

Some Ways to Develop Sea Buckthorn Cluster aimed at Improving the National Competitiveness of Mongolia

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1. Need for Mongolia's sea buckthorn cluster development

Cluster development is necessary to support the country's vital objective to achieve fast and measurable improvements in people's livelihoods and ensure growth in national income.

GNI per capita in Mongolia is low, and therefore peoples' livelihoods often are insufficient and the threat of "the cycle of poverty" remains prevalent. This observation is being confirmed by numerous researches. The population income census of 1995 showed that 36.3 percent of the population was living in poverty at that time. The 1998 census identified 35.6 percent of the population (39.4 percent of urban and 32.6 percent of rural residents) as poor. In 2004, the "Household Income and Expenditure Survey/Living Standards Measurement Survey" by the National Statistics Office of Mongolia showed that 36.1 percent of the country's citizens lived below the poverty threshold. The office estimates that in 2011 29.8 percent of Mongolia's population remained poor, with the figures varying between 38.9 percent in the Khangai region, 34.3 percent in the Eastern region and 30.2 percent in the Western region. Poverty rates in rural regions are continue to grow.

Under these circumstances, achieving fast and multiple increases in the GNI leading to the transition into the upper middle income and further to the high income category and creating significant improvements in people's livelihoods is becoming a vital national objective. Realization of this objective can only be undertaken through very high growth of the economy, or, namely, production and service sectors. Just to reach the current South Korean level of income, Mongolia needs to increase its per capita GNI by almost 10 times. Building and developing clusters will be a major tool to achieve this objective.

Cluster development is necessary to improve the structure of the national economy.

In developed countries, almost 71 percent of the Gross Domestic Product (GDP) is contributed by services, 27 percent by industry and 2 percent by agriculture. In contrast, in low income countries the service sector provides 50 percent, industry 25 percent, and agriculture 25 percent of the GDP. The Mongolian GDP structure in 2011 resembled that of a low income, developing country with 13 percent coming from agriculture, 35 percent from industry and construction, and 52 percent from services.

In addition, the economy is considerably fragile from a structural point of view. Particularly, the country's service sector is mostly comprised of wholesale and retail trade, extractive industries are predominant in the industrial and construction sector, and agriculture is dominated by pastoral animal husbandry which is highly dependent on climatic conditions. Thus, structural improvement of the

national economy is another vital objective for Mongolia. In simple words, improvement of the economic structure needs to start with expanding processing or end-product manufacturing in the industrial sector, reducing the dependence of agriculture on nature through industrialization, and modernizing the service sector through development of high value added industries such as tourism. Building and developing clusters will be instrumental for achieving these objectives.

Cluster development is necessary to improve the structure of Mongolia's foreign trade and strengthening the economy.

Overall, Mongolia's foreign trade is extremely vulnerable to price fluctuations in global markets as it is dominated by mineral and livestock based raw materials which command prices several times lower than finished goods. On the other hand, the country imports products that potentially can be produced domestically, satisfying not only internal demand but international markets as well.

2. Competitiveness of sea buckthorn cluster

Situational analysis of factor conditions

Sea buckthorn cultivation in Mongolia is increasing within the framework of the national 'Sea buckthorn' and 'Green Wall' programs. In 2009, prior to adoption of the national 'Sea buckthorn' program, 80% of 1,200 hectares for horticulture cultivation were used for growing sea buckthorn. The 'Sea buckthorn' program was ratified in March 2010, and within 2010, the total cultivation area doubled to 2,210 hectares. While a certain share of sea buckthorn plantations are state sponsored, private sector investment both at the household and company level is flourishing. In 2011, the total area used for sea buckthorn cultivation reached 4,000 hectares and further expanded to 6,000 hectares in early 2012. The national 'Sea buckthorn' program aims to increase the cultivation area to 10,000 hectares in 2012 and 20,000 hectares by 2016. 17,000 hectares are planned for commercial fruit production, and the remaining 3,000 are mainly for combating desertification and soil erosion.

In 2009, Mongolia harvested approximately 500 tons of sea buckthorn; output increased to 900 tons in 2011 as a result of the efforts by 700 household and corporate sea buckthorn growers. The national 'Sea buckthorn' program aims to achieve a 3,500 ton harvest in 2012, further increasing it to 7,000 tons in 2016. According to the Mongolian Sea buckthorn Growers and Producers Association, Mongolia is fully capable to harvest 30,000 tons of fruit annually by increasing per hectare yields.

Sea buckthorn cultivation and processing in Mongolia is concentrated in Uvs, Tuv, Selenge, and Darkhan aimags. Uvs aimag has the highest number of sea buckthorn

enterprises. Cultivation is increasing in Bayankhongor, Bulgan, and Uvurkhangai (Kharkhorin soum) aimags.

Research and development organizations are actively working to develop new technologies for industrial processing and manufacturing of various sea buckthorn products. As global demand for pure, natural products increases, opportunities for Mongolia to export its products will grow.

The authors calculated aimag sea buckthorn cultivation indices based on aimag cultivation area statistics of 2011. Aimag statistics were compared to the nationwide total to calculate individual aimag percentages. Afterwards, percentages for individual aimags were converted to aimag sea buckthorn cultivation indices using the formula on page (Table 1).

Aimag sea buckthorn cultivation indices are highest for Uvs, Selenge, Uvurkhangai, Bulgan, Tuv, and Khovd aimags. Indices for Darkhan-Uul, Zavkhan, Bayankhongor, Govi-Altai, Arkhangai, Khentii, Khuvsgul, Orkhon, Bayan-Ulgii, and Dornod aimags are average.

As crop cultivation sector in Mongolia developed intensively during the previous socialist system, a qualified labour supply for horticulture, in particular sea buckthorn cultivation exists. Individual households are also growing sea buckthorn. The University of Agriculture and the School of Foodstuff Engineering and Biotechnology of the Mongolian University of Science and Technology are training personnel in related professions.

Table 1 Sea buckthorn Cultivation Indices in 2011, by aimags

Aimag	Cultivation area, ha	Share in nationwide total	Sea buckthorn cultivation index $J_i = \frac{V_i}{V_{max}}$
Uvs	625,4	17,6	1,000
Selenge	620,0	17,5	0,991
Uvurkhangai	616,8	17,4	0,986
Bulgan	260,3	7,3	0,416
Ulaanbaatar	258,7	7,3	0,414
Tuv	248,7	7,0	0,398
Khovd	174,8	4,9	0,279
Darkhan-Uul	79,6	2,2	0,127
Zavkhan	79,4	2,2	0,127
Bayankhongor	78,4	2,2	0,125
Govi-Altai	75,5	2,1	0,121
Arkhangai	70,8	2,0	0,113
Khentii	67,1	1,9	0,107
Khuvsgul	61,1	1,7	0,098
Orkhon	55,7	1,6	0,089
Bayan-Ulgii	52,5	1,5	0,084
Dornod	47,2	1,3	0,075
Dundgovi	21,8	0,6	0,035
Sukhbaatar	18,6	0,5	0,030
Dornogovi	11,5	0,3	0,018
Umnugovi	10,9	0,3	0,017
Govisumber	9,7	0,3	0,015
Total	3544,5	100,0	

Source: Own research, Ministry of Industry and Agriculture

State and private investments into sea buckthorn cultivation are increasing. A number of large-scale processing enterprises, such as "Shar doctor" and "Uvs sea buckthorn", has been set up in Ulaanbaatar city and Uvs aimag. As production of sea buckthorn products increases, imports are also rising to 10,00-15,000 tons per year. A 5,000 ton annual sea buckthorn processing facility is being planned to be established in Uvurkhangai aimag with financing by a concessional loan from China.

As most sea buckthorn resources are concentrated in the Western region, in particular the Great Lakes basin, Uvs aimag and Zavkhan river basin areas, and with the emphasis being put on establishing major processing capabilities locally, the importance of infrastructure development has further increased. Large-scale, long-term objectives for development of Mongolia's auto road networks have been formulated in such policy documents as the "Comprehensive National Development Strategy" and the "2020 Road Network Development Master Plan". Paving of new roads in the regions will improve infrastructure connections which in turn will benefit the sea buckthorn sector.

Situational analysis for demand conditions

With strengthening purchasing power of the Mongolian consumer, demand for foodstuffs, in particular sea buckthorn products, is increasing. Sea buckthorn is rich in vitamins and nutrients beneficial for human health, and it is also widely used in medicines and beauty products.

For the past few years, consumers have been putting forth ever stricter requirements on food product and service quality. Accordingly, demand for high quality, international standard eco-foods is growing, and importance of food safety and eco-production concepts is gaining stronger ground. Major domestic food producers are adopting Hazard analysis and critical control point (HACCP) systems, and the ISO14001 and ISO22000 international standards, and consumers are taking notice of these developments. The fact that demand by Mongolian consumers for quality of domestic food products and related services is strengthening provides a sound incentive for a faster development of the sea buckthorn sector.

Global demand for eco-products, including sea buckthorn, is also growing exponentially. Consumption of sea buckthorn products for prevention of respiratory tract diseases is growing in cold climate countries of Asia, Europe and Americas. It shows that Mongolian sea buckthorn-based eco-products have strong potential to attract consumer demand both domestically and internationally.

Situational analysis for related and support industries

Today, collaboration between the majority of Mongolian companies engaged in sea buckthorn cultivation in the regions, remains very weak. There are no feedback mechanisms in the chain and end results of any collaborative activities are not being shared among all the participants.

Smaller companies, in particular regional producers, experience chronic shortages in working capital and investment funds. In some cases, they are unable to secure all the necessary raw material and inputs for production,

and as a result, sea buckthorn cultivation areas and harvest yields decrease leading to processing entities in the next level in the chain to suffer from unavailability of raw materials. This weakens linkages among companies along the sea buckthorn production chain and destabilizes overall sector operations.

Professional competencies of industries related to and supporting the sea buckthorn sector, namely information, banking, insurance and other industries, are improving sizably. Commercial bank branches operate in all aimag and soum centers and some large banks are present in all of them. Accelerating development of these industries constitutes another favorable factor to support the growth of future sea buckthorn clusters.

Analysis of firm's strategy, structure and rivalry

Major domestic sea buckthorn cultivation and processing companies include Uvs khuns of the UFC group, Uvs sea buckthorn LLC, Entum LLC, Gangar invest LLC, Khaan jims LLC and Tovkhon jims LLC. Furthermore, there are numerous small and micro enterprises and households who grow sea buckthorn and produce sea buckthorn juice and wine.

Regional sea buckthorn companies commonly lack modern cultivation and harvesting machinery which negatively impacts on both cultivation technologies and yields. Due to this severe underdevelopment of sea buckthorn related expertise and capacity, only 50-70 percent of fruit is harvested.

Mongolia's sea buckthorn enterprises are to a large extent dependent on foreign markets for production inputs. The Diamond model of the sea buckthorn industry is illustrated in Box 1.

Based on the Diamond model analysis of the Mongolian sea buckthorn sector, the authors are confident that sector weaknesses can be rectified through building sea buckthorn clusters able to utilize the current competitive advantages of the industry.

Mongolia's sea buckthorn industry is developing equally in both Ulaanbaatar city and the regions. There are large processing factories not only in Ulaanbaatar, but also in Uvs, Zavkhan and Govi-Altai aimags.

Analysis of sea buckthorn cultivation in aimags and current location of major processing enterprises shows that national sea buckthorn clusters can be established in Ulaanbaatar and Darkhan cities, as well as in Uvs aimag. Within the framework of the study, the authors identified potential candidates for major operators of national and regional clusters. For national clusters they include: in Ulaanbaatar – Shar Doctor sea buckthorn factory, in Darkhan – Tovkhon Jims LLC and Khaan Jims LLC, and in Uvs aimag – UFC Group and Uvs Chatsargana LLC. For regional clusters the authors recommend: Zavkhan Bayalag JSC in Zavkhan aimag and Gangar Invest LLC in Uvurkhangai aimag¹.

"Shar Doctor" sea buckthorn factory, a potential major operator for the Ulaanbaatar national sea buckthorn cluster,

is the largest sea buckthorn processing entity in Mongolia with capacity to process 5 tons of fruit per day. The company currently cannot source locally the full amount of raw materials it requires and it has to import a certain quantity from China. Analysis of the sea buckthorn production value chain demonstrated that harvest losses are high due to deficiencies in harvesting techniques. Creation of a national sea buckthorn cluster will help rectify the situation and foster growth and development in the cultivation segment.

3. Some ways to develop sea buckthorn cluster

Mongolia does not have any stand-alone legislative acts aimed at promoting cluster development. Nevertheless, as both the Parliament and Government of Mongolia have been addressing the need to establish and develop industrial and technology parks in the country, certain legislative background is already in place. It is expected that the above legislation enacted by the Parliament and Government of Mongolia will promote the establishment of various clusters in the country. Therefore the Government of Mongolia to take some actions to establish and develop sea buckthorn cluster in the country. In particular, the government should:

- 1) Develop and adopt a sea buckthorn cluster concept for Mongolia;
- 2) Formulate and implement a medium term action plan for the sea buckthorn cluster concept;
- 3) Plan and implement programs of sea buckthorn cluster;
- 4) Establish a country-wide financial support structure to provide assistance to regional and aimag's sea buckthorn cluster initiatives;
- 5) Create a database of international sea buckthorn cluster initiative information;
- 6) Take comprehensive measures to report on and introduce best international practices in sea buckthorn cluster development;
- 7) Implement wide-ranging actions to support internationalization of sea buckthorn cluster;
- 8) Organize regular conferences and workshops on sea buckthorn cluster development, policies and mechanisms for the central and local governments;
- 9) Establish national, regional and aimag level structures to monitor and evaluate the effectiveness and development of sea buckthorn cluster;

Develop and implement marketing programs for promotion of Mongolia's regions and aimags on international markets.

¹ Interview with D.Nasanjargal, Chairman of the Association of Seabuckthorn Growers and Processors of Mongolia. May 2012.

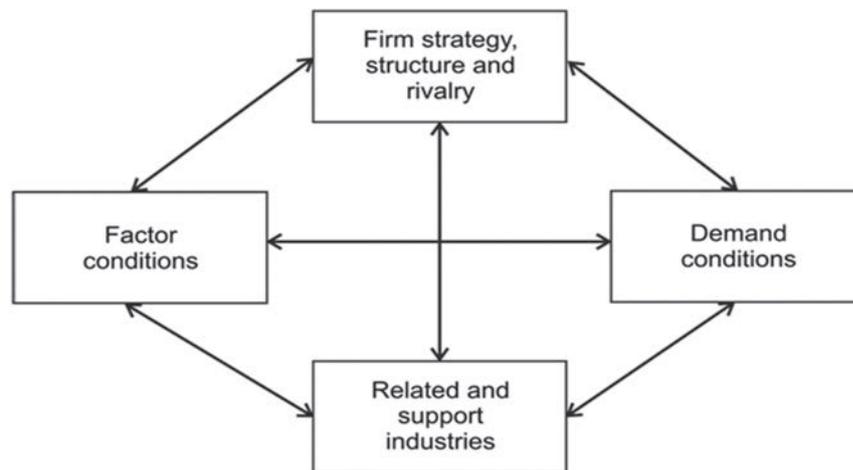
Box 1 Diamond Model analysis for Mongolia's Sea buckthorn Sector

Factor conditions

- ☑ The national “Sea buckthorn” program is under implementation. As a result, the country will be able to increasingly meet internal and export demand
- ☑ Sea buckthorn cultivation is low-cost and provides pure eco-products.
- ☑ Private sector investment in the Mongolian sea buckthorn industry is increasing.
- ☑ Road and other infrastructure investments are increasing.
- ☑ Good supply of qualified labor (MUST, Institute of technology).
- ☒ Sea buckthorn cultivation and harvesting are dominated by traditional technologies and are vulnerable to nature-related risks.
- ☒ Irrigation of cultivation fields is inadequate.

Demand conditions

- ☑ Improving purchasing power of consumers.
- ☑ Increasing adoption of global standards including HACCP, ISO-14001, and ISO-22000. Higher consumer requirements for product quality and related services.
- ☑ Growing international demand for eco-food. Railway connection to Russia and China markets.



Related and support industries

- ☑ Emergence of professional associations (Mongolian Sea buckthorn Growers and Producers Association).
- ☑ Accelerated development of Mongolia’s banking, insurance, communications and information industries.
- ☒ Weak collaboration among crop cultivation companies. Lack of feedback and profit sharing mechanisms.
- ☒ Poor development of agriculture-related processing industries in the regions.
- ☒ Weak control of product quality and hygiene.

Firm’s strategy, structure and rivalry

- ☑ Emergence of national sea buckthorn producers.
- ☑ Growth of nationwide sea buckthorn output.
- ☒ Companies procure production inputs from overseas, exacerbating the problem of external economic dependence.
- ☒ Absence of modern standards and expertise among regional enterprises.
- ☒ Regional sea buckthorn cultivation enterprises are chronically short in working capital and investment funding.

Source: Own research