1. 2. 3. 4.		

Internal Weaknesses (W) 1. 2. 3. 4.	WO <i>"Mini-Maxi" Strategy</i> Strategies that minimize weaknesses by taking advantage of opportunities.	WT <i>"Mini-Mini" Strategy</i> Strategies that minimize weaknesses and avoid threats.
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(Wehrich H., 1982)

This helps you identify strategic alternatives that address the following additional questions:

- Strengths and Opportunities (SO) – How can you use your strengths to take advantage of the opportunities?
- Strengths and Threats (ST) – How can you take advantage of your strengths to avoid real and potential threats?
- Weaknesses and Opportunities (WO) – How can you use your opportunities to overcome the weaknesses you are experiencing?
- Weaknesses and Threats (WT) – How can you minimize your weaknesses and avoid threats?
- Strengths and Opportunities (SO) – How can you use your strengths to take advantage of these opportunities?
- Strengths and Threats (ST) – How can you take advantage of your strengths to avoid real and potential threats?
- Weaknesses and Opportunities (WO) – How can you use your opportunities to overcome the weaknesses you are experiencing?
- Weaknesses and Threats (WT) – How can you minimize your weaknesses and avoid threats? Note:
- The WT quadrant – weaknesses and threats – is concerned with defensive strategies. Put these into place to protect yourself from loss, however don't rely on them to create success.
- The options you identify are your strategic alternatives, and these can be listed in the appropriate quadrant of the TOWS worksheet.

When you have many factors to consider, it may be helpful to construct a matrix to match individual strengths and weaknesses to the individual opportunities and threats you've identified. To do this, you can construct a matrix such as the one below (Fig.3) for each quadrant (SO, ST, WO, and WT).

Figure 10: The example of SO matrix

SO Matrix	S1	S2	S3	S4
O1				
O2				
O3				
O4				

(www.mindtools.com, 2013)

This helps you analyse in more depth options that hold the greatest promise. Note any new alternatives you identify on the TOWS Strategic Alternatives worksheet.

Step 4: Evaluate the options you've generated, and identify the ones that give the greatest benefit, and that best achieve the mission and vision of your organization. Add these to the other strategic options that you're considering.

The TOWS Matrix is a relatively simple tool for generating strategic options. By using it, you can look intelligently at how you can best take advantage of the opportunities open to you, at the same time that you minimize the impact of weaknesses and protect yourself against threats.

Used after detailed analysis of your threats, opportunities, strength and weaknesses, it helps you consider how to use the external environment to your strategic advantage, and so identify some of the strategic options available to you.

2 Difference from SWOT

You've probably noticed that TOWS is simply SWOT spelled backwards. For the TOWS matrix, simply create a chart where your internal pieces (Strengths and Weaknesses) intersect with the external aspects (Opportunities and Threats). The one of the main difference from SWOT is the opportunity to analyse the multiple strategies within the comparison of Strengths-Opportunities, Strengths – Threats, Weaknesses - Opportunities, Weaknesses – Threats. The Table 1 below shows an example of how your table should look.

Table 1: TOWS matrix table alternatives

	Opportunities	Threats
	<i>Opportunity 1</i>	<i>Threat 1</i>
	<i>Opportunity 2</i>	<i>Threat 2</i>
Strengths	S-O Strategies	S-T Strategies
<i>Strength 1</i>	<i>S-O Strategy 1</i>	<i>S-T Strategy 1</i>
<i>Strength 2</i>	<i>S-O Strategy 2</i>	<i>S-T Strategy 2</i>
Weaknesses	W-O Strategies	W-T Strategies
<i>Weakness 1</i>	<i>W-O Strategy 1</i>	<i>W-T Strategy 1</i>
<i>Weakness 2</i>	<i>W-O Strategy 2</i>	<i>W-T Strategy 2</i>
<i>Weakness 3</i>	<i>W-O Strategy 3</i>	<i>W-T Strategy 3</i>

(www.mindtools.com, 2013)

Now that your matrix has been created, it's time to come up with some strategies. The goal is to come up with many ideas for each box. Since you'll have lots of strengths, opportunities, etc. listed, there's plenty of fodder to come up with multiple solutions. The explanation of particular areas is described below.

SO (Strengths-Opportunities) - Use internal strengths to capitalize on external opportunities. For example, if you have in your company a person who is able to manage the environmental issue (i.e. minimize the negative impact on the environment) and there are the opportunities for market expansion, then a strategy may be to devote more focus to this area.

WO (Weaknesses-Opportunities) - Improve internal weaknesses by using external opportunities. If we are using the first example, our company hasn't had success in area of market expansion. Even we thought that our staff is suitable, the results showed the opposite. That's a weakness, but are there opportunities to gain access to market expansion? Yes, there are various solutions. The company could hire an expert or consultant. That means that this process can be outsourced. Or the company can focus on the better and updated training in order to have own in-house expert.

ST (Strengths-Threats) - Use internal strengths to avoid external threats. Suppose there is a threat of funding decreasing dramatically in company service area. What are your organization's strengths that can help? Do we focus on the productivity, efficiency or market diversion? Each company advantage can help in order to minimize to potential threats.

WT (Weaknesses-Threats) - This is definitely the most defensive position on the matrix. The strategies created here will want to avoid threats and minimize weaknesses. It is most often used when an organization is in a bad position. For example, the market share loosing and lower income of finance. In this case it might make sense to focus on the company restart or on the re-evaluation of products, ways, technologies or new markets.

As you can see, the TOWS matrix is a fairly simple tool to use. The reason so many business strategists use it isn't based on its academic merits but rather that it gets conversations started. The real secret to this approach is the fact that it gets everyone on the same page and focusing on the same issues.

The TOWS Matrix: A Conceptual Model

The process of strategy formulation, shown before in Figure 1, is now surrounding the TOWS Matrix in Figure 2. Preparation of the enterprise profile, Step 1, deals with some basic questions pertaining to the internal and external environments. Steps 2 and 3, on the other hand, concern primarily the present and future situation in respect to the external environment. Step 4, the audit of strengths and weaknesses, focuses on the internal

resources of the enterprise. Steps 5 and 6 are the activities necessary to develop strategies, tactics and more specific actions in order to achieve the enterprise's purpose and overall objectives. During this process attention must be given to consistency of these decisions with the other steps in the strategy formulation process. Finally, since an organization operates in a dynamic environment, contingency plans must be prepared (Step 7).

There are different ways of analysing the situation. One is to begin with the identification of important problems. A second approach is to start with determining the purpose and objectives of the firm. A third way is to focus on opportunities. The question may be raised whether one should start with the analysis of the external environment or with the firm's internal resources. There is no single answer. Indeed, one may deal concurrently with the two sets of factors: the external and the internal environment. It is important, therefore, to remember that the process followed here is just one of several options.

Time Dimension and the TOWS Matrix

So far, the factors displayed in the TOWS Matrix pertain to analysis at a particular point in time. External and internal environments are dynamic; some factors change over time while others change very little. Because of the dynamics in the environment, the strategy designer must prepare several TOWS Matrixes at different points in time, as shown in Figure 3. Thus, one may start with a TOWS analysis of the past, continue with an analysis of the present, and, perhaps most important, focus on different time periods in the future.

Complexity of Interactions of Situational Factors

The conceptual model provides a good framework for identifying relationships, but it can become a complex process when many factors are being identified. The matrix, shown in Figure 5, is an example of one approach to identify combinations of relationships which, in turn, may become the basis for strategic choices. (See Figure 5)

In Figure 4, a '+' indicates a match between the strengths of the company and external opportunities, while an '0' indicates a weak or non-existent relationship. Analysis of Figure 4 indicates that Strength No. 1 can be matched with several opportunities. Similarly, many strengths can be utilized to exploit Opportunity No 7. Although this figure shows only the

relationship between strengths and opportunities, similar tables can be used for analysing the other three strategy boxes (WO, ST, WT) shown in Figure 2.

A word of caution is in order here. One cannot simply add up the number of pluses (although especially strong relationships could be indicated by two pluses such as '+ + ') in each row and in each column to determine the best match between several strengths and opportunities. Clearly, different relationships may have different weights in terms of their potential, so each should be carefully evaluated. Still, it is suggested that this matrix is a relatively simple way of recognizing promising strategies that use the company's strengths to take advantage of opportunities in the external environment.

Figure 11: Interaction matrix

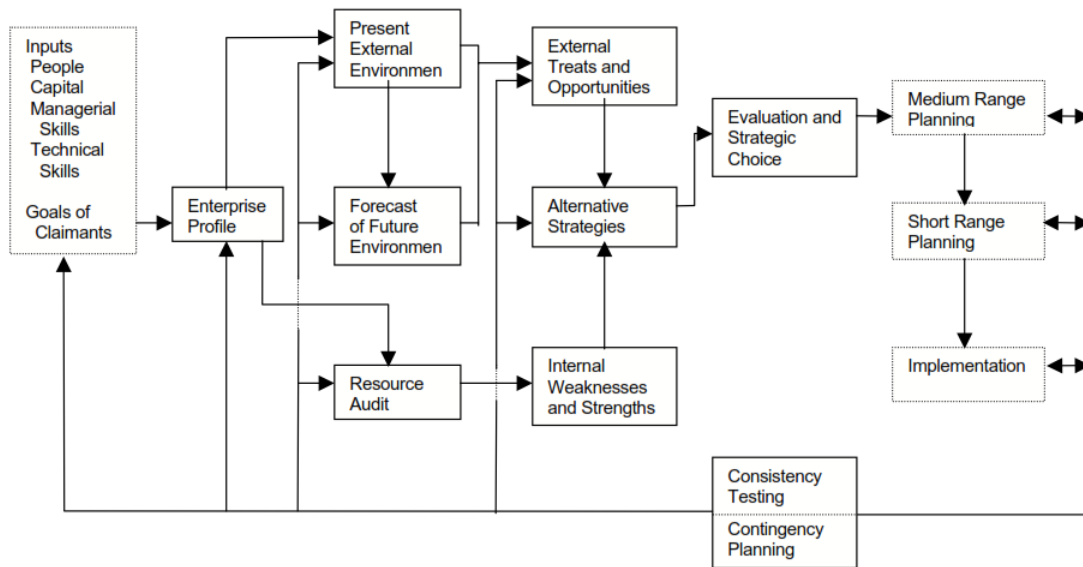
		Strength									
		1	2	3	4	5	6	7	8	9	10
Opportunity	1	+	0	+	0	0	+	+	0	0	0
	2	+	0	0	+	0	0	0	+	0	0
	3	0	0	0	+	0	0	0	0	0	+
	4	+	+	+	0	+	+	0	+	+	+
	5	+	0	+	0	0	0	+	0	0	0
	6	+	0	0	0	+	0	0	0	+	+
	7	+	+	0	+	+	0	+	+	+	+
	8	0	0	0	0	0	+	0	0	+	0
	9	+	0	0	+	0	0	0	+	0	0
	10	+	+	0	0	+	0	0	0	0	0

(Wehrich H., 1982)

3 Application on strategic planning

Today most company management deals with strategic planning, although the level of strategic planning varies. The term 'strategy' refer to the systematic planning which is focused on the purpose, mission, goals, objectives, policies and plans. Also for cities or region have high impact the strategic planed especially in area of land – use or transport planning (Terrados. J, 2007). Strategic planning is currently an extended tool for regional development and territorial structuring. Cities, regions and provinces have carried out their strategic plans on the basis of participation processes, which have driven the later development of their territories. The strategic planning process is very good described in the Figure 5.

Figure 12: The strategic planning process



(Wehrich H., 1982)

Each company with defined the strategic goals can use a various strategy. These strategies are aiming to achieve the stated goals, but in reality this process is not very simple. There are many factors that can have influence on the achieving the goals. For example, the company goal was stated that h n horizon 10 years the company wants to have the 25% share of market regarding their product. But the company goals were stated in the time when the number of competitors was not so high, the state of art of technology was different from the current status, the environmental policies were a little bit soft. For each of these changes the company must find to strategy in order to overcome to potential problems resulting with the market losing or expansion. Also the strategic planning approach is possible to apply in the development of the new product or service.

4 Inputs for Strategic Planning

Strategic planning, to be effective, must carefully consider the inputs into the system. As we said before they include for instance the staff, people, capital, state of art of technology, policy limitation, management and technical knowledge and skills, environment regulation, etc. Unfortunately, many of the goals of these claimants are incongruent with each other and it is the manager's task to integrate these divergent needs and goals.

Employees, for example, want higher pay, more benefits and job security. Consumers demand safe and reliable products at a reasonable price. Technology state of art varies within the time because it is still in progress and newer. Suppliers want assurance that their products are purchased. Stockholders want not only a high return on their investment but also security of their money. Similarly, the community demands that enterprises be 'good citizens', providing jobs and emit a minimum of pollutants. In the area of environment there are various policies around the world, the different norm regarding the environment have the companies within in

EU, different in Asia. That means if the company target market is in the different area, the company has to meet the requirement stated by foreign authority in the environmental area.

The Enterprise Profile

The way an enterprise has operated in the past is usually a starting point to determine where it will go and where it should go. In other words, top executives wrestle with such fundamental questions as:

- What is our business
- Who are our customers?
- What do our customers want?
- What should our business be?

These and similar questions should provide answers about the basic nature of the company, its products and services, geographic domain, its competitive position and its top management orientation and values. These topics demand elaboration.

Geographic Orientation

A company must also answer questions such as:

- 'Where are our customers?'
- 'Where are those who should be our customers, but are not at present?'

Companies need to develop a profile of their geographic market. While some firms may restrict themselves to the eastern part of the European union, United States or Russia, others view the whole country as their region of operations. Many large companies, of course, conduct their business on different continents.

Competitive Situation

Business firms usually do not have an exclusive market; instead, they compete with other firms. But current market share is not necessarily a sufficient indicator of a firm's long-range potential. One must also consider other factors and competitive items such as price, quality, cost, services, product innovation, distribution systems, facilities and locations. For example, in the area of environmental issue there are a plenty of restriction and limitation for particular area or country which should be taking into account. Some of the companies could already meet the requirements and it will allow to access to the market, some of company not, so each company aiming to participate in that market must try to meet such kind of requirements. The assessment of the competitive situation involves several steps. First, key success factors must be identified. Then the relative importance of these key success factors needs to be estimated. Next, the firm's competitive position in respect to these key success factors must be evaluated and ranked. Thus, only a careful analysis of the current competitive position provides an indication of the company's future growth and profits.

The competitive analysis, especially for large firms, is done for individual business units, product lines or even specific products. Moreover, the competitive analysis focus is not only on the present situation, but also looks into the more distant future. This analysis becomes intricate for firms that compete in the national and international markets. An enterprise profile is shaped by people, especially executive management.

They set the organizational climate, they influence the atmosphere in the organization and they determine the direction of the company. There is the basic rule if the management accept the bad solutions this solution has the influence on the whole company with adequate consequences. Another example of the influence of values may be management's commitment to socially responsible actions, believing that these activities will benefit the enterprise in the long run.

5 The External and Internal Environment

As it was described the TOWS matrix put emphasis on the external environment. In the analysis of the external environment, many diverse factors need to be considered. Today, the threats certainly would include the problems of inflation, energy, technological change and government actions. The diverse factors—which can be either threats or opportunities—can be grouped into the following categories: economic, social and political factors, products and technology, demographic factors, markets and competition, environmental factors, etc.

External environment: Threats and Opportunities

Economic Factors

The general state of the economy certainly affects strategy formulation. Social and Political Factors. Social developments also influence the business strategy. For instance, consumerism and consumer protection movements require the firm's attention to product safety and truth in packaging.

Environmental regulation and policy

This is factor which is changed over the time the current restriction is different from regulation in the path.

Products and Technology

Products need to be adjusted to technological changes. For example, the astonishing success of the Volkswagen Beetle in the 1960s diminished in the 1970s. Also the brand Apple and its success were based mainly on the innovation concepts.

Demographic Factors

Demographic changes significantly affect business. We can see the difference for example in the area of health service, etc. Markets and Competition. In the United States, coping with competition in the marketplace is a corporate way of life. In comparison the EU has the free

market within the union, but for access the border of EU it is possible meet some requirements. The following questions and the answers to them are crucial for formulating a strategy:

- Who are our competitors?
- How does our company compare with the competition?
- What are the strengths and weaknesses of our competitors?
- What is the state of art the technology we are using?
- What are their strategies?
- How do we best compete?

Other Factors

There are, of course, many other factors that might be particularly important to a specific firm. The availability of raw materials, suppliers and the transportation system, are a few examples. The ever-changing environment demands continuous scanning for opportunities and threats. A company that discovers customer needs and provides the products and services demanded, certainly has a better chance for success than an enterprise that ignores such changes.

The Internal Environment: Weaknesses and Strengths

The demands of the external environment on the organization must be matched with the resources of the firm. Internal strengths and weaknesses vary greatly for different enterprises; they may, however, conveniently be categorized into (1) management and organization, (2) operations, (3) finance and (4) other factors important for a particular organization.

Management and Organization

This category includes not only managerial talent but also the labour force as a whole. It also encompasses labour relations; personnel policies; the appraisal, selection, training and development of employees; and the reward system. The planning and control system as well as the organization structure and climate are equally important for the success of the organization.

Operations

Operations must be carefully analysed in terms of research and development capabilities, and the adequacy and productivity of the manufacturing facilities available to meet the expected growth and other objectives of the firm. Similarly, marketing must be assessed in terms of product distribution channels, brand name protection, competitive pricing, appropriate customer identification, service, and company image.

Finance

A careful evaluation of the company's strengths and weaknesses also must be made in the areas of capital structure, financing, profitability, the tax situation, financial planning and the accounting system. Many financial ratios are available for making analyses. But financial management not only requires focusing on the past and the present situation; it also demands short- and long-term financial planning congruent with the firm's objectives and strategy.

Other Factors

The focus here is on the obvious factors on which the strengths and weaknesses of the organization must be evaluated. Other factors however such as patents inventions and the firms image may be peculiar to an enterprise or may be prominent during a particular time period.

Strategic Alternatives

The foregoing analysis of environmental opportunities and threats and the company's strengths and weaknesses, encourages the creative process of developing alternatives. As any experienced manager knows, in almost all situations alternative courses of action are available.

One strategy is to specialize or concentrate. Thus, a company may utilize its energy and strengths to pursue a single purpose or it may restrict its efforts to only a few aims. For example, American Motors for many years used its limited resources primarily for the production of small cars, rather than competing directly with General Motors, Ford or Chrysler who had a complete product line ranging from relatively small models to large, luxurious cars. The Korean companies Hyundai, Kia set up the joint strategy for market expansion in central Europe in order to cover the European market. They built the two car plant situated close to each other, one in Slovakia and one on Czech Republic, in order to supply and distribute the car parts effectively.

Other alternative strategies are backward and forward integration. In backward integration a company may acquire suppliers to ensure a steady flow of materials. In forward integration the attempt is to secure outlets for products or services and to reach toward the ultimate user of the product. Another strategy focuses on diversification by moving into new and profitable markets. This may result in greater growth than would be possible without diversification. A company may adopt a 'no change' strategy and decide to do nothing. Instead of innovation or expansion, a firm may continue to follow the tried and proven path, utilizing existing products and services and letting others make possible mistakes in innovation.

A company may also select an international strategy, repeating the approach which was successful in its home country and extending its operations from there to different parts of the world. Companies with global strategies include Heineken, Unilever, Colgate-Palmolive, Singer, Nestle and IBM, to mention a few.

Finally, there is the alternative of engaging in joint ventures, which may take different forms. For example, corporations may join with foreign firms to overcome political and cultural barriers. The strategies discussed above provide an overview of possible approaches. Within these categories, of course, many variations are possible. In reality, enterprises often pursue a combination of these strategies. What has become clear is that evaluating and choosing a strategy, the next topic of discussion, is not a simple task.

6 Application on transport issue: case studies

Hazard shipping of chemical liquids by tankers

As the show case we will use the study (Arslan, 2008) dealing with safer carriage of bulk liquid chemicals in tankers. There are several hazard analysing methods available such as hazard and operability (HAZOP) analysis, What/if checklists, failure modes and effect analysis (FMEA), fault

tree analysis (FTA), event tree analysis (ETA). The brief description and limitations of these methods are listed below.

SWOT and TOWS approach

When used in combination with an analytic hierarchy process (AHP), however, the SWOT approach can provide a quantitative measure of the importance of each factor in decision-making. AHP enables decision makers to assign a relative priority to each factor through pair wise comparison. The main difference between SWOT analysis and other hazard analysis methods seems that it can easily be used for both organizational issues and safety issues. The power of SWOT analyses reveals itself when constructing strategy for overall safety aspects rather than sole events, faults or incidents by compromising both internal and external factors of processes. Taking into account the TOWS approach we can consider the following:

Probable Opportunities for carriage of chemical liquids by tankers:

- Improvements in maritime education, training, especially simulator-based tanker training: User-friendly tanker simulators have been used in maritime education and training institutions in the last decade.
- High-quality measurement devices and safety equipment: Measurement devices and safety equipment on tankers are better and more user-friendly than before. The correct use of safety equipment reduces on-board incidents. The installation of remote-controlled, fully automated loading/discharging equipment and measuring systems on chemical tankers has reduced the workload of officers and ratings in the deck and cargo areas.
- Shortening of crew's contracts: The shortening of crew's contracts, especially in the tanker fleet, has increased the rest time/leave period.
- Ergonomic design of new ships.
- Internal and external inspections: The compliance with rules and procedures are inspected frequently by port officers and flag state officers. These inspections and internal audits have produced an improvement in the safety aspect of navigation. As a further desirable result of these inspections, the frequency of detention for failure to adhere to the relevant rules and regulations is lower for tankers than for other types of ship.
- Improvements in technology: New technology for improving navigation, ship construction and loading/discharging systems reduce the crew's workload by providing tools for efficient sea and terminal operations.

Now we want create SO matrix, see table 2 (as mentioned in chapter 1) with various strategies that will be focusing on *Improvements in maritime education, training issue*.

Table 2: SO matrix for Improvements in maritime education and training issue

SO matrix	S1	S2
O1	Company has own simulator centre	Changing of training on the regularly base
O2	Company participate with simulator developers	Update knowledge transfer

As we can see in the Table 2, the company can apply two strategies which are based on the various opportunities regarding the improvement of education.

Probable Threats for carriage of chemical liquids by tankers:

- Terror threats.
- Worldwide officer shortage.
- Intensive ship traffic: There are around 48,500 ships in service at sea, and the number is increasing by 1%/annum. Increasing both the number of ships and the number of newly built faster ships increases the risk of collision.
- Trend of decreasing number of crew members on board.
- Extra workloads for navigation officers.
- Port stay days and continual inspections on restricted port days.
- Construction of new ports and terminals far away from city centres.
- Bad weather.
- Currents, tides, and darkness
- The increasing of the shipping cost resulting from the securing the loads

As we can see the probable Opportunities and Threats can lead to the various strategies resulting from the particular measure.

Probable strengths:

- Lectures and training provided by Maritime Training and Education (MET) Institutions about tanker and chemical tanker operations: Training in the operation of tankers in general and chemical tankers in particular is widely available. The training includes information about the properties of chemical cargoes, hazards of transporting chemicals, precautions that need to be taken, rules and regulations about chemical transportation, ship design and cargo containment, cargo-handling systems, safety, pollution prevention, ballast operations, tank cleaning operations, ship/shore interface and emergency operations.
- High standards for chemical tankers: The carriage of chemicals and the requirements concerning ship arrangements, survival capability, cargo-handling systems, tank materials, tanks and venting systems, pumps and unloading systems, heating, stripping, inert conditions, and tank washing systems are determined by International Maritime

Organization rules (IMO) in the SOLAS convention, the STCW convention and other international codes and resolutions.

- Equipping chemical tankers with high-technology loading/discharging systems and automated systems: New technologies that are used in chemical tankers such as automatic control of loading/discharging systems reduce the number of officers and the workloads of ratings have been developed to lighten the port operation workload and reduce human error.
- Increasing team awareness and contribution: Team culture has become more important recently, and all officers and ratings in charge of chemical operations share their knowledge.
- Increasing safety culture on board: Safety on board has become a critical issue in the last few decades. In light of a safety culture philosophy, changes of shipboard operations depend directly on the actions of the ship management company and resources that are supplied to the vessel.
- Continuous internal/external inspections: Chemical tankers are subject to inspection by port and flag state controls, and by the major oil companies, and this level of accountability helps to maintain high levels of safety.

Probable weaknesses:

- Fire hazards, health hazards, pollution hazards, reactivity hazards, toxicity hazards, corrosive hazards, and explosive hazards.
- Commercial pressures imposed by ship management companies: There have been commercial pressures on ship masters, such as cleaning cargo tanks faster, arriving at the next port faster, as well as pressure to use the shortest rather than the safest sea passages.
- Fatigue: The workloads of employees on chemical tankers are greater than those on other types of ship. Attention failure, memory failure and human error are related directly to fatigue. Fatigue has two main aspects: physical and psychological. Physical fatigue is related to working hours, rest times and the quality of rest times on board, and psychological fatigue is related to welfare aspect.
- New technology needs new skills and education: Every new technology that has been introduced to increase the safety of port operations has required the acquisition of new skills via appropriate training.
- New procedures bring more paperwork.
- Low quality of crew resources: According to a recent manpower survey, crew resources are changing from traditional maritime countries to Eastern Europe and the Far East Countries.
- Low-level satisfaction of crew with their occupation and their comfort on board.

7 Case study: EIA practice in India

The second case study focus on the India Environmental Impact Assessment (EIA) has been formally introduced in 1994, presented by study (Paliwal, 2006). It relied on the institutional framework that has a strong supporting legislative, administrative and procedural set-up. Both central and state authorities together are sharing the responsibility of its development and

management. A Strength, Weakness, Opportunity and Threat (SWOT) analysis taken up in this article has suggested that there are several issues that need to be readdressed. It highlights several constraints, ranging from improper screening and scoping guidelines to ineffective monitoring and post project evaluation. The opportunities are realised as increasing public awareness, initiatives of environmental groups and business community and forward thinking to integrate environmental consideration into plans and policies. Poor governance, rapid economic reforms, and favours to small-scale units are some of the foreseen threats to the system. This article concludes with some suggestions to improve EIA process in India.

For application of TOWS matrix, we can consider the following:

Opportunities

With more education and awareness, people are becoming environment conscious. Change in income levels, demand for personal comfort and socially responsible behaviour of industrial units would open up opportunities to improve the implementation of laws and policies.

Increasing public awareness

Increasing awareness and growing public pressure are demanding action to stop further environmental degradation. The demand for better environment is forcing a policy shift. In response to this stress, government has been setting emission standards for various pollutants, whereas industries in turn have focused on achieving emission goals. People are challenging the decisions of government where industrial growth is favoured over environmental protection. Several public interest litigations had been filled on these issues. Taj Trapezium Zone (TTZ), shifting of industries from Delhi and Kanpur tanneries cases are some of the examples where public intervened and judiciary reckoned that industries were liable to the environmental damages (CPCB, Public interest litigation. Parivesh newsletter, 2002). Local people are now emerging as a new range of environmental 'stakeholders'.

Growing consciousness through Non Governmental Organisations (NGOs)

For the past few decades, environmental groups are taking initiatives to develop activities in raising public awareness and public involvement in decision-making process. They play a multi-dimensional role, which includes capacity building of a civil society with emphasis on the principles of sustainable development and creating a forum to facilitate the implementation of regulations involving localities. Their campaigns empower communities by furnishing information on environmental laws, policies and effects of environmental damages. These NGOs are catalysing a participatory movement involving women and youth, school and university students, towards environmental protection. The aim of the environmental movement is to improve information disclosure and engaging various stakeholders in the process of managing environmental goods.

Self-regulation in industrial sector

The concept of Corporate Social Responsibility (CSR) is emerging fast, which emphasise on the business practices based on ethical values and respect for employees, communities and the environment. Corporate have started realizing that initiatives towards environmental conservation would characterize an effective means of advertising their virtue in the eyes of society. Consumers are now demanding for more environment friendly products, which clearly indicate that companies have their interest in going green. Corporate have also agreed that "clean is cheaper", on saving resources and throwing less waste to environment in strict business

sense means adding to their profits. As per an environmental manager of a lead battery-manufacturing unit, export opportunities paved way to adopt better housekeeping and environmental standards (personal communication). Opening up of markets for multinationals in India is providing opportunities as global companies may facilitate the diffusion of cleaner technologies conforming high global standards.

Integration of EIA with plans, policies and programs

To streamline EIAs of individual development projects, the Indian system should also look at the problem from a higher platform and Strategic Environmental Assessment (SEA) may be seen as possible solution to it. SEA is a tool, which aims to integrate environmental considerations into laws, policies, plans and programmes (Clayton, 1998). SEA addresses cumulative effects and alternatives that are not addressed at project level as well as refines the scope of assessment at lower tiers (Sadler & Verheem, 1996). (Nooteboom, 2004) advocated SEA as it enhances the transparency of the whole planning and assessment process. Despite several inherent advantages, SEA can never replace projects level EIA but it strongly reduces the effort and resources (i.e., time and cost) involved in project EIAs (Thérivel & Partidário, 1996).

Threats

Several advantages and opportunities have been realized in EIA system, yet certain threats exist, which are mentioned below.

Poor governance and corruption

Good governance implies decision-making in accordance with law and undertaken in a transparent, accountable and participatory manner (UNDP, 1997) and (Kakonge, 1998)). This implies that political commitment at all the levels is crucial for any reform and it holds true for environmental reforms or EIA system. Excessive bureaucratic requirements, inefficient and complex administrative procedures may pose hurdles to these reforms. Public disclosure of information and accountability are lacking. All above mentioned factors and governance failure has potential to encourage corruption, which may results in misuse of scarce public resources (UNDP, 1997). Corrupt payoffs, i.e., bribes, may be made to override the legal norms. As on today, corruption has become a critical consideration in India. The ministry must show commitment to safeguard the EIA process so that the same should not creep into the system dealing with environmental regulations.

Effect of economic reforms

China faced serious environmental consequences of the pro-economic growth policies adopted by local governments where their performance was judged by financial benefits (Mao & Hills, 2002). Similarly, in Indian context, state government of Gujarat was in question (IPTEHR., 1999). In a survey CPCB identified 1349 units generating hazardous waste in the five districts of Gujarat, i.e., Valsad, Surat, Bharuch, Vadodara and Ahmedabad (CPCB, Inventories of Hazardous waste generation in five districts (Ahmedabad, Vadodara, Bharuch, Surat and Valsad) of Gujarat., 1996). Industrial units manufacturing dyes and dye-intermediates account for 59.2% of the hazardous wastes generated and are concentrated in the industrial estates of Odhav, Naroda and Vatva in Ahmedabad district, Nandesari in Vadodara, Ankleshwar in Bharuch and Vapi in Valsad district. CPCB also identify Vapi and Ankleshwar as critically polluted areas because of spurt of growth in chemical units generating huge quantum of toxic effluent and hazardous waste (CPCB I, 1994) (CPCB, Inventories of Hazardous waste generation in five districts

(Ahmedabad, Vadodara, Bharuch, Surat and Valsad) of Gujarat., 1996)). Gujarat state had also given permissions to fertilizer plant in Baharuch, copper smelter and chlorine plant in Jhagadia, which were thrown out of Maharashtra state because of environmental considerations (CSE, 1996). Above-mentioned cases suggest that the concepts of heavy industrial growth for economic yields and environmental protection are conflicting in nature. The current era of economic reforms and decentralization of power, emphasize more on economic growth and profit generation, which may create stress on environmental regulations.

Lax regulations for small-scale industries (SSI)

Unplanned, uncontrolled and haphazard growth of small-scale industries has caused serious problems of pollution. The SSI sector accounts for 45% of the industrial production and generates 40% of the total wastewater among different classes of industries (CPCB, Public interest litigation. Parivesh newsletter, 2002). The outflow of wastewater, emissions or solid wastes per unit of production is very high in SSIs because of usage of outdated and inefficient technologies and lack of resources for enforcement and implementation of pollution control programmes (CPCB, Public interest litigation. Parivesh newsletter, 2002). Still these small-scale industries most of the times do not require EC from MoEF. Mere acknowledgement of the application form by the SPCB or State Pollution Control Committees serves the purpose of consent for these units and there is no need to obtain periodic renewal of consent until the time they modify or change their process. These proliferating SSIs are posing environmental risks, which necessitate to considering these units under EIA regime; to formulate a carrying capacity based approach for better environmental management of an area. A step has been taken in this direction as last amendment in EIA notification has been put forth to cover industrial estate where pollution potential is high under purview of EIA notification (MoEF, 1994–2004).

Now we can create the TS matrix regarding to Poor governance and corruption (See Table 3).

Table 3: TS matrix regarding to Poor governance and corruption issue

TS matrix	S1	S2
T1	Corruption can have influence on EIA	The law enforcement is on the low level
T2	Big bureaucracy led to increasing cost	Administrations is not helpful in EIA process

In table 3 we can see the different strategies which resulted from the area of threats and can have negative impact on the process of EIA. That means in administrative issue EIA can meet the requirements but the requirement was met in the way of corruption.

Strengths

Strength identifies resources and capabilities of the EIA system, which may aid to develop the system further. It shows that there are huge possibilities to improve the system but strong legal framework is a positive and supportive feature. The strength of Indian system also lies in existence of regulatory authorities to execute the law all over the country.

Well-defined legal structure

It is very much evident that the constitution of India is deeply committed to environmental protection (Biswas, 1996). A well-defined legal framework exists to safeguard quality of environment. The EPA in particular established EIA as a legal requirement for upcoming development activities. The EPA and various other laws, to which EIA process is linked and draws its meaning, explicitly state penalties and fines along with imprisonment in case of any infraction of the legal provisions. Strong judicial construct and democracy in the country are strong points of the system. Several Public Interest Litigations (PILs) have been raised on the pollution related hazards in different parts of the country. On realizing implications of pollution on the environment and human health, the judiciary has also directed central and state authorities to take initiatives (CPCB, Public interest litigation. Parivesh newsletter, 2002).

Presence of well-knitted regulatory structure

The constitution of India has assigned various bodies with the responsibilities of the defining and implementing the stipulations mentioned in EIA decree, as discussed in Section 2.2. Both central and state authorities are made responsible for its execution, which provide a well-knitted execution system at every end.

Weaknesses

Present EIA practice in India is restricted to project level, which also has several weaknesses. It is perceived merely as a bureaucratic requirement limited to selection of project or pollution control technology ((Lohani, Evans, Ludwig, Evritt, & Carpenter, 1997) and (Rao, 1997)).

Screening and scoping processes are not well defined

The screening process is based on list of 32 projects listed in schedule-I of EIA notification, amount of investment and sensitive zones, as discussed in Section 2.3, not on level of impact, types and complexities of pollutants, size of project or raw material and technology used, etc., as considered in China ((Chen, Warren, & Duan, 1999) and (Wang, Morgan, & Cashmore, 2003)). Screening guidelines in India do not specify if rapid EIA could be conducted (TERI, 2002). Scoping on the other hand is left on project proponents who most of the time are not interested in considering diverse impacts. For instance, in industrial estate of Haldia, most of the industrial projects never tried to estimate the impacts of their effluents on the ground water and nearby flowing river streams. All of them got rid of it by saying that impact of their loadings would be negligible when compared with the quantum of flow in the river Hoogly. Analysis of alternatives is also a weak link in EIA. Most of the time it is restricted to 'with project' and 'without project' scenarios (Worldbank, 1999). Site clearance happens much before environmental clearance process because of which comparative assessment of sites is also not given due consideration.

Insufficient baseline data

Good quality data is a major concern while preparing any EIA report. Lack of sampling networks and ill-defined sampling and analysis procedures also adds to the problem of inconsistency (TERI, 2002). There is no central data bank; therefore, data gathered through different agencies is not available to public. Quality assurance and quality control on existing data is also nil. One of the PCB officials remarked during a meeting with author that there is no dearth of data as almost all major industries are carrying out periodic monitoring to fulfil their administrative requirements but reliability of such data is very low (personal communication).

Inconsistent application of evaluation and predictive tools

Lack of guidelines on the use of available modelling approaches put a doubt on their application to the Indian conditions and on their level of accuracy in prediction. Most of the mathematical models used are not developed for Indian conditions, so validation is necessary each time, thus, accuracy of modelling depends on knowledge and expertise of the analyst. Indian practice still considers impacts of individual activity thereby ignoring cumulative impact assessment. It was observed that prediction techniques employed in most of the EIA reports for the units in Haldia focus on primary impacts, rather than secondary and tertiary impacts. Socio-economic, cultural and ecological assessments were also not given much emphasis.

Improper monitoring and implementation

EMP is mere a statutory requirement i.e., if development of green belt is one of the solutions, EMP mostly lacks details on type of plant species to be planted, area required for plantation and time to accomplish the target. Most of the EIAs do not mention cost of implementation, responsibility and period for EMP implementation. It was observed that regulatory authorities have their own limitations in regards to manpower, technical resources and ever-increasing workloads, to carry out a purposeful monitoring (Lohani, Evans, Ludwig, Evritt, & Carpenter, 1997). Besides weak enforcement is another important factor ((MoEF, 1994–2004); (TERI, 2002)). It has been observed that show because notices were issued to the industries in Haldia, which, were found noncompliant repeatedly. However, strong actions against them were not taken. “We do guide them on these issues and take necessary actions but cannot shut them, as it may have several repercussions”, said one of the PCB officials (personal communication).

Inadequate public participation

Public hearings are conducted to incorporate concerns of locals in decision-making. Unlike USA and Netherlands, where public involvement is must at various stages of EIA i.e., screening, scoping, report preparation and decision-making ((Wood, 1995) and (MHSPE, 2000)), in India public hearing is conducted just before making decisions. Though it is understood that mechanism of public participation prevailing in developed countries may not be feasible in India because of societal and economic reasons. But even one time public interaction is not very apt because of insufficient information on the role of people in the process as well as lack of awareness on environmental matters (Sinclair & Diduck, 2000). Above that, people feel betrayed, as points raised in public hearing are rarely involved in planning and decision-making (as observed in case of one of the units in Haldia).

Poor quality EIA reports and non-accountability of EIA professionals

Project proponents hire professionals to carryout EIA for their projects and thus the role of these experts is very central. There is no process of certification of consultants to maintain quality of EIA report. There are guidelines for preparing EIA report (MoEF, 1994–2004), but most of the reports tend to be a collection and compilation of data ((TERI, 2002) and (Valappil, Devuyt, & Hens, 1994)). Interpretation and analysis of the collected data is subjected to various inadequacies, which place a question mark on the accountability of EIA professionals. As discussed in earlier sections for Haldia, information on various aspects of water had been collected but never done any analysis to realise the impact of various sources on the water quality, biodiversity, etc. In one of the reports even the calculation for maximum ground level concentration of air pollutants was suspected when found inconsistent. Assumptions and limitations of the analysis carried out by consultants were hardly discussed in any of the report.

Lack of coordination and poorly defined decision-making process

Lack of expertise and limited resources with executing authorities result in inferior decision-making. In several cases at Haldia lack of coordination was felt among SPCB and concerned regional office. Though they are dealing with same set of industries both perform their duties in isolation. Lack of coordination between various governmental agencies, decision makers, planners and project proponents not only cause delay in decision-making but also pose hindrance in effective implementation of environmental regulations (MoEF, 1994–2004).

Potential directions of change/improvements

The study proposed the following improvement strategies:

Increase the accountability of the EIA experts

Certification of consultants is deemed necessary so that only licensed agencies should accomplish EIA. Authorship should be specified in the EIA reports with the intention that project developer or consultants should feel responsible and each piece of information could be traced back to its original source (Fearnside, 1994). IA professionals should not only explicitly mention all assumptions and limitations of the analysis but also present their findings in comprehensive and easy to understand format so that decision makers can judge both pros and cons of the upcoming activity.

Manage baseline data properly

One of uncertainties in the EIA prediction is due to lack of reliable and accurate data. Therefore, it is suggested to organize a common database exclusively where all relevant agencies may pool in the data and this data could be made available to the project proponents on request. This data may be charged and money collected from this source may be utilized in upgrading the data bank.

Improve monitoring and implementation

The EMPs should clearly suggest mitigation, monitoring and institutional measures to eliminate, compensate, or reduce impacts to acceptable levels during construction as well as operation phase of an activity. Implementation of EMP must ensure effectiveness of mitigation measures and also detect the need for any corrective action. Continuous monitoring and assessment of the system, public participation and simplified administrative procedures are obligatory to facilitate the adequate implementation. Good environmental monitoring practices not only establish a baseline data of the region but also increase understanding of cause–effect relationship between an activity and environmental changes and checks accuracy of an EIA prediction, thereby increasing knowledge base for better EIA of the future projects.

Focus on SSIs

Concept of industrial estate should be promoted for SSIs. Grouping of these units in an industrial estate should be done considering regional aspects such as carrying capacity, optimal utilization of natural resources, utilization of waste from one unit as resource to another and establishment of common waste treatment plants (Singhal & Kapoor, 2002).

Integrate environmental concerns into plans and policies

There is a need to improve the role of local planning agencies in the EIA process. To incorporate environmental concerns into plans and policies, (Mc Donald & Brown, 1995) have illustrated

certain ways: (i) Local strategic plans—determining the form of future developments that can take place in an area taking cumulative impacts and carrying capacity in account; (ii) Zoning schemes—addressing specific land use patterns, permitted and prohibited in the area, as set out in local plan; (iii) Sub-divisional plans—setting layouts of future settlement pattern while conserving natural areas such as watercourse, riparian habitats, agricultural land, etc.

Capacity building of stakeholders

It is very essential to spot major stakeholders involved in EIA system. While preparing the technical and procedural guidance material needs of all the stakeholders should be considered to indicate the roles and duties of each of them. Effective public involvement in the process brings forth wide range of social, cultural and emotional concerns, to establish terms of reference of scoping, which may be deemed outside the scope of EIA. It would make decision socially acceptable. In addition, it is necessary to sensitise, inform and train stakeholders to make them understand the significance of EIA process. Capacity building of regulatory agencies in terms of staff, technical expertise and monitoring facilities is also recommended. Making inter organization coordination more smooth would facilitate information sharing process. It is also required to develop disciplinary expertise to mainstream the cumulative impact assessment and SEA at plan and policy levels.

These findings from the study show the real application of TOWS method in issue of Environmental Impact Assessment. In addition, there are a plenty of application of TOWS even in company management, technology analysis or efficiency approaches.

References

1. Arslan, O. -D. (2008). SWOT analysis for safer carriage of bulk liquid chemicals in tankers, . Journal of Hazardous Materials, Volume 154, Issues 1–3, Pages 901-913.
2. Biswas, D. (1996). Environmental legislation and enforcement mechanism. Tech Monitor, 13 (1).
3. Clayton, B. -B. (1998). Strategic environmental assessment: a rapidly evolving approach, A directory of impact assessment guidelines. Compiled by Donnelly, Clayton B D, Hughes R (2nd ed.). London: International Institute for Environment and Development.
4. CPCB. (1996). Inventories of Hazardous waste generation in five districts (Ahmedabad, Vadodara, Bharuch, Surat and Valsad) of Gujarat. New Delhi: Hazwams, Central Pollution Control Board.
5. CPCB. (2002). Public interest litigation. Parivesh newsletter. New Delhi: Central Pollution Control Board.
6. CPCB I. (1994). Inventory of large and medium water polluting industries. Vol. II (Gujarat). Probes/58/1993–94, Central Pollution Control Board, New Delhi, India (1994).
7. CSE. (1996). Country's waste: Gujarat's wealth, Down to Earth, vol. 5(5). Centre for Science and Environment, New Delhi, India.
8. Damian, S. M. (2014). SWOT Analysis of the Services Provided by e-government Sites in Brazil. Procedia Computer Science, Volume 33, Pages 130-135.
9. Dana, B. (202). SWOT Analysis to Improve Quality Management Production. Procedia - Social and Behavioural Sciences, Volume 62, Pages 319-324.
10. Fearnside, P. (1994). The Canadian feasibility study of the three gorges dam proposed for China's Yangzi River: a grave embarrassment to the impact assessment profession Impact Assess.

11. Chen, W., Warren, K., & Duan, N. (1999). Incorporating cleaner production analysis into environmental impact assessment in China. *Environ Impact Asses Rev*, 457–476.
12. IPTEHR. (1999). Who bears the cost: industrialisation and toxic pollution in the 'golden corridor' of Gujarat. The Indian People's Tribunal on Environment and Human Rights. <http://www.iptindia.org/pdf/Who%20Bears%20the%20Cost.pdf>.
13. Kakonge, K. (1998). EIA and good governance: issues and lessons from Africa. *Environ Impact Asses Rev*, 289–305.
14. Lohani, B., Evans, J., Ludwig, H., Evritt, R., & Carpenter, R. (1997). Environmental impact assessment for developing countries in Asia (Volume I: Overview). Asian Development Bank, Manila, Philippines.
15. Mao, W., & Hills, P. (2002). Impacts of the economic–political reform on environmental impact assessment implementation in China. *Impact Assess Proj Apprais*, 101–111.
16. Mc Donald, G., & Brown, L. (1995). Going beyond environmental impact assessment: environmental input to planning and design. *Environ Impact Asses Rev*, 483–495.
17. MHSPE. (2000). The regulations on environmental impact assessment in the Netherlands. Ministry of Housing, Spatial Planning and the Environment, The Netherlands, <http://www.eel.nl/countries/pdf/EIA%20NI.pdf>.
18. MoEF. (1994–2004). Annual reports, Ministry of Environment and Forest, . Government of India, New Delhi, India.
19. Nooteboom, S. (2004). Environmental assessments of strategic decisions and project decisions, integrations and benefits. Ministry of Housing, Spatial Planning and the Environment, The Netherlands.
20. Pai, H.-C. C.-C.-M. (September 2013). Ontology-based SWOT analysis method for electronic word-of-mouth, *Knowledge-Based Systems*, Volume 50, Pages 134-150.
21. Paliwal, R. (2006). EIA practice in India and its evaluation using SWOT analysis, *Environmental Impact Assessment Review*, Volume 26, Issue 5, , Pages 492–510.
22. Rao. (1997). Environmental impact assessment state-of-art. *Tech Monitor*.
23. Sadler, B., & Verheem, R. (1996). SEA: status, challenges and future directions. International study of effectiveness of environmental assessment, EIA Commission of the Netherlands Ministry of Housing, Spatial Planning and the Environment, The Netherlands.
24. Sinclair, A., & Diduck, A. (2000). Public involvement in environmental impact assessment: a case study of hydro development in Kullu district, Himachal Pradesh, India, *Impact Assess Proj Apprais*.
25. Singhal, S., & Kapoor, A. (2002). Industrial estate planning and management in India—an integrated approach towards industrial ecology. *Journal of Environment Management*, 19-29.
26. TERI. (2002). TA cluster for environmental management at the state level (component A: promotion and assessment of environmentally sound projects). Asian Development Bank the Energy and Resources Institute, New Delhi.
27. Terrados. J, A. G.-H. (2007). Regional energy Renewable and planning through SWOT analysis and strategic planning tools.: Impact on renewables development, *Sustainable Energy Reviews*, Volume 11, Issue 6, Pages 1275-1287.
28. Théritel, R., & Partidário, R. (1996). The practice of strategic environmental assessment. London: Earthscan.
29. UNDP. (1997). Corruption and good governance. New York: Management Development and Governance Division, Bureau for Policy and Programme Support.
30. Valappil, M., Devuyt, D., & Hens, L. (1994). Evaluation of the environmental impact assessment procedure in India.
31. Wang, Y., Morgan, R., & Cashmore, M. (2003). Environmental impact assessment of projects in the people's republic of China: new law, old problems. *Environ Impact Asses Rev.*, 543–579.

32. Wehrich H. (1982). The TOWS Matrix - A Tool for Situational Analysis. Long range Planning, Volume 15, Issue 2, Pages 54-66.
33. Wood, C. (1995). Environmental impact assessment: a comparative review. Longman, Harlow.
34. Worldbank. (1999). India—review of the effectiveness of EA in World Bank assisted projects (1990–97). <http://www.emcentre.com/>, Environment Sector Management Unit, South Asia Region, Washington, DC: The World Bank;.
35. www.mindtools.com. (6. 12 2013). <http://www.mindtools.com>. Cit. 12 2013. Dostupné na Internetu: <http://www.mindtools.com>: <http://www.mindtools.com>