



NATIONAL DEVELOPMENT AND INNOVATION COMMITTEE
Governmental Coordination Agency

www.ndic.gov.mn



ACTIVITIES FROM NDIC TO SUPPORT THE “SAINSHAND INDUSTRIAL PARK”



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Head NDIC Б.Ганбаатар



1. PREPARATION OF HUMAN RESOURCES

Demand for manpower

Plants	Total no. of workers	Foreign workers	Mongolian workers /in thousands/	
			Technical engineering workers	Professionals
Cement plant	270	27	54	189
Pellet plant	295	30	59	207
DRI plant	136	14	27	95
Coke plant	270	27	54	189
Power plant	161	16	32	113
Gasification plant	122	12	24	85
Copper smelting plant	515	52	103	361
Copper production plant	395	40	79	277
Railway repair station	100	10	20	70
Total owners' organizations, 20% from above	453	45	91	317
Total	2717	272	543	1902



Manpower demand by skill levels

Plants	TEW	Needed skills	P	Needed skills
Cement plant	54	2141 Industrial engineer	189	3113 Electrical engineering technicians
		2151 Electrical engineer		3115 Mechanical engineering technicians
		3111 Technicians in Chemistry and Physics		3117 Mining metallurgical engineer
				7126 Plumbers
				7212 Welders
Pellet plant	59	2146 Mining engineer	207	7411 Electricians
		3111 Technicians in Chemistry and Physics		3113 Electrical engineering technicians
		2151 Electrical engineer		3115 Mechanical engineering technicians
				3117 Mining metallurgical engineer
				7126 Plumbers
				7212 Welders
				7213 Sheet metal worker
DRI plant	27	2146 Mining engineer	95	7223 Metal machinery operator
		3111 Technicians in Chemistry and Physics		7411 Electrician
		2151 Electrical engineer		7212 Welders
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Gasification plant	24	3111 Technicians in Chemistry and Physics	85	7223 Metal machinery operator
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Copper production plant	79	2151 Electrical engineer	277	3113 Electrical engineering technicians
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				7126 Plumbers
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Railway repair station	20		70	7212 Welders
				7223 Metal machinery operator



Some considerations:

- The committee has developed the project criteria and requirements to organize the national manufacturers and entrepreneurs that are intended to participate in the implementation of development project initiated by the Mongolian government, and assist them by means of policy and financial support.
- According to the offer of the Japanese International Cooperation Agency (JICA) for a long term scholarship loan for 460 students to develop the human resources in the Science and Technology field of Mongolia, the committee is doing research of the labor market for engineers and technicians and making requests to JICA (this includes 360 bachelors, 160 masters).
- According to the research results, 4774 bachelors, 250 masters in engineering are needed in coming 5 years. From this amount, Sainshand industrial park needs a total of 543 engineers and technical workers.



Possibilities to prepare qualified workers

- In September, 2013, a VTPC is going to start in Nalaikh.
- VTPC in Gobi Sumber (central resort college)
- Poly-technicum in Darkhan
- Mongolian-Korean college (UB)
- VTPC in Dalanzadgad
- VTPC in Baganuur (starts working in 2015)



Important future considerations

- Support State and Private universities to prepare engineering and technical workers through policy.
- 2.2 million tugrug is required as investment to prepare one professional worker³ (about today 590.0 tugrug have been spent)
- Expand and provide equipment for practice to VOCATIONAL TRAINING AND PRODUCTION CENTER,
- Organize training to prepare the specialized workforce based in training centers with enough resource materials and capable teaching staff,
- Support the training of specialized personnel relying upon large entities and companies and to organize on-the-job training for this personnel,
- Organize training within the industry to prepare specialized workers.



2. EXPERIENCE WITH INDUSTRIAL PARK ESTABLISHMENT

- NDIC and representatives of related ministries and agencies visited and were introduced to the “Industrial Park in Tsenkher” and the Metallurgy plant in Bugat which are located in the north of Bayannuur town in IMAR of PRC, and the coal gasification plant in Ordos, Shenshua.
- Considerations related to the construction of the industrial park:
 - develop and follow the laws for “heavy industrial parks”, assign levels to companies depending on their income by the State,
 - provide possibilities to get loans and tax exemptions for certain period of time,
 - implement the infrastructure of the industrial park supported by State funding,
 - it is required to develop policies to determine the capacity depending on processing levels and mineral types in the plant operation.



3. In line with cooperation with technology owners and investors

- Related to the construction of the “iron plant” a memorandum was made with “Siemens” company of the Federal Republic of Germany on the 20th of the December, 2011 and “Kobe Steel” Ltd of Japan on 19th of the March, 2012.
- To implement the “copper smelting plant” construction a memorandum with Rio Tinto of England-Australia is ready to be signed.
- To intensify the “coal gasification plant” construction cooperation is in progress with the “industrial corporation of Mongolia” Co Ltd, “MCS” Co Ltd, “Mongolian Gold” (MAK) Co Ltd and “Petrovis” Co Ltd within the framework of a memorandum.
- Working on offers from companies such as BNP Paribas, Sumitomo Mitsui, Standard Chartered, PricewaterhouseCoopers, ThyssenKrupp, Uhde, the “industrial corporation of Mongolia” Co Ltd, and “Beren” to cooperate and to invest.



4. Improvements of research work

- A meeting of the working group was organized 3 times and met in person with related ministries and agencies each 3-4 times to ensure the fulfillment of the master plan and gathered their input.
- To intensify receiving, evaluating and concluding the report, set up a sub working group according to order number 124, made in 2012 by the director of NDIC.
- A decision was made to develop a comparative study for the location to construct the plants.
- A decision was made how to manage Sulphuric Acid and develop market research more accurately.
- Choose potential technology for the iron plant
- Arranged the calculation of the labor demand for each profession.
- Cooperated to prepare the information about international experience of industrial complex establishment (prepared the information, delivered to ЗГХЭГ-Mongolian Governmental agency).



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5. CONCLUSIONS ECONOMIC ANALYSIS

The economic study has been made according to international standards and methodology and based on cash flow.

	Sainshand (without discounts)	Return on investment period	Other location alternatives
Coke plant	15.0%	11	8.8%
Cement plant	7.8%	5	N/A
Pellet plant	4.4%	18	2.2%
DRI plant	N/A		N/A
Copper smelting plant	1.1%	25	0.6%
Coal gasification plant	9.1%**	14	N/A
Power plant	9.1%**	14	N/A



CONCLUSIONS ECONOMIC ANALYSIS

Ways to improve the productivity of the iron reduction and copper smelting plants that are intended to build into park:

- Provide power supply and rate discounts,
- Decrease the price of Syngas supplied to the iron reduction plant such as easing the coal price,
- Sulphuric Acid from the copper smelting plant,
- It is possible to use the approach for decreasing the cost of investment, by reducing import tax and VAT.



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CONCLUSIONS ECONOMIC ANALYSIS

Sainshand industrial park	Cement	Coke	Pellets	Smelted copper	DRI
Base case (Syngas price \$9 /MMBtu)	7.3%	13.8%	3.2%	0.4%	N/A
Electricity (Syngas price \$8 /MMBtu)	17.7%	10.4%	7.0%	3.5%	N/A
Equipment, construction material exempt from VAT and import duties		11.4%	9.0%	4.1%	N/A
Income tax exempted		14.0%	11.2%	5.1%	N/A
Water cost exempted			11.5%	5.5%	N/A
Governmental ownership of coal gasification plant (Syngas price \$6/MMBtu)			12.8%	5.5%	N/A
100% cost subsidy for coal gasification plant (Syngas price \$3/MMBtu)				5.6%	7.8%
Electricity cost subsidized for coal gasification plant (Syngas price \$2/MMBtu)				5.6%	11.8%
Cost of investment reduced by 40%				9.4%	18.8%
Calculation with highest commodity prices				13.2%	



**6. Determination of responsible organizations for implementation,
needed technological development, production strategy,
manufacturing and their issues**

Interrelations between industrial and innovation policies

Industrialization program (2009-2016)

1. Provide a favorable legal and business environment for the industry

2. Contribute through industrial investment and financial, market policies

3. Find human resources required to maintain industrial operation

4. Intensify the introduction of industrial research, innovation, progressive technology and establish methodologies, technology innovation to increase industrial capacity and productivity

5. Increase total production by promoting raw material processing
6. Support products toward export by trade policies

Innovation policy

Pleasant business environment

Provide and promote possibility to intellectual property become a part of the economic circuit
Provide rebates and encouragement to start-up companies

New investment institution

- Establish innovation funds /ЗГТЦ/
- Establish venture investment funds

Human resource

Prepare specialized professionals
Promote foreign specialists to work
Develop business skills and entrepreneurship

Science and business cooperation

Science park,
Research centers,
Infrastructure for a national innovation framework

Technology innovation

Technology transfer, dispersion
Technical and equipment innovation
Companies based on technology

New markets, competing new products

- Nanotechnology, nano-material
- Biotechnological products
- Information technology, outsourcing
- Electronics

Innovation development framework program in Mongolia (2008-2015)

Program of high-tech industry development (2012-2014)

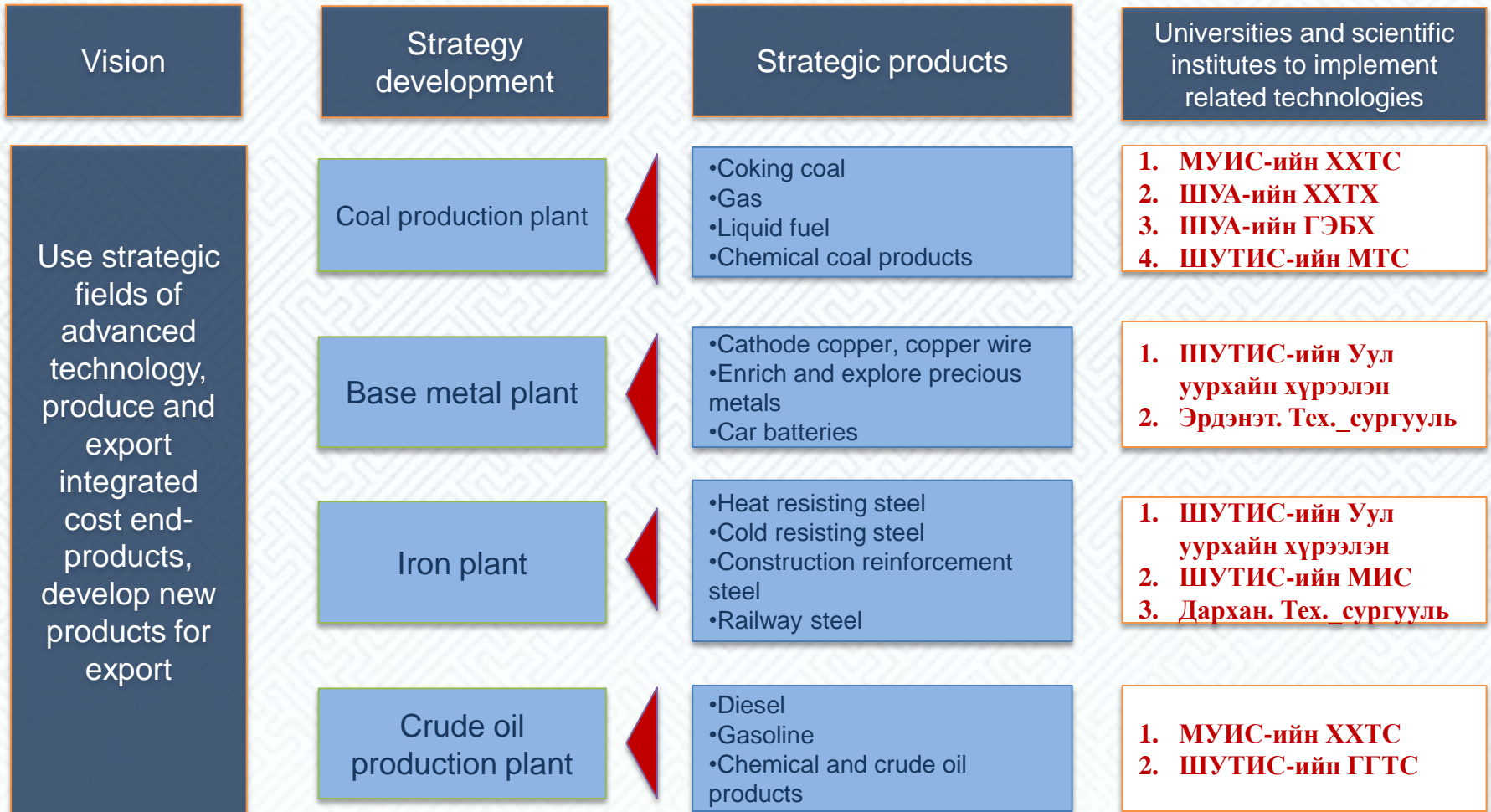
Leading science and technology development program (2009-2014)

Law on Innovation (project)

National program Technology (project)

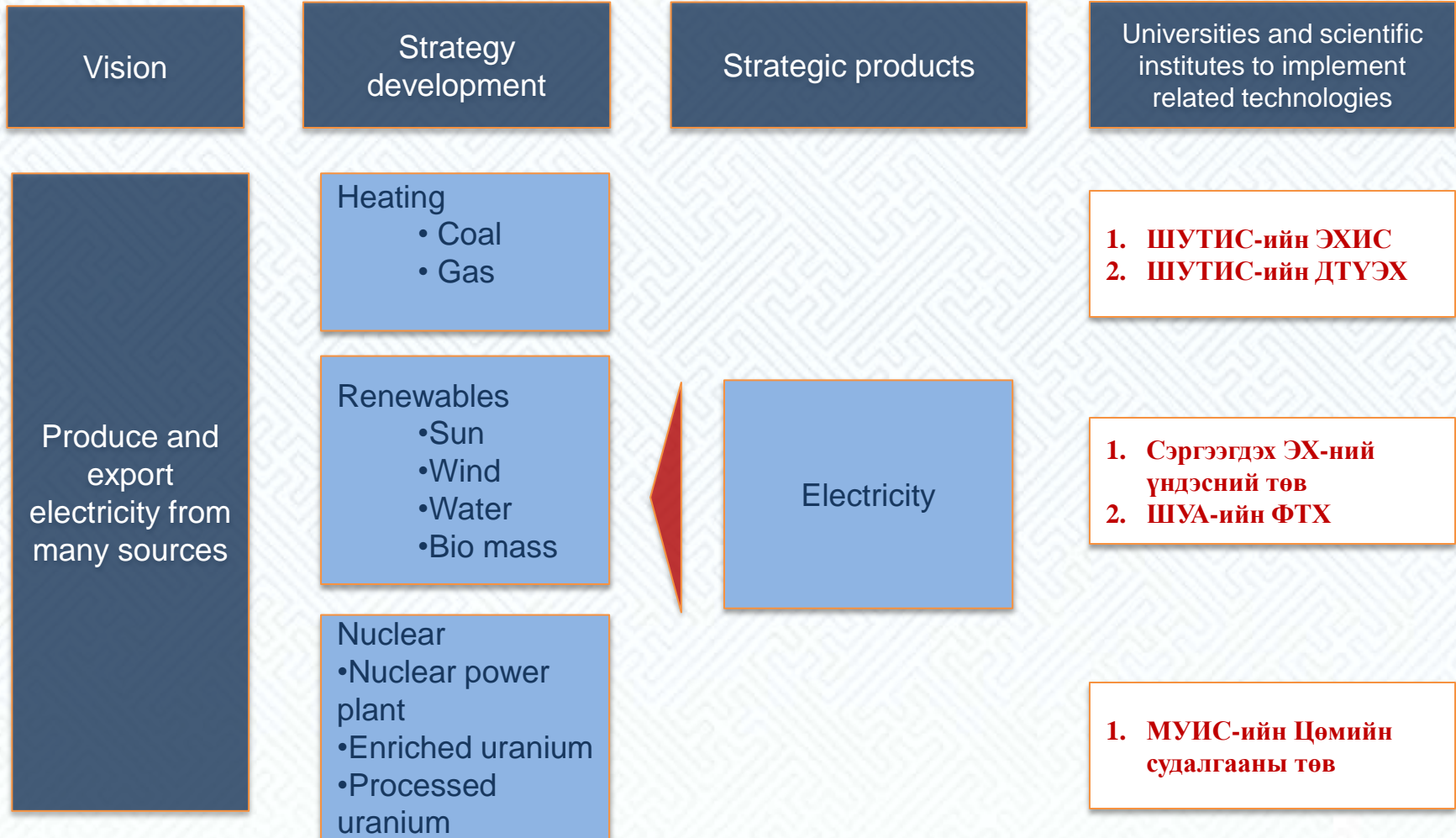


Mineral production



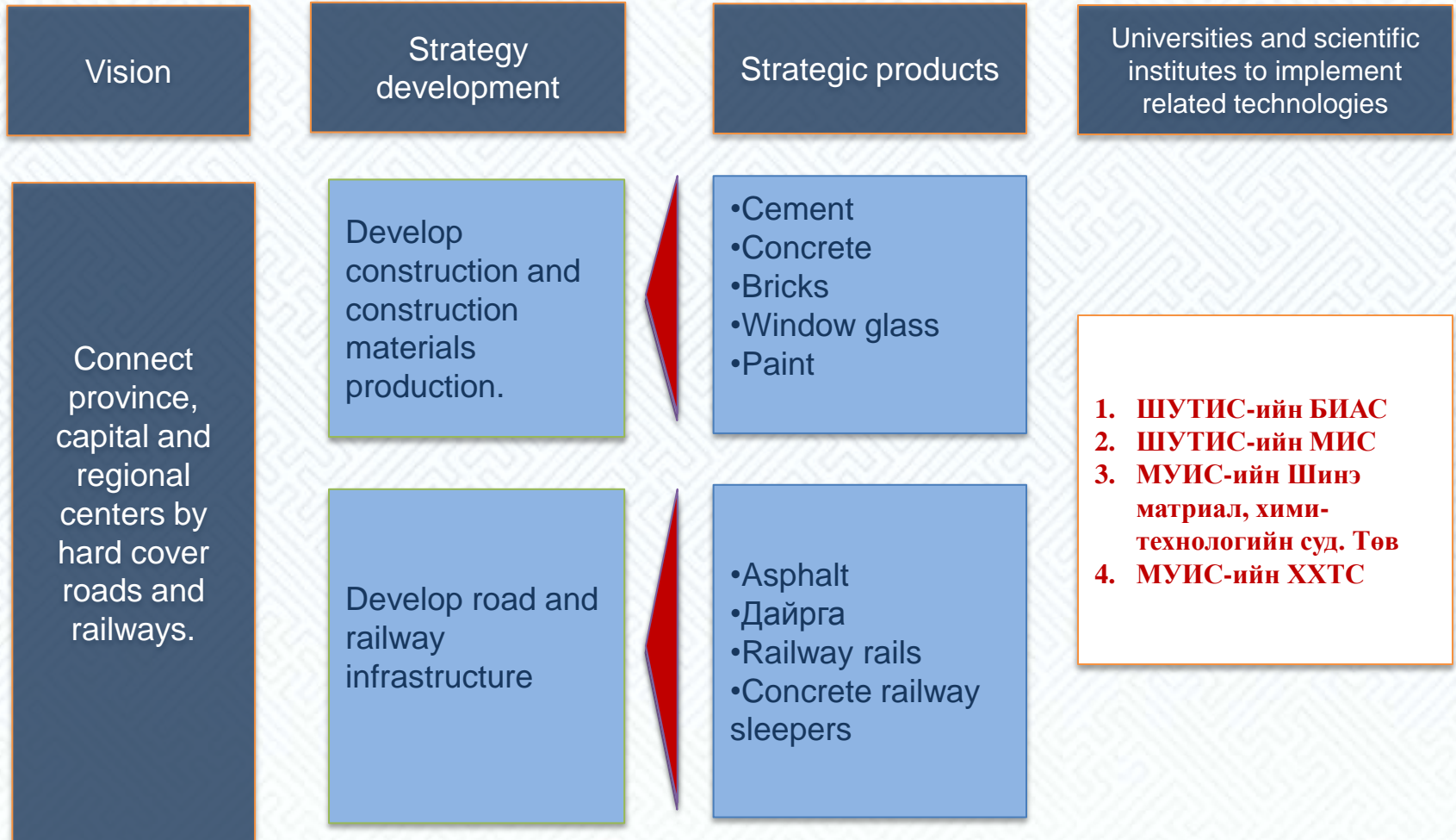


Power plant



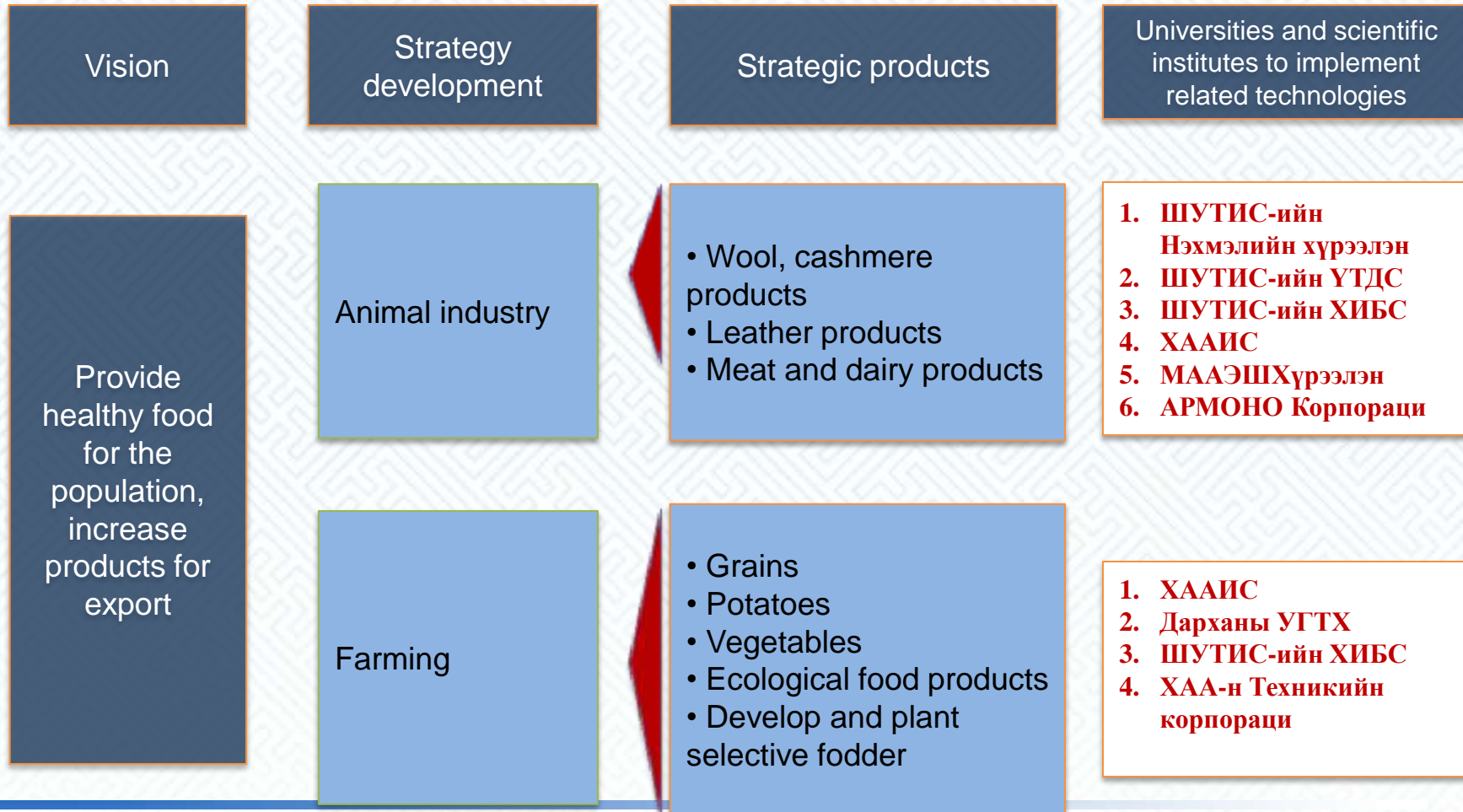


Construction, railway and roads





Food, agriculture and light industry





THANK YOU FOR YOUR ATTENTION!