

Cotton-Textile Cluster as a Knowledge Base for Education, Science and Manufacturing Innovational Cooperation

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Abstract The role of the innovative community of education, science, production in growth and development is scientifically substantiated in the article. The regularity of the formation of innovation, innovation centers, innovation environment in the interrelation of the essence and content of the term cluster is highlighted. At the same time, the advantages and plans of the Bukhara “cotton-textile cluster” project, which provides stability of the socio-economic growth of the region, the creation of industrial products with high added value, the appropriate conjuncture of the domestic and foreign markets, an integrated collegial exchange of experience.

Keywords Integration, Innovation, Innovative environment, Development, Cooperation, Industry, Education, Science, production, Technopolis, Technopark, Cluster

1. Introduction

In the modern world of globalization a wide range of approaches oriented to fast development require collective harmony. It is hard to imagine development and promotion without effective integration of science, education and manufacturing, innovational processes [1].

In view of implementation of the tasks specified by the National Program for training personnel, intensifying the integration of science and education and more effective use of scientific-technical potential of academic science in preparation of highly-qualified specialists, ensuring broad participation of scientists in the educational process of higher education institutions, active involvement of talented young people from Masters and Bachelor-degree holders in research and development, and to ensure continuity between the stages of undergraduate and postgraduate education, a joint Resolution of the Academy of Sciences of the Republic

of Uzbekistan was adopted with the Ministry of Higher and Secondary Specialized Education of the Republic of Uzbekistan “On Integration of Science and Education” (2006).

The resolution of the President of Uzbekistan No.2687 “On program of measures on further development of the textile and sewing-knitting industry for 2017-2019” set a number of tasks in front of specialists working in this field of science, education and manufacturing [1, 2].

Education – a free of charge remedy of preparing a scholar to life and modern labor. Human cognition starts from practical attainments and experience and turns into knowledge. Through education, the knowledge of society, country, and of the world is passed on from generation to generation. In democracies, through education, children and adults are supposed to learn how to be active and effective citizens. Education may help and guide individuals from one class to other. Educated individuals and groups can do things that the less educated cannot [3].

The upbringing is a pedagogic measures aimed to perfect human physically, spiritually, morally, politically, legally, generally.

Science – a power leading the development of society and system of infinite knowledge updating, that is a mean for

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development not only technology but also human itself, its intellectuality, capabilities, intellectual culture. Science contributes to the quality of life in so many areas: health, nutrition, agriculture, transportation, material and energy production, and industrial development [4].

A practice requires subject and practice trials the accuracy of its arguments. In this sense science and manufacturing are two peas in a pod. But, manufacturing in this case, that is practice, has a decisive role. In other words, the practice is a basis as well as providing ground for theory [5].

The manufacturing has also direct relationship with terms technics, technology.

Technics (skill, art) – a complex of skills and means that are instrument in impacting the surrounding nature in purpose of possessing material treasure as well as satisfy demands human and society. Depending on activity technics classified to manufacturing and non-manufacturing technologies (household services, education and culture, military, medicine and etc.) [6].

The active part of manufacturing technics – machines, which basis for manufacturing technology. Technics is developed under achievements of science, bring new issues for science, require interconnection. **Technology** (art, skillfulness, acquisition) – a system, that is formed through received and processed products from art, construction, transportation, agriculture and in other fields. Development of science and technics causes renewal and evolvement of technology [7, 8].

As we can see from above mentioned, any field aimed to human benefits develops in life cycle of science and manufacturing cooperation. It is commonly known that, social life also consists of dialectic union of manufacturing power and manufacturing relationship [7].

Manufacturing power has four elements, while manufacturing relationships are known to have up to ten complicated forms. The decisive factor of manufacturing power is skillful human. Human speech language, intellection, level of it, labor simplicity of skillfulness, is identified by level labor tool and depend on equal ascension of field science, education and manufacturing [9]. This ascension also identified through thorough integration of each field, extensive analysis of current situation, exact identification of future plans and respective successful achievements, connection and integrity of processes with education stages, skills of specialization and qualification in this environment, development of spiritually healthy person with deep fundamental knowledge as well as created innovations [8].

Analysis and effective use of innovation, innovative centers, innovative environment and its forming, technologies related to its development and patterns is today's demand. Because, innovation is an idea that came out from integration of complete conceptualized knowledge beginning from a product of active cooperation of scientific research, science, education and manufacturing, renewal based factor for exuberant and wealthy life, social and economic growth [10].

The largest innovation centers have distinctive forming and development, as well as unique history. Their activity and working approaches are closely related with a number of factors, such as knowledge level mentality of people, state of manufacturing, government policy, capacity of science and education institutions, human capital. [4-10].

According to general director of Valeo company, Mr. Jacques Aschenbroich, innovation as an invention that has found a market... [5]. In a world that is more and more open, we promote an innovation of the widest possible scope, including partnerships with public research bodies, academic organizations, customers, and suppliers.

The cooperation in field of innovation is ground for forcing innovation processes, forming consort, active innovation environment, and providing mutual experience sharing among strategic companions and suppliers for further growth and renewal.

In accordance with The Strategy of action on five priority areas of development of the Republic of Uzbekistan in 2017-2021 issued with initiative of our President Shavkat Mirziyayev, the wide scale activities on deepening of structural transformations, increasing competitiveness through modernization and diversification of the leading sectors of the economy are ongoing. Along with this processes such notions as technopolis, technopark, cluster and others are coming to our lifestyle [7].

Technopolis or technology park are synonyms for science park - one of the forms of the free economic zone, designed to activate the innovation process, support the fast and effective use of high-tech products.

In accordance with Presidential Decree from February 7, 2017 No-2759 "On measures toward establishment of sewing science-educational Technopark under Tashkent Institute of Textile and Light Industry" there are number of tasks on renewals in system of high qualified human resource development, educate world class engineering-technical specialists, training are defined and systematically are being implemented [9].

Cluster (from French palm, head, connection, community, chain) - a notion came to the world of social-economic activity in the end of 19 century. Cluster in economics, is not only competition, but also collective approach for problem solving, effective usage of available raw materials, energy and labor resources, stable social-economic relations based active knowledge sharing, and mutually trusted cooperation of group of manufacturing companies under common technologic system [10].

Nowadays development of any field through deep understanding of weakness, fully alignment of achievements and analysis causing a movement of the cross-filed cooperation to a new level is a life-proved fact. The new approaches in rapid social-economic development of country is always under attention of our Government [9].

This scientific article tells about a system of planting and deep processing of nation treasure – cotton, about pilot project formed as a reply to and based on the tasks written in Presidential decree No.2978 "On measures toward

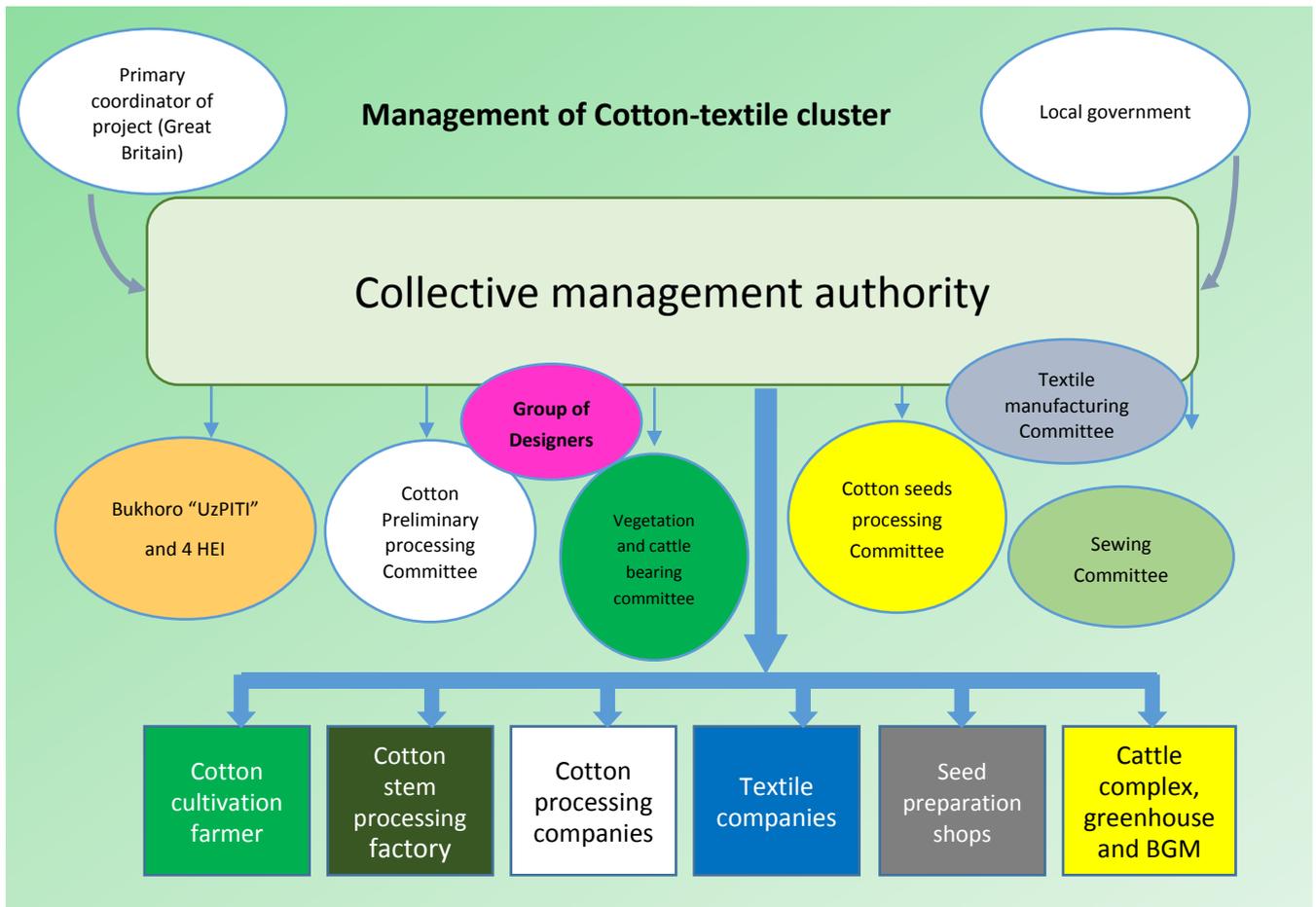
establishment of modern cotton-textile cluster in Bukhara region” from May 19, 2017 [3], that is implementing for social-economic development of Bukhara region, for employment of different level of population, for increasing of real income, a combined life time experience and knowledge of scientists in textile and other fields, economists, manufacturing specialists [7, 8].

The aim of this paper is to study the cotton-textile cluster as a knowledge base for education, science and manufacturing innovational cooperation.

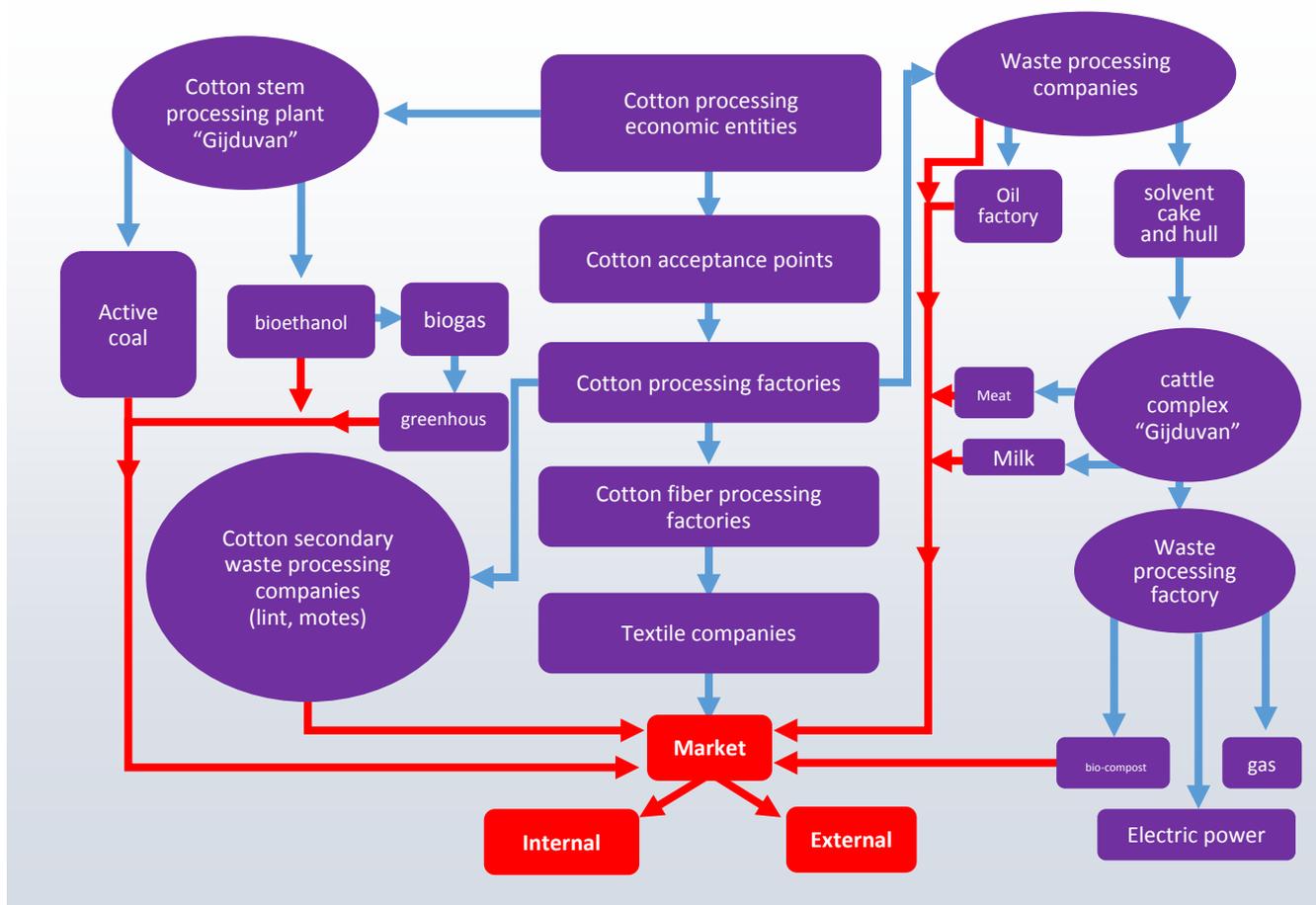
“Cotton – textile cluster” is formed through investment in amount of 123,1 million USD by “Bukhara Cotton Textile” British-Uzbekistan JV, “Paraglide LTD” JV and “Petromaruz” (Russia). This cluster, managed by Primary coordinator of project (Great Britain) and local government (scheme 1), mainly investments are targeted to harvesting, enlarging capacity of local textile and garment manufacturing and modernization. This facility has a capacity to annually produce 1,5 million units of ready products, 2,5 thousand tons of yarn, up to 4 million running meters of textile [3].

For textile industry the raw materials are cultivated in places using drip irrigation, inside cluster territory there will be oil and at extraction factory, cotton stem processing companies established. Secondary products such as solvent cake and hull are to be primary ingredient of daily nutrition for 10 thousand horned cattle of complex. The additional nutrition for horned cattle is planned to be through hydroponics, the plans with high fertility grown not on ground but in humidity. System of milk and meat products producing will be created. The wastes from farms and manufacturing will be used as biogas – a source for heating of 21 hectare greenhouse (scheme 2).

Each cycle of business-plan with finalized scale is finished with ready product, and according to calculation of economists will have ROI in 5 years. There is planned to employ more than 9 thousand people, and major part will consist of local professional colleges and gradutors of higher educational institutions. The world and national science-innovation products of utilized. For instance, in painting of textile products the “Indigo” ecologically clean, local paints are aimed to be used.



Scheme 1. Management of Cotton-textile cluster



Scheme 2. System of cotton-textile cluster activity

The below table shows the annual capacity, raw materials and ready products plan of “Bukhara textile cluster”.

#	Company (factory)	Annual capacity	Raw materials	End product	Comments: export volume
1	Cotton processing	8000 t. Fiber	24000 t. cotton	8000 t. fiber 4160 t. seeds 240 t. lint, motes	350 t. seeds
2	Oil extraction	4160 t. cotton seeds	4160 t. cotton seeds	758 t. oil, 414 t. coancrok 1825 t. solvent cake 1320 t. hull	121 t. oil, 66 t. coancrok 291 t. solvent cake 211 t. hull
3	Cotton stem processing	100000 t.	100000 t. Cotton stem	10500 t. bioethanol 250 t. active coal 100000000 m ³ biogas	
4	Horned cattle complex	1700 cattle	1700 cattle for milk and meat	1200 t. milk 14000 t. meat	1020 t. milk 11900 t. meat
5	Waste processing factory	Wastes of complex	Wastes (dung) 18000 t.	18000 t. bio-compost 2000 MW.hour electric energy. 3000 MW.hour heating energy. 10 mln.m ³ biogas	2700 t. bio-compost
6	Greenhouse	15 hectare	Vegetable cultivation	3000 t. tomato 3300 t. cucumber	
7	“Bukhara cotton textile” JV	1 500 000 units ready product	thread, strand	2500 t. threads 3960000 r.m.strand 1,5 mln units jeans	

The recommended cluster project will serve as an intermediary in forming competitive and effective economy of Bukhara region. Implementation of cotton-textile cluster is an economically effective for cotton market players. Because, it will be base for delivery of ready products to consumers, development of manufacturing, growth of production values as well as health and effective manufacturing.

2. Conclusions

Bukhara region will gain modern work places that serve for sustainable social-economy, unification of deferent level people from various fields and forming a manufacturing with additional value that suites internal and external market conjuncture by deep processing of local raw materials, increase of export share, forming an environment for young generation on achieving practical skills and mutual experience sharing, implementation of modern highly effective innovation technologies in each cycle of manufacturing as well as root updates. Education, science and manufacturing of the fields joined in cluster will integrate, in frame of continuous education spiritually health person with fundamentally deep knowledge will be formed and bases for innovation will be established.

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