

Study of Product of the Wood in Forests in North of Iran at Ten Years Period

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ABSTRACT

Forests play a key role in stable development of a country as part of its renewable natural resources. Since utilization of forests to make wood products seems to be necessary, increase in grow-up rate of forests as well as supplying the raw materials of wood industries will have significant importance in satisfying the initial needs of a society to wood materials, industries and products. Forests of Iran used to have an area of about 18 million hectares in not so far past, though all of them did not have industrial significance. It is the northern forests of Iran which is usable in producing wood and securing industrial applications. Northern forests of Iran can be divided into four regions of Golestan, Sari, Nowshahr and Gilan with main products being used as log, timber wood, traversing, beam and tunnel woods, cattin, firewood and charcoal. There was a meaningful difference between the production volumes of different regions. Aggregation of forest roads, accessibility to mechanized exploiting equipments, type of product, conditions of tree farm, volume of signed trees, method of protection and quality of trees can all be identified as parameters which affect volume of product and supply. Generally, results from the research indicated that the product and supply volume in Sari district is more than others while Gilan, Nowshahr and Golestan are rated afterwards, respectively.

KEY WORDS: log, timber, traversing, Cattin, charcoal, firewood.

INTRODUCTION

Iran with an area of 165 million hectares possesses forests abroad 14.2 million hectares. Some 1,962,720 million hectares out of the later is located in north of Iran which are called Caspian, Hirkani, Humid and Industrial forests [1]. They include the southern margin of Caspian Sea and the northern profile of Alborz Mountain from Astara in west to Gildaqi in east through approximately 800 km long and 20-70 km width up to 2800m height. This 1.9 million hectares of total northern forests includes 564720 hectares for administration of Gilan natural resources, 323000 hectares for administration of Nowshahr natural resources and 645000 hectares for administration of Sari natural resources (18% of which is protected zone), while administration of Golestan natural resources has a contribution of 430000 hectares [2]. The apparent role of mechanical production is generally investigated in this research. Mechanical production is the amount of wood distributed in markets for different applications which are expressed as wood exploitation and cutting [3]. Although some studies on literature about markets of wood and wood products in Mazandaran, Semnan and Khorasan provinces [4, 5, and 6], marketing forest products [7] and preparing schedules of wood production [8] have been implemented, limited information is still available on wood production and adequate market management during a 10 year period [9, 10, and 11]. EbrahimPour Kasmani adopted to investigate production of various wood (forest) products in Mazandaran province during the 10 year period (1994-2004). Two administrations in Mazandaran were studied as being responsible for utilization of forests in that district. Study results indicated that the rate of utilization and production of different forest products in Sari region is more than that of Nowshahr [8]. This paper has been done in order to study and compare quadruplet northern forests in terms of production and distribution of various wood products including log, timber wood, traversing, beam and tunnel woods, cattin, firewood and charcoal during an 11 year period (1999-2010) to specify the amount of production for each of products in different regions. Finally, it has been tried to propose proper solutions to compensate for insufficient wood raw materials.

Experimental

A great deal of literature including articles, technical report ops and journals related to Organization of Forests and Parks located in Chalous has been reviewed in addition to several theses and published articles. Investigations were all launched based on data extracted from activity reports related to Organization of Forests and Parks for the duration of 1996 to 2010 [12]. At the end, variance analysis test and average grouping were applied in combination with Duncan multi domain test using SPSS software at 1% level.

RESULTS

Production of log

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Production of log experienced fluctuations in Sari district as showed it's maximum and minimum production volume with 189074 m³ and 155467 m³ which were related to 2002 and 2005, respectively. Production rate had some 6.9% decrease during the 11 year period. Similar statistics has been reported for Gilan region in which log production has decreased from 90935 m³ in 1999 to 56081 m³ in 2009 with approximately 62.15% fall. The maximum and minimum values have also been reported to be 107158 m³ and 53559 m³ in 1999 and 2005, respectively. However, utilization of log has increased with a rate of about 60.4% from 19215 m³ in 1999 to 48485 m³ in 2009. Production was accompanied with fluctuations during the period as it shifted from 48485 m³ in 2009 to 19215 m³ in 1999. Lastly, Golestan has had the most production during 1999 with 32999 m³ and the least production during 2003 with 9067 m³ which showed a decrease of 192.2% (fig.1). Comparison between average log productions in four administrations of natural resources can be classified into 4 different groups at 1% meaningful level.

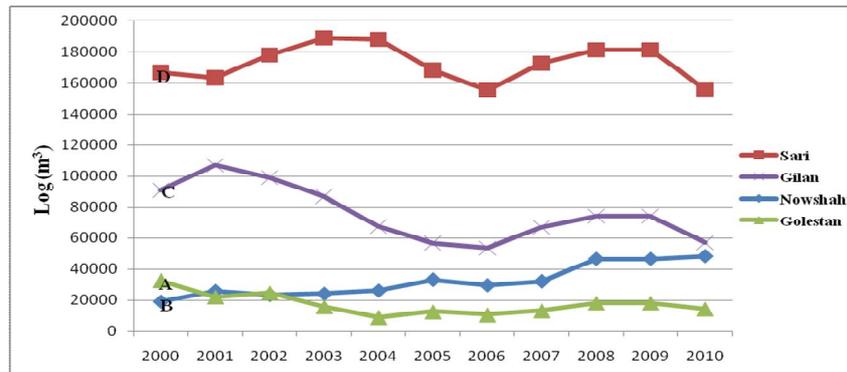


Figure1. Comparison between log productions in 4 different administrations of natural resources related to Nowshahr, Sari, Golestan and Gilan.

Production of Timber Wood

In Nowshahr, administration of natural resources has been exposed to 98.7% decrease in timber wood with the highest and lowest values of 20000 and 10064 m³ that occurred in 1999 and 2009, respectively. Gilan region has experienced a severe decrease of approximately 288.1% from 13606 m³ in 1999 to 3506 m³ in 2009. Maximum and minimum productions of timber wood were reported to be 25914 m³ and 3506 m³ for 2001 and 2009, respectively. The same regime was also observed for Sari with 18118 m³ in 1999 to 4848 m³ in 2009 with about 273.7% decrease. 19477 and 4848 m³ were respectively the highest and lowest production statistics related to 2000 and 1999. Assigned maximum and minimum amounts of production in this field were reported to be 12776 m³ and 2954 m³ which were related to 1999 and 2009, respectively. Thus, it can be calculated that the decrease was about 332.5% (fig.2). A comparison between average timber woods produced in the four administrations of natural resources reveals that at 1% meaningful level, Golestan and Sari regions are grouped in the same class with almost no meaningful difference. Meanwhile, Sari and Gilan districts can be categorized similarly as well as Gilan and Nowshahr, with the statistical difference being insignificant between them.

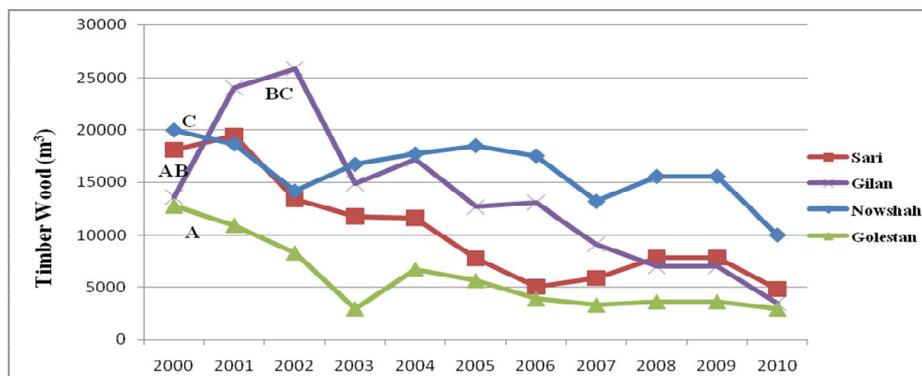


Figure2. Comparison between productions of timber wood in 4 different administrations of natural resources related to Nowshahr, Sari, Golestan and Gilan.

Traversing

It was also noticed that production of traverse has also been accompanied with some fluctuations. Nowshahr region has had the maximum production in 1999 with 13794 m³ and its minimum in 2009 with some 6157 m³. So it can be said that the production has had a decrease of 124%. In Sari district, production has descended from 9798 m³ in 1999 to 4307 m³ in 2009 with 127.5% percentage. The maximum traverse produced was 9798 m³ which was occurred in 1999. Through Golestan region, production has come down about 61.2% with 7270 m³ and 2193 m³ being the highest and

lowest produced traversing in 1999 and 2002, respectively. Traverse production has reached from 1200 m³ in 1999 to 4031 m³ in 2009 which shows a decrease of 70.2%. The maximum and minimum production statistics are related to 5194 m³ in 2003 and 1200 m³ in 1999 (fig.3). A rough comparison of traverse production in four administrations leads to the fact that Gilan, Golestan and Sari administrations are grouped together with the least meaningful difference between them. Additionally, Nowshahr has showed the most traverse produced during the period so it has been classified separately.

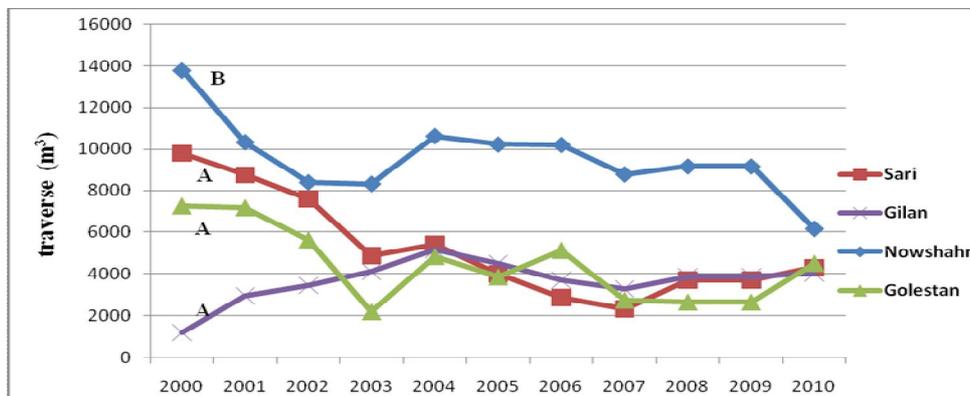


Figure3. Comparison between traverse productions in 4 different administrations of natural resources related to Nowshahr, Sari, Golestan and Gilan.

Production of Beam and Tunnel Woods

Gilan's administration of natural resources has experienced a noticeable decrease of 2524.2% from 15714 m³ in 1999 to 62 m³ in 2009 with the former being as the maximum production rate and there has been no production during 2006, 2007 and 2008. Similar examinations in Sari indicated that production rate has reached zero since there has been 2979 m³ woods produced in 1999 while no wood was been produced during 2009. Conversely, Golestan region has been exposed to an increase of 83.5% which has occurred from 492 m³ in 1999 to 2977 m³ in 2009. 2977 m³ in 2009 was reported as the most woods produced while there has been no production during 2002, 2006, 2007 and 2008 years. The obtained statistics for Nowshahr district shows that 379 m³ has been produced during 1999 which has reached 190 m³ in 2009 with about 99.5% fall. The maximum production has been reported to be 2680 m³ in 2003 while the minimum amount was just 15 m³ in 2000 (fig.4). Comparing the average production rates for beams and tunnel woods reveals that at 1% meaningful level, Nowshahr, Golestan and Sari administrations are grouped together while Gilan region has shown the maximum production rate during the same period, so it has been grouped separately.

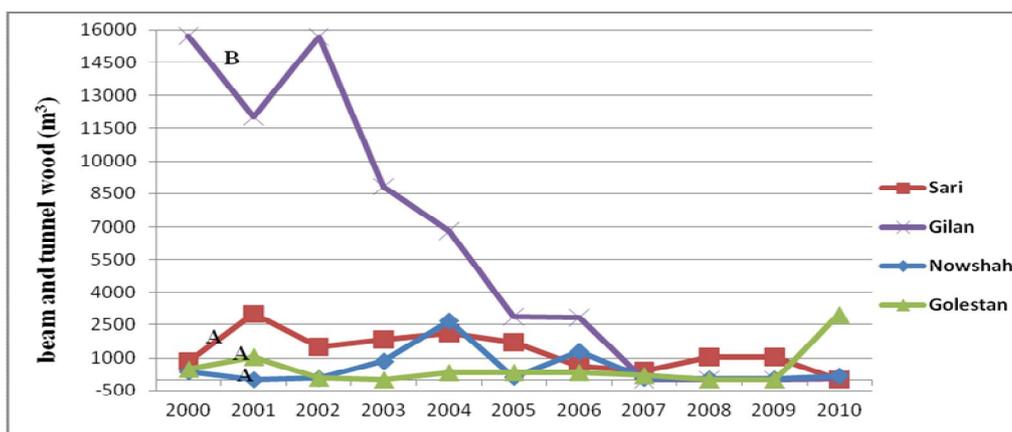


Figure4. Comparison between beam and tunnel wood productions in 4 different administrations of natural resources related to Nowshahr, Sari, Golestan and Gilan.

Production of Cattin

Sari natural resources was exposed to an increase of 11.1% from 105427 m³ in 1999 to 118644 m³ in 2009 while maximum and minimum amounts were reported to be 123395 m³ and 85872 m³ related to 2007 and 2001, respectively. Gilan experienced a decrease of about 20.7% with maximum and minimum amounts of 87625 m³ and 51868 m³ dedicated to years of 2001 and 2003, respectively. Nowshahr district is exposed to a decrease of 29.9% in cattin production. The highest and lowest production occurred in 1999 and 2006 with 49442 and 34092 m³, respectively. Meanwhile, Golestan region has had a 14.5% decrease and its maximum and minimum statistics seemed to occur in 1999

and 2002 with 24411 and 8961 m³, respectively (fig.5). Duncan test classifies the average cattin produced among 4 administrations of natural resources at 1% meaningful level into 4 different groups. Figure 5 depicts that the Sari region has had the superior place.

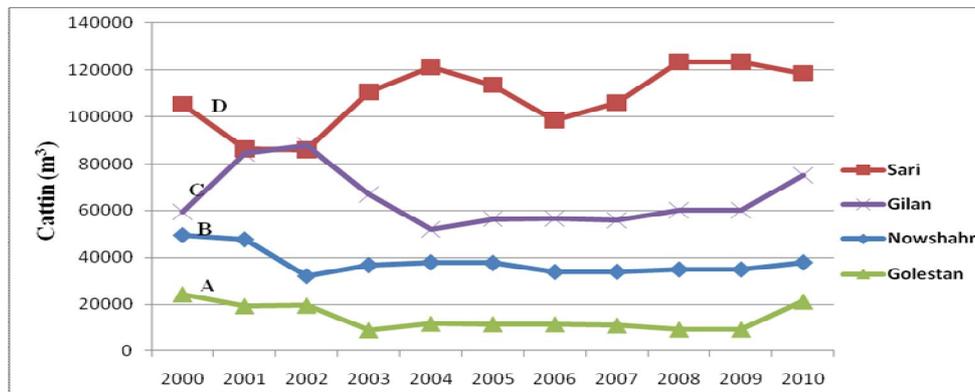


Figure5. Comparison between Cattin productions in 4 different administrations of natural resources related to Nowshahr, Sari, Golestan and Gilan.

Production of Firewood

Sari has experienced a 113.5% fall with maximum and minimum amounts being related to 2001 and 2009 with 246191 and 101971 m³, respectively. Golestan has also showed a similar regime since it has produced less firewood with 42.6% fall from 1999 through 2009; the maximum and minimum production rates were related to 1999 and 2006 with 139227 m³ and 53361 m³. Gilan natural resources has seen a 156.3% decrease from 98288 m³ in 1999 to 38342 m³ in 2009. Nowshahr natural resources were exposed to an increase of 5.7% from 38092 m³ during 1999 to 40411 m³ during 2009. The maximum and minimum amounts of firewood produced in the region were 55190 and 38092 m³ dedicated respectively to 2002 and 1999 (fig.6).

It is found by comparison of the average firewood production in four administrations of natural resources at 1% meaningful level that Nowshahr and Gilan possess the first title with no significant difference between them. At the same time, Golestan and Sari possess second and third titles, respectively.

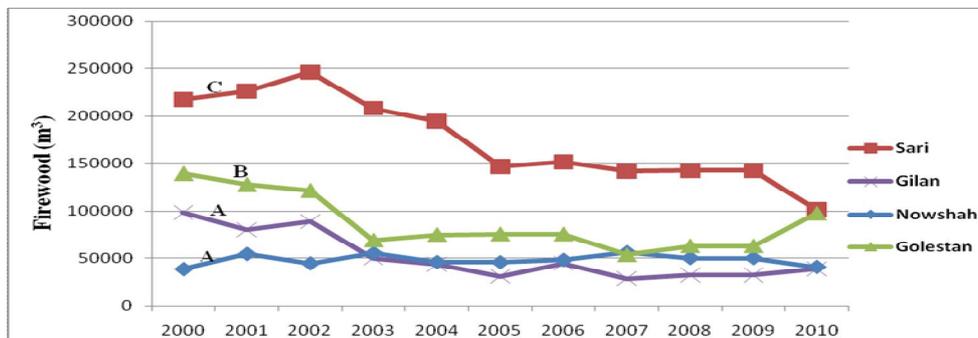


Figure6. Comparison between firewood productions in 4 different administrations of natural resources related to Nowshahr, Sari, Golestan and Gilan.

Production of Charcoal

Production of charcoal in Gilan district has decreased from 29130 m³ in 2006 to 4380 m³ in 2009 with the rate of 565.1%. The most charcoal produced there is related to year 1999 with some 29130 m³ and there have been just 395 m³ production during 2005 and 2006. Nowshahr region has also experienced much severe behavior with 3989.4% decrease. The maximum and minimum amounts were recorded during 1999 and 2006 with 30180 and 222 m³, respectively. Sari and Golestan were also exposed to decrease in productions. Actually, there has been no charcoal produced in these two regions during 2009. Sari has had 30336 m³ in 1999 and there has been no product during 2003 and 2005 to 2009. The highest production record was 1422 m³ in 1999 for Golestan region, while the lowest record is related to the years of 2001, 2003 and 2005 to 2009 with no produced charcoal (fig.7).

Comparing the average charcoal production of four administrations shows that at 1% meaningful level, Golestan, Sari and Nowshahr regions are grouped together while Nowshahr and Gilan districts can be classified in conjunction with each other. Each individual group was without any meaningful difference.

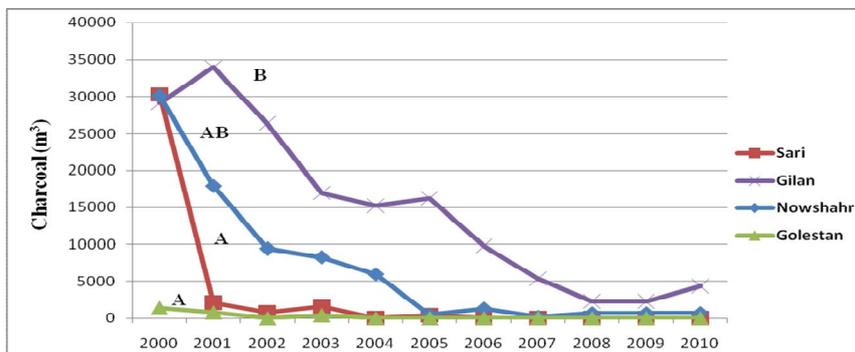


Figure7. Comparison between charcoal productions in 4 different administrations of natural resources related to Nowshahr, Sari, Golestan and Gilan.

Total Production of the forest products

Natural resources of Sari experienced a decrease of 43.3% from 549093 m³ in 1999 to 385827 m³ in 2009 with 5553539 m³ in 2001 as the maximum and 385827 m³ in 2009 as the minimum. Gilan district was exposed to a decrease of 69.1% from 308368 m³ in 1999 to 182347 m³ in 2009. The highest and lowest productions have occurred in 2001 and 2006 with 347161 and 168588 m³, respectively. It was observed that Nowshahr has produced 171102 m³ during 1999 and this value is decrease by 18.7% to reach 144103 m³ during 2009. The maximum and minimum reported statistics are related to 2000 and 2001 with 175049 and 132105 m³, respectively. Golestan produced 218597 m³ of the forest products in 1999 and this amount was decreased by 52.1% and reached to 143726 m³ in 2009. The maximum amount was dedicated to the former while the minimum was occurred during 2005 with some 96264 m³ (fig.8). Comparison of the average total production between four administrations of natural resources reveals that at 1% meaningful level, Golestan and Nowshahr are classified in the same group without any meaningful difference. But, Gilan and Sari were apparently different from each other and from the first group, so they are grouped individually. Figure 8 shows that the first place of production goes to Sari district.

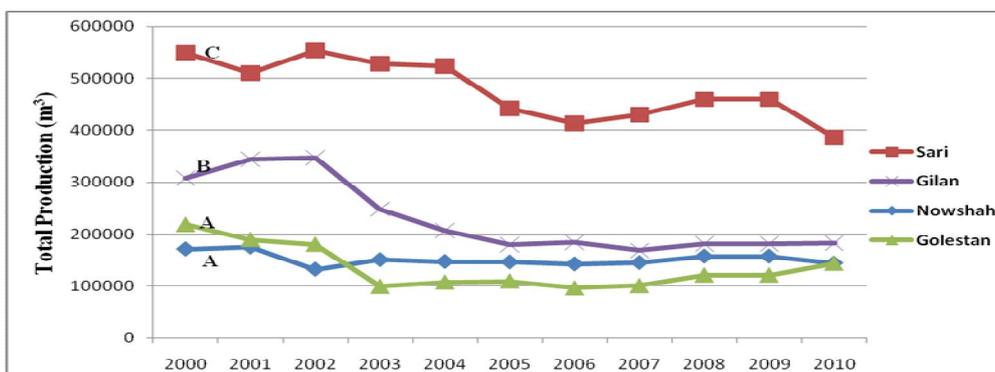


Figure8. Comparison between total productions in 4 different administrations of natural resources related to Nowshahr, Sari, Golestan and Gilan.

DISCUSSION AND CONCLUSIONS

Total production amount of various forest products in Sari was reported to be more than other three regions. Gilan had also superior statistics than Nowshahr and Golestan. Exploitation of the forests in Sari region was higher since there are more commercial and industrial forests with additional industrial units. The fact goes true for Gilan district to some extent. One new approach adopted by Organization of Forests and Parks is in harvesting towards selective alternatives and old choices. This new harvest method from the northern forests which is defined based on forestry regime and undergoes internal requirements and regulations of forests and its surroundings, will contribute to cut old trees whose existence prevents new young plants from proper growing, before their break and fall down happen. In this method, the first priority is allocated to utilize broken and fallen down trees or those which have many plagues, mostly located in Sari region or even Gilan. The volume of signed trees may also play a significant role in harvesting different

forest products. Organization of Forests usually adopts to sign trees through common exploitation techniques and without considering the amount of demands. The amount of signed trees and therefore the number of trees allowed to be cut in Nowshahr and Golestan regions are apparently less than that of Sari and Gilan. Furthermore, since most of the forests in Nowshahr region are protected, administration of natural resources will not permit machines to enter them. Topographic situations of Nowshahr in addition to location of trees on high lands with slopes are other reasons for their low exploitation.

In Studying the quantitative production, distribution and properties on different forest products during the period, there can be seen various wood products in four regions of Nowshahr, Sari, Golestan and Gilan.

Log production in Sari is more than others due to the huge amount of log being produced by governmental companies located there. They are able to produce more than other companies because they benefit from adequate equipments and skilled personnel. Meanwhile, Gilan produces log product more than Nowshahr and Golestan as a result of activities by companies such as Asalem and Shafaroud. Nowshahr and Golestan are exposed to lower production record due to lack of suitable accessibility roads which are constructed on time, lack of track machines and using traditional contractors in forestry projects.

Production of timber woods and traversing is reported to be the highest in Nowshahr region. Topographic conditions of its forests from slope and height points of view make them such that the major wood products are made inside the forests, so there would be a little chance to produce high quality log.

Beams and tunnel woods were produced in Gilan more than any other region during the period. Most of these products are supplied from the forested fields of Shafaroud Company. This product in Sari district is more than the other two districts since Central Alborz Coal Company is located there which needs to these products as its necessary raw material. Cattin is also the raw material of lignocelluloses which is required substance in manufacturing particleboard and paper. Existence of Mazandaran Wood and Paper Company in addition to many other particleboard companies in Sari district has yielded higher amounts of this product during the period studied here. Cattin is also produced in Gilan more than the other two regions because Chuka Company is located there.

For most years of the period, firewood production in Sari region has been higher than all other regions. Since major paper and lumber wood manufacturing companies are established in Sari and Golestan, the statistics related to this product has been more prominent there. However, Nowshahr region has lower percentages of firewood production because it lacks those major industries. Of course, construction of Pars Neopan Company has had noticeable impact on increasing contribution of the product in Nowshahr district during the recent years. Low quality of signed trees is another reason why to use Sari forests mostly as firewood.

Firewood production may have several reasons: necessity of cleaning the fields based on forestry requirements, uneconomic transfer of firewood for long distances, using exploitation machinery and underdevelopment of forest roads from what is necessary based on topographic conditions of a region. During the period, charcoal production in Nowshahr and Gilan regions have frequently been more than the other two districts which can be attributed to the special topographic conditions of forests in these two with trees being located in high lands and slopes in addition to not established proper machinery to produce industrially.

Above studies show that in spite of different problems in wood production as well as serious requirements to manufacturing activities acceptably, there is no clear strategic plan to solve them. It is obvious that the small area of forests in Iran does not provide the required wood resources. Furthermore, the obtained results believe that the country is currently experiencing lack of wood which will have negative impacts as below:

- 1) Increase in the wood price is considered as a severe threat to ruin natural resources through wood smuggling,
- 2) Causing motivations to develop wood smuggling,
- 3) Suspension of the units related to wood and cellulosic industries,
- 4) Increase in the amount of polluted woods with plagues and diseases which are transferred illegally from borders of the country,
- 5) Unorganized and disordered markets of wood and appearance of unhealthy exchanges.

As a result, studying the import fields can be considered as one of the recent policies decided in this regard. Import policies considering the wood supply have also been adopted. Currently, there is approximately 1,900,000 m³ wood import of wood to the country whereas the actual requirement is about 6 million m³ and some of this lacking material is provided by garden woods and woods which are sold by individuals. If proceeded along with governmental plans and do import more wood, then it will be possible to provide raw materials required for those factories which were established previously with a huge investments and further, it will be possible to make occupation secure in the region.

Regarding the experiences on cultivating wood among farmers from ancient years in addition to development of social culture and ever increasing wood utilization in Iran, responsible executives and programmers must pay particular attention to develop wood cultivating, since the only solution to provide the vital wood requirements of the country is to develop it by using appropriate type of plants which are fast growing. Therefore, in order to support and develop the wood and cellulosic industries, prevent or mitigate the unnecessary pressure on forest fields to supply wood, satisfying the annual wood requirements of the country to 14 million m³ and benefit from water and soil capabilities to develop wood industry, the government must support proper national fields to grow wood, give inexpensive bank loans, provide wood purchase guarantees from farmers and insuring the whole process by forecasting and ratifying assistance on

framework of the 5-year development plans. If wood requirement of the country is secured up to 14 million m³ annually by cultivating wood, there will be no need to harvest wood from natural resources in addition to economic advantages due to prevention from import wood. Meanwhile, in combination with supplying part of the needs, wood smuggling problem will also be solved completely.

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