Effects of Air Pollution Costs in Selecting the Most Efficient Economic and Environmental Parts on Export Development Process

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Introduction

In many developing countries, growing trend of manufacturing mechanization, high costs of using cleaner fuels and priority of economic issues to environmental issues, have caused the environmental costs to be ignored in policy making. However, considering the environmental costs created by the development, can lead to the reduction of damages to environment.

According to ability of input – output tables to describe the different relationships between economic sectors, many studies show that this can be used as an appropriate average to enter the environmental calculations into economic policies of a country.

Research about the relationship between air pollutants and economic policies have been carried out by using input – output tables since 1970. Leontief has studied the relation between air pollutant and the economic input -output structures for 70 sectors, between 1958 and 1970. Also, in recent years Kerkhof et al. examine the relations between various household consumptions and environmental impacts by combined household expenditure data with an environmental input-output model, in the Netherlands. Also, a study has been carried out in this area by Akhbari in Iran. In this study, the amount of indirect pollution caused by household consumption has been calculated, using input-output table. The study results show that in 1999 the electricity consumption by household was the main cause of CO_2 and SO_2 emissions.

In the present study, attempt has been made to use the economical- environmental input - output technique to enter policies to environmental considerations during the trade policy of export development. Therefore, the amount of five types of air polluting gases (CO2. SPM, CH, NOX, SO2) and common input-output data tables among the last data tables in this area in the country, have been extracted from 18 economic sectors.

Materials & Methods

To investigate the economical and environmental effects related to the pollutants, it is necessary to set a framework for modeling the way the emissions are generated by economic activities. In addition, this framework should be appropriate for enabling the policy-makers to reduce the environmental impacts. In this paper, the conceptual framework for this type of economical- environmental model is a common input-output model. The starting point of input-output model is trade off table that is a professional form of national account including the inter-industries and marginal demands tradeoffs.

Discussion of Results

Table 1 shows the effects of sectored development policy on the eighteen different economic sectors.

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Table 1: Effect of sectored development policy on different sectors

Sectors	Pollution emission per value added	Sectors rate	Pollution emission per employment	Sectors rate	Increasing value added growth to the growth of pollution emissions	Increasing employment growth to Pollution emission growth
Agriculture	261	16	6.12	17	0.137	0.178
Mining industries	3062	2	358	2	-0.655	-0.820
Food industries	321	14	7	15	0.115	0.174
Wood and paper industries	454	13	10	13	0.079	0.123
Textile industries	464	12	7.6	14	0.075	0.211
Petrol industries	1901	3	116	3	-0. 308	-0.420
Chemical industries	847	9	33	10	-0.018	-0.066
Non metal and mineral industries	1736	4	84	4	-0.255	-0.341
Electronic industries	516	11	16	11	0.058	0.038
Metal industries	1224	5	49	7	-0.116	-0.172
Electricity's	7602	1	678	1	-1.92	-2.063
Water	1036	7	81	5	-0.075	-0.207
Natural gas	266	15	37	9	0.136	-0.032
Construction	579	10	10	12	0.047	0.157
Business	245	17	6.49	16	0.145	0.159
Transport	1145	6	39	8	-0.106	-0.135
Communication	892	8	60	6	-0.035	-0.156
Services	167	18	5	18	0.16	0.163

According to the results, the selection of economic sectors depends on the aim and its priority. In some cases, the choice is realizing a goal that can be separated from other goals. If the main goal creates the maximum added value in economy, it is necessary to allocate more investments to mining, natural gas and business. However, it is important that investing in these sectors cannot guarantee environmental standards and create appropriate employment.

If the main goal is to reduce unemployment, it is better to develop the expert trade policies in textile, construction, food industries and agriculture sectors. However, strengthening the GDP cannot be greatly affected by the increase in exports at the above-mentioned sectors. If the main goal is minimizing environmental damage, the best sectors for export development policy are services, business, agriculture, natural gas and food industries.

It is important that long term growth and development is dependent on environmental conditions, and it is necessary to reduce environmental pollution to protect the environment. For example, in electricity and petrol production sectors with maximum direct and indirect pollutants, using a substitute fuel with less pollutants or changing the electricity production methods from thermal plant to water plant or wind plant can reduce pollution.

Research findings also show that the negative consequences on environment caused by expanding exports in services, commerce, agriculture, food industries, wood and paper industries and construction sectors, are less than their positive economic consequences. The pollution to added value per capita and the pollution to employment per capita in these sectors are less than that of other production sectors. Electricity, mining industries, oil industries and products, and non-metallic mineral industries are respectively the least efficient sectors in providing the simultaneously economical and environmental goals during the export sectored Development. Due to the direct pollutant nature of electricity sector and

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its role in indirect pollutant production in other sectors, utilization of alternative clean fuel like renewable energy and changing the production style have been recommended. These methods have no effect on achieving the economic goals; and will have a great impact on reducing the pollutant emissions.

Conclusions

Regarding estimated results, policy makers should develop convenient fields of production and export in services, commerce, agriculture, food industries, wood and paper industries and building sectors. Because it minimizes environmental damage while economic goals are provided.

Key Words

Export development, Input-Output tables, Added Value, Employment, Pollution

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