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Environmental Structure Strategies of City by Approach of Urban Sustainable Development (Case Study: Kermanshah City)

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ABSTRACT

In contemporary capitalism system, city is regarded as suitable and urbanization place as good environmental practices. Seepage and influence of capitalism culture in the third world such as Iran leads to heterogeneous city focus and city population's quick growth in effect of spreading agropolis. In fact, this trend leads to population transmission of mainly poor people to cities. Specific and clear example of this contrast sort can be observed in old texture as well as rural textures of today's cities such as Kermanshah city. On the one hand, city was immigrants' surrounding cities and villages because of its specific place i.e settlement at communicative highway path of country's East as well as its extraordinary environmental talents and having factories and industrial regions and on the other hand, it was attacked by immigrants' spreading of surrounding cities and villages because of quick urbanization trend of country level, change of society consumption pattern and exogenetic development of country that intelligible consequence of this attack is to make city crisis and physical urban development and as opposed, destruction and ruining gardens and agriculture lands at city corner. Today ,Kermanshah involves many ecological issues such as existence of usage and annoying and inconsistent activities in the city, consumedly development of industries at Kermanshah, lack of urban sewage disposal system, existence of massive center of garbage landfilling in south of city and….In this article, environmental structure situation of Kermanshah city has been assessed by use of SWOT technique by noticing at project findings, strengths and obtained opportunities have not been used for overcoming weaknesses and strengths and threats overcome opportunities and strategy type shows (contingency) diversity strategy. Finally, strategies are prioritized and suggested based on QSPM matrix.

KEYWORDS: strategy, environmental structure, urban sustainable development, Kermanshah city.

INTRODUCTION

In few last decades, many issues in environment have caused human society to comprehend that his activities' spreading in environment is without boundary and on the other hand, environment has limitation that is not extendable even with the best imaginable technologies indefinitely [4] and lack of attention to these limitations will accompany environment destruction during economic development. [2; 9].

So, every productivity of nature should be after assessing resources and in the frame of environment capacities and ability. Conservation and improvement of urban environment is possible through environment responsibility and guarantee which is through decrease of reliance to natural resources, minimizing air pollution avoidance of earth pollution and productivity of energy, ecological variety and reuse or clean burnt lands that finally lead to improvement of life quality. [6], sustainable development is defined as development that present generation needs without endangering future generation abilities to meet their own needs. Sustainable development needs environmental planning approach in which is kept all legal levels from sustainable development. Assessment of environment effects as well as helping planning is one of the improvement means for achieving this goal. [1]. Urban sustainable development is an active and non-stop process in response of changing economic environmental and social pressures. [3]. Now, environment is discussed as third Olympism element after physical education and culture [7]. Social-economic development and growth is unavoidable but conservation of natural resources should always be considered by attention to appropriate and sustainable development principle. Sustainability means today's habitants of supposed local, rural, urban and country community live and develop so that next generation continues to live a noble life and [5]. conservation and improvement of urban environment is possible through environmental possibility and guarantee that is through reduction of reliance to natural resources, minimizing air pollution, avoidance of earth pollution, energy productivity, raising environmental variety and reuse or cleaning burnt lands that finally leads to improvement of life quality [10]. On one hand, scarcity of resources and on the other hand, happening of environmental crises makes extreme concern at different human levels which its result is necessity of considering environmental criterion at development activities. So planners' development programs face these questions increasingly that how to assess program sustainability of suggestive development in the scale of city and region.[8]. Its main aim of doing research is recognition and explaining weakness and strength points, opportunities and threats of environmental structure of Kermanshah city and presenting strategies for conserving weaknesses to strengths and threats to opportunities in revival of environmental structure of Kermanshah city. In this project, by attention to discussed aims, questions and presented hypothesis are related to studied issue which we try to answer these questions and presented hypothesis are surveyed and analyzed.

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RESEARCH METHOD

Generally, Research method is how to research facts or specific method for discovering relationship of phenomenon and comprehending their principles or rules. In other words, research method is a method and process that is chosen for problem solution, achieving aims and better results in specific time. Governing approach over spatial space was qualitative and quantitative and its type is applied. Research method was descriptive-analytic and collecting required information was through exact library studies and using documents and observation and fieldwork for reducing information and paying to survey of environmental structure situation of Kermanshah city. Then, they exploit SWOT method for analysis of findings. For this reason, interior and exterior environment of Kermanshah city was studied and then for completing this obtained information by questionnaire with statistic universe, 25 person among previous and current urban managers, researcher and urban experts for giving weight and scoring of status quo are used for all interior factors(weakness and strength points) and exterior factors(threats and opportunity).At last, QSPM matrix is used for prioritizing strategies.

Introducing the study Region

Kermanshah is the central city in the west of Iran, has a large population, and Farsi is the first language but some dialects of Kurdish is used in the city. Kermanshah developed in the 4th century AD under the patronage of Sassanian kings. Briefly renamed Bakhtaran in the 1980s. Its climate is mild and it has many natural and historical sightseeing in the city and in the towns around. The city is 525 km southwest of Tehran at the foothills of the Zagros mountain range. The city enjoys a temperate climate and regular seasons.

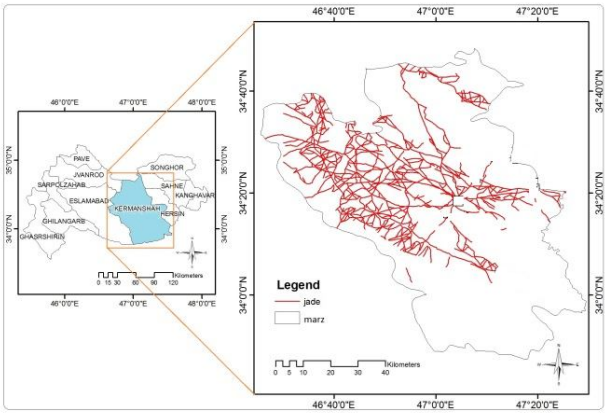

Figure 1. Physical map of the city of Kermanshah

DISCUSSION AND FINDINGS

Discussion and findings Among 4 models of urban sustainable development mentioned, we can find these features in every city. These models can be assessed by attention to specific expert view or based on indices due to data and expert assessment of existing information which is relying on changes and occurring developments in trend of urban development and programs, designs and policies which are performed and preparing sustainable development management in urban region. Self- reliance model is multi-axis by attention to steps which is done in Kermanshah city. First step is design preparation of development and civil of Kermanshah city and its seepage as well as comprehensive design of Kermanshah city that pay attention to effects of urban development on environmental region. Next steps are emphasis on discrete urbanization development and making towns and small new towns for rural immigration and population spillover in Kermanshah. Especially being introvert of local economics, development of industries and activities that their primary resources are provided in its own region such as existence of rich agriculture hinterland and … had shown other mentioned economic aspects of self-reliance of Kermanshah regions. In spite of these features, consumedly non-renewable energies and lack of recycling systems and reuse and etc, environment cycle of urban development have problems in region. Indices which can be used for evaluating this method by using this model by using population data are such as raising percentage at staffs at service parts of economic activity, raising percentage of city immigration and in relation of land use and city skeleton, scarcity of various and coeducational uses, city's spatial-skeleton dissociation and discontinuity at self-reliance discussion in Kermanshah city issues. Second discussed model is compaction and aggregation of population and residential units in Kermanshah city. Indices such as percentage of two-floor and more residential buildings, residential use rate and green space per capita are usable criterion in this issue. Based on existing statistics, rate of this index is in ideal condition except green space per capita and use rate now because of land price increase due to being province center of Kermanshah and to some extent, filling blank spaces of city level and city open altitude, especially at center regions and new towns, It has been paid attention. Although this urban development shape finds subjectivism due to city aggregation and density increase in this model but it is lack of desired performance in these models because of urban spatial-skeleton discontinuity and dissociation. Lack of recycling and sewage systems in city, insufficiency facilities and public transportation means, releasing enough open and green spaces. Even surrounding city regions which have agriculture and garden talented lands, are devoured by illegal consumption day to day.

Third model of urban reliance is in Kermanshah to surrounding and its outside that Kermanshah city has the most important natural resources including water existence for city potable water and agriculture and talented lands of garden, agriculture and bestial and Kermanshah city has high efficiency and potential and it doesn't have important external reliance but existence of backwater, sewage and urban and industrial garbage in city and downstream regions have been discussed Existing problems in discussion.

At last model, external costs' discussion of urbanization and cities' development have two aspects in Kermanshah. First aspect is providing some required potable water of Tehran citizens that is by saved water of Kermanshah dam. Although existence of this water is discussed from point of local self-reliance of urban economics but extra capacities of Kermanshah region to its outside have included social and economic costs (reduction of agriculture activities and as opposed, raising service jobs, descending economic incomes) and environmental costs (being abandoned Kermanshah city streams, being dried Gardens and water lands) for city. Second aspect, Kermanshah city has turned into place for providing dormitories of low-income and excess Tehran citizens that will have many negative consequences for city instead of its dynamism and vitality. It will increase to be dormitory. Share discussion of Kermanshah city which is from injuries that its development influence on environment, has not already measured. The only crises that can be named in this model even in urbanism of whole country are charges and taxes that are taken in the frame of defect tariff through mayoralty and server's organizations in cities. Perhaps it can be said that uses and densities and traffic toll and principle agreements are in the frame of this model but "do these received digits compensate costs and defects" At last, points that can be mentioned about development models of Kermanshah city is institutionalizing instability due to lack of system of urban integrated management, overcoming"expediency"and sectional thinking instead of long-term and providential "social development" thinking, financial problems of urban management and its executive limitations in organizing urban development.

This problem has made economic aspect of development to be preferred to its social and environmental aspects.

In this field, city council's activation which is one of the local good self-reliance steps to some extent. At first, environmental features has been defined based on theoretical frame of urban sustainable development for recognizing and explaining and analyzing Kermanshah city situation. Then, indices have been prepared in each structures based on qualitative and quantitative information and they lie on the frame of extra-regional factors (weakness and strength) and intra-regional. factors (threats and opportunities) by using SWOT technique in order to guide organizing strategies and future planning in the frame of aims to strategies of Kermanshah city of urban sustainable development. Weakness and strength points (interior factors) threats and opportunities (exterior factors) in environmental structure of Kermanshah city.

A) Weakness points

w_1-existence of domestic running hysteresis and …in streams and passages and making environmental pollution and illness.

w_2-lack of urban sewage disposal system.

w_3-increasing growth of mischievous animals at large urban ducts and streams.

w_4-existence of uses and annoying and inconsistent activities in the city.

w_5-lack of enough capacities and lack of ducts and street streams at surface water disposal due to specific climate of Kermanshah region.

w_6-ascending use level and urban green space per capita (per capita 2/26 mm)

w_7-existence of pollution due to consumption of fossil and non-renewable energies in the city.

w_8-lack of noticing at environmental issues at urban development issues.

w_9-Poor governmental management and lack of comprehensive noticing at environmental issues.

w_{10}-Lack of refining and exact supervision over producing and publishing pollutants and increasing urban environmental pollutants.

B) Strength points

s_1-existence of natural talents e.g Qrso river,White Mountainscastle

s_2-climatic conditions, favorable weather

s_3-existence of garden lands surrounding the city

s_4-existence of environmental thinking among citizens

s_5-existence of many non-governmental organizations in field of environment

s_6-Citizen inclination for using public transportation including bus, taxi and subway.

s_7-execution and development of urban sewage disposal system

s_8-Existence of programs and designs for increasing urban green space per capita and surfaces.

S_9-Making and planting different trees in steep slopes of city's south.

S_{10}-Existence of facilities and technologies of urban transportation including gas log buses and subway.

Table 1.IFE matrix of environmental structure of Kermanshah city

Interior strategic factors		Weight	Status quo score	Weighed score
Weakness points	W_1-existence of domestic running hysteresis and …in streams and passages and making environmental pollution and illness.	0.056	2	0.114
	W_2-lack of urban sewage disposal system.	0.057	2	0.114
	W_3-increasing growth of mischievous animals at large urban ducts and streams.	0.057	2	0.114
	W_4-existence of uses and annoying and inconsistent activities in the city.	0.028	2	0.056
	W_5-lack of enough capacities and lack of ducts and street streams at surface water disposal due to specific climate of Kermanshah region.	0.071	2	0.142
	W_6-ascending use level and urban green space per capita (per capita 2/26 mm)	0.042	3	0.126
	W_7-existence of pollution due to consumption of fossil and non-renewable energies in the city.	0.028	3	0.084
	W_8-lack of noticing at environmental issues at urban development issues.	0.071	2	0.142
	W_9-Poor governmental management and lack of comprehensive noticing at environmental issues.	0.071	3	0.213
	W_{10}-Lack of refining and exact supervision over producing and publishing pollutants and increasing urban environmental pollutants.	0.071	2	0.142
Strength points	S_1- existence of natural talents e.g Qrso river,White Mountainscastle	0.057	4	0.288
	S_2-climatic conditions, favorable Weather	0.071	4	0.284
	S_3-existence of garden lands surrounding the city	0.042	4	0.168
	S_4-existence of environmental thinking among citizens	0.028	3	0.084
	S_5-existence of many non-governmental organizations in field of environment	0.014	3	0.042
	S_6-Citizen inclination for using public transportation including bus, taxi and subway.	0.014	3	0.042
	S_7-execution and development of urban sewage disposal system	0.057	3	0.171
	S_8-Existence of programs and designs for increasing urban green space per capita and surfaces.	0.057	3	0.171
	S_9-Making and planting different trees in steep slopes of city's south.	0.057	3	0.171
	S_{10}-Existence of facilities and technologies of urban transportation including gas log buses and subway.	0.042	3	0.126
	sum	1		2.794

C) Threats

T_1-urban physical development and as opposed, destruction and ruining gardens and agriculture lands.

T_2- Consumedly development of industries in Kermanshah

T_3-urban horizontal extension

T_4-Raising urban seismicity potential.

T_5-Raising Level of subterranean water in region of city's south.

T_6-Transmission of agriculture water to Kermanshah for consumption and Kermanshah potable water of this region (destroying gardens of this region)

T_7-Existence of massive center of garbage landfilling in city's south

T_8-Extreme reliance to private car in intra-city traffic.

T_9-lack of environmental integrated management at national level.

T_{10}-lack of noticing at extending cities and predicting comprehensive plans of urban environment at the macro level.

D) Opportunities

O_1- thinking existence of environmental conservation at national and worldwide level.

O_2-Existence of massive resources of renewable energies in order to replace fossil fuels in the country

O_3-Existence of an appropriate scientific knowledge for facing environmental problems.

O_4-Existence of efficient and expert forces at environment discussion

O_5-Existence of natural potential including appropriate climate and vast garden lands and Kermanshah river

O_6-Existence of fourth plan of country development as 20 year perspective document of country development in order to achieve sustainable development aims.

O_7-Massive economic resources for changing technologies and using advanced and pure technologies.

O_8-governing management thinking of hysteresis and garbage and their recycling.

O_9- Executing decentralization policies from center regions of country to surrounding.

O_{10}-Existence of suitable beds for using modern electronic information systems in the country (including electronic government).

Table 2. EFE environmental structure of Kermanshah city.

Exterior strategic factors		Weight	Status quo score	Weighed score
Threats	T_1-urban physical development and as opposed, destruction and ruining gardens and agriculture lands.	0.059	2	0.118
	T_2- Consumedly development of industries in Kermanshah	0.059	2	0.118
	T_3-urban horizontal extension	0.044	2	0.088
	T_4-Raising urban seismicity potential.	0.059	2	0.118
	T_5-Raising Level of subterranean water in region of city's south.	0.044	2	0.088
	T_6- Transmission of agriculture water to Kermanshah for consumption and Kermanshah	0.059	2	0.118
	T_7-Existence of massive center of garbage landfilling in city's south	0.074	2	0.148
	T_8-Extreme reliance to private car in intra-city traffic.	0.074	2	0.148
	T_9-lack of environmental integrated management at national level.	0.059	2	0.118
	T_{10}-lack of noticing at extending cities and predicting comprehensive plans of urban environment at the macro level.	0.059	2	0.118
opportunities	O_1- thinking existence of environmental conservation at national and worldwide level.	0.044	3	0.132
	O_2-Existence of massive resources of renewable energies in order to replace fossil fuels in the country	0.029	4	0.116
	O_3-Existence of an appropriate scientific knowledge for facing environmental problems.	0.059	3	0.177
	O_4-Existence of efficient and expert forces at environment discussion	0.059	3	0.177
	O_5-Existence of natural potential including appropriate climate and vast garden lands and Kermanshah river	0.059	4	0.236
	O_6-Existence of fourth plan of country development as 20 year perspective document of country development in order to achieve sustainable development aims.	0.044	3	0.132
	O_7-Massive economic resources for changing technologies and using advanced and pure technologies.	0.029	3	0.087
	O_8-governing management thinking of hysteresis and garbage and their recycling.	0.029	3	0.087
	O_9- Executing decentralization policies from center regions of country to surrounding.	0.015	3	0.045
	O_{10}-Existence of suitable beds for using modern electronic information systems in the country (including electronic government).	0.029	3	0.087
	sum	1		2.456

Based on tables 1 and 2, the most important weakness and strengths and threats and opportunities are based on weighed score that are of importance and their existing situation and obtained from environmental structure of Kermanshah city. The most important weakness of W_9 , factor is poor governmental management and comprehensive noticing at environmental issues by weighed score of 0/213.The most important strength of S_1 is existence of natural talents like Kermanshah river, White Mountains Castle by weighed score of 0/288 and the most important threat of T_7 is massive center existence of landfilling garbage in city's' south and the most important threat of T_8 is extreme reliance to private car at intra-city traffic which both factors exists in one level by weighed score 0/147.The most important opportunity O_5 is the existence of natural potentials including favorable climate and vast garden lands and Kermanshah river by weighed score 0/236.Situation of strategy type in environmental structure of Kermanshah city has been shown in shape 2.The mark on the axis of Xs is -0/52 and on the axis of Ys is -1/08 that it shows exactly defensive strategy. In such situation, it is inappropriate and lies on dangerous situation.

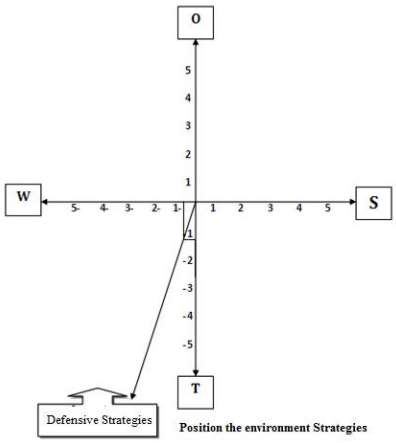

Figure2.Situation of strategy type in environmental structure of Kermanshah city

Matrix of 4 strategies of SWOT in environmental structure of Kermanshah city.

1) Offensive strategy (so)

SO_1-making attractive and refreshing ecotourism and recreational spaces in the surrounding corners of Kermanshah river.

SO_2-public transportation extension, especially development of Rayleigh and upgrading production technology and suitable fuel consumption by least pollution.

SO_3-Model preparation of urban sustainable development by environmental approach and partnership of strategic committees of urban management

SO_4-Institutionalizing unit of environmental management in mayoralty and preparing information bank of environment in Kermanshah city.

SO_5-Spreading urban environmental sciences in specific levels and development and executing comprehensive plans of urban development in consistent with urban sustainable development.

2) Contingency strategies (ST)

ST_1-Upgrading urban environmental quality through organizing and developing green spaces and forest parks with urban, region, district and local function scale in Kermanshah city.

ST_2-Building required refinery in appropriate places and using recycling water and applying preventive policy from raw sewage consumption for agriculture.

ST_3-developing necessary policies for people partnership as the main factor of urban environment conservation.

ST_4-extending use of renewable energies and consumption of fossil energies in the whole city.

ST_5-Reducing reliance to private car by replacing public transportation means especially Bus.

3) Adaptive strategies (WO)

WO_1-Boosting and feeding subterranean aquifers of Kermanshah and avoiding pollution of subterranean water resources as part of providing water resources of Kermanshah.

WO_2-Organizing and conserving gardens and agriculture lands

WO_3-Modifying demand of intra-city trips through ICT development in order to accomplish electronic city.

WO_4-Replacing intermediate and small industries gradually by high and pure technology instead of large pollutant industries and pantry.

WO_5-Optimization of hysteresis management and recycling garbage especially dangerous, hospital hysteresis and building's trashes.

4) Defensive strategies (WT)

WT_1-Emphasis on completing installation and collecting sewage network of Kermanshah city.

WT_2-improving and completing drainage system, collecting and transmission of surface water for increasing water crossing ability of ducts.

WT_3-Organizing and refining activities and transmission of pollutant center to outside of city limits.

WT_4-Making urban environmental integrated management and codifying comprehensive environmental plans of Kermanshah city.

WT_5-Organizing and preventing from urban physical growth and constructions in privacy of resources of surface and subterranean water and garden lands and agriculture.

According to quantitative planning tables of strategies, that is codified for types of strategy (SO, ST, WO, WT) , SO_1 strategy with max score of 8/97 by strategy of making ecotourism and attractive and refreshing and recreational space at the corner of Kermanshah river surrounding are discussed as the best strategy in environmental structure of Kermanshah city. WO_2 Strategy with score of 8/803 is presented as second strategy by organizing strategy and conserving gardens and agriculture lands and green space development in level and limits and privacy of Kermanshah city as second strategy.WT_4 Strategy with score of 8/466 is introduced in third category with strategy of making urban environmental integrated management and codified comprehensive environmental plans of Kermanshah city. In survey of hypothesis exam, first hypothesis is not correct and acceptable based on surveys at table 1.Matrix result of interior strategy factors of Kermanshah city. Matrix result of interior strategy factors of Kermanshah environmental structure shows that weighed score's sum of matrix table of interior factors 2/794 and lower than mean (S) that weaknesses in Kermanshah environmental structure overcome strengths. Second hypothesis is not correct and acceptable. Based on surveys in table -2 of EFE matrix of Kermanshah environmental structure shows that resulted number is lower than mean (3) and weighed score's sum of matrix table of exterior factors is 2/456.Here resulted number is lower than mean that is not used from obtained opportunities for overcoming threats and threats overcome opportunities but according to surveys, third hypothesis shows situation of strategic type in Kermanshah environment structure with mark on axis of Xs:-0/52 and on axis of Ys:-1/08 of defensive strategy.in conclusion, mentioned hypothesis is not verified and accepted.
Situation is inappropriate and lies on dangerous position.

Conclusion

Urban sustainable development has turned to new and dominant patterns in current theoretical and scientific literature about urban development and planning gradually during recent decades. Discussed Sustainable development due to effects of cities over globe environment spreading and different aspects of human life as main slogan of third millennium features of today urban societies have caused unsustainability of human and environment (natural environment and artificial environment). Environmental problems are one of the basic problems of today's city and result of their conflict and contrast with natural environment. On the one hand, Kermanshah city is attacked because of its specific local situation i.e settlement in communicative highway path of country's East as well as extraordinary natural talents and having factories and industrial regions and on the other hand, it is attacked because of quick urbanization process at the country, changing society consumption pattern and exogenous development of country by immigrants of surrounding cities and villages that intelligible consequence of this attack is to make urban crisis and urban physical development and as opposed, destruction and ruining gardens and agriculture lands at the corner of city. Matrix result of interior and exterior strategy factors of Kermanshah environmental structure shows sum of weighed score. Matrix table of interior factors is amount of 2/794 and lower than mean (3) that weakness in Kermanshah structure overcome strengths. Sum of weighed score of matrix table of exterior factors is 2/456.Here resulted number is lower than mean that obtained opportunities has not been used for overcoming threats correctly and threats overcome opportunities. Finally, exterior factors' matrix has better relative position in comparison with exterior factors' matrix. But strategies which resulted QSPM matrix for exit of status quo of Kermanshah environmental structure and movement to urban sustainable development. They are based on final score in sequence. It is suggested as following.

Table 3. Combined strategies in Kermanshah environmental structure.

Priority	Final score	Combined strategies in Kermanshah environmental structure
1	8.97	SO_1-making attractive and refreshing ecotourism and recreational spaces in the surrounding corners of Kermanshah river.
2	8.803	WO_2-Organizing and conserving gardens and agriculture lands
3	8.461	WT_4-Making urban environmental integrated management and codifying comprehensive environmental plans of Kermanshah city.
4	8.272	ST_1-Upgrading urban environmental quality through organizing and developing green spaces and forest parks with urban, region, district and local function scale in Kermanshah city.
5	7.983	ST_3-developing necessary policies for people partnership as the main factor of urban environment conservation.
6	7.688	ST_4-extending use of renewable energies and consumption of fossil energies in the whole city.
7	7.401	SO_2-public transportation extension, especially development of Rayleigh and upgrading production technology and suitable fuel consumption by least pollution.
8	7.39	WO_1-Boosting and feeding subterranean aquifers of Kermanshah and avoiding pollution of subterranean water resources as part of providing water resources of Kermanshah.
9	7.154	WO_6-Optimization of hysteresis management and recycling garbage especially dangerous, hospital hysteresis and building's trashes.
10	7.065	WT_1-Emphasis on completing installation and collecting sewage network of Kermanshah city.
11	7.004	ST_5-Reducing reliance to private car by replacing public transportation means especially subway.
12	6.939	WT_2-improving and completing drainage system, collecting and transmission of surface water for increasing water crossing ability of ducts.
13	6.864	WO_4-Replacing intermediate and small industries gradually by high and pure technology instead of large pollutant industries and pantry.
14	6.795	ST_2-Building required refinery in appropriate places and using recycling water and applying preventive policy from raw sewage consumption for agriculture.
15	6.755	SO_4-Institutionalizing unit of environmental management in mayoralty and preparing information bank of environment in Kermanshah city.
16	6.644	ST_5-Reducing reliance to private car by replacing public transportation means especially subway.
17	6.407	WO_3-Modifying demand of intra-city trips through ICT development in order to accomplish electronic city.
18	6.402	ST_3-developing necessary policies for people partnership as the main factor of urban environment conservation.
19	6.363	WT_5-Organizing and preventing from urban physical growth and constructions in privacy of resources of surface and subterranean water and garden lands and agriculture.
20	5.86	WT_3-Organizing and refining activities and transmission of pollutant center to outside of city limits.

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