German Economic Team

UZBEKISTAN

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Assessing the potential for the development of automotive clusters in the Republic of Uzbekistan

Key findings and recommendations

by Björn Vogler, Woldemar Walter and Bahtiyor Eshchanov

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About the German Economic Team

Financed by the Federal Ministry for Economic Affairs and Climate Action, the German Economic Team (GET) advises the governments of Ukraine, Belarus*, Moldova, Kosovo, Armenia, Georgia and Uzbekistan on economic policy matters. Berlin Economics has been commissioned with the implementation of the consultancy.

**Advisory activities in Belarus are currently suspended.*

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Executive summary

International experience indicates that, in principle, the cluster approach can be used to address a number of challenges and opportunities related to managing the structural transformation process in Uzbekistan. However, there is also evidence showing that not every concentration of companies can be developed into a cluster. Certain preconditions have to be met, in particular with respect to:

- **Regional concentration / critical mass:** e.g. sufficient number of companies and institutions, balanced mix of cluster actors, strong role of private companies (especially SMEs)
- **Specialisation in synergetic fields and value chains:** e.g. sufficient breadth (variety of related products, services and value chains) and sufficient depth (stages of value chains covered)
- **Cooperation climate / linkages:** e.g. shared interests, mutual trust and willingness to collaborate between the triple helix players (businesses, academia, government), variety of formal and informal relationships, understanding of the cluster approach.

Regarding the automotive industry in Uzbekistan the first precondition, a sufficient concentration – in quantitative terms – can only be found in the Andijan Region. However, the strong role of large (state-owned) companies is limiting the potential for cluster development. Criteria related to the specialisation pattern of the automotive industry are also fulfilled only in the Andijan Region.

While there is some interest in collaborative skills development and innovation activities, in general, the current level of cooperation is considered to be too low and stakeholders lack the necessary awareness of the cluster approach. Overall, linkages and the level of trust between the triple helix players are still rather weak.

The results from the interviews and complementary research carried out clearly show a need and potential to improve the competitiveness of the automotive industry in Uzbekistan. At the same time, considering the findings on the preconditions, a phased introduction of a cluster-oriented approach is advisable. Against this background, a road map with three phases is proposed:

(1) **Preparatory phase:** The focus of the initial phase is on sensitising the key stakeholders as well as international partners for the potential of the cluster approach and to develop a common understanding of the way forward. Furthermore, the phase serves to prepare two pilot projects (automotive cluster academy and innovation hub in the Andijan Region).
(2) **Pre-cluster phase:** Main emphasis is on improving the environment for cluster development at both the regional and national level. While implementing the two pilot projects, further formats and support services could be tested in the Andijan Region. It is recommended to complement those regional activities by a national grant scheme for collaborative innovation and R&D projects in the automotive industry.
(3) **Roll-out phase:** The focus of the final phase is on establishing a full scale regional cluster initiative in the Andijan region, which reflects international best practice. Depending on the results and experience gained, the developed policy tools as well as organisational and financing model could be transferred to other regions.

Content

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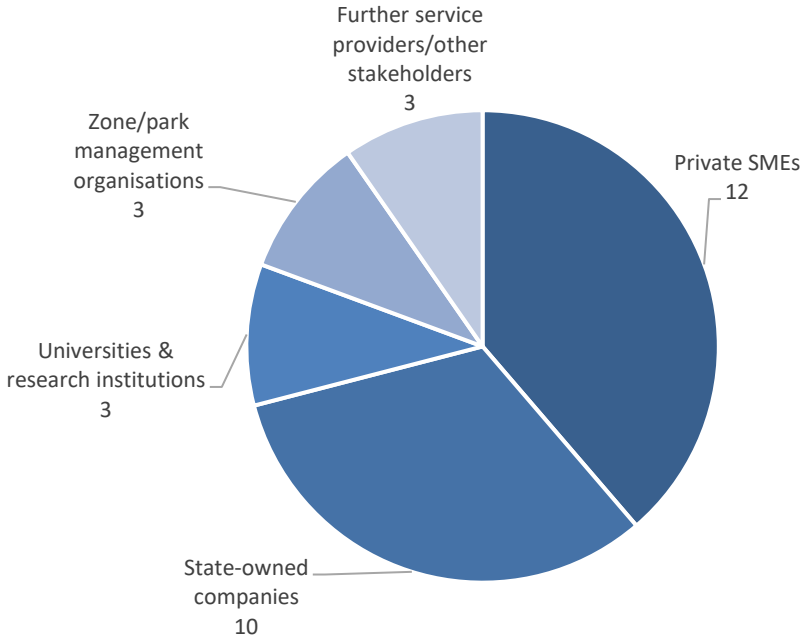
1 Introduction

In many countries, cluster policies and programmes have been successfully introduced to stimulate innovation, enhance the quantity and quality of attracted investment and to strengthen the competitiveness of SMEs. Against this background, the Government of the Republic of Uzbekistan is interested in leveraging clusters for industrial development.

In order to support the necessary planning processes and policy decisions, the German Economic Team has recently reviewed relevant international experience focusing on key features of successful cluster initiatives as well common policy tools and organisational models for the implementation of cluster programmes (Policy Briefing PB/01/2022). Building upon the discussion of the results and recommendations presented in the policy briefing, the German Economic Team has been asked by the Ministry of Economic Development and Poverty Reduction of the Republic of Uzbekistan to assess the potential for the development of automotive clusters in the country focusing on the Tashkent, Andijan and Jizzakh Regions.

This policy paper summarises our findings, conclusions and recommendations regarding the way forward. Chapter 2 outlines the rationale of the cluster approach and identifies necessary preconditions. These form the basis for the assessment (chapter 3), which has been carried out drawing on 31 interviews with companies in automotive value chains, relevant universities, zones and parks and further institutions in three regions (see figure 1 below). In chapter 4, recommendations for introducing a cluster-oriented approach to support the development of the automotive industry are derived. Proposing a phased approach, the main focus is on measures stimulating collaborative activities in the area of skills development and innovation. Practical examples, amongst others from Germany, Portugal and Canada, are used to illustrate the recommendations.

Figure 1: Interviewed stakeholders of the automotive industry in the Tashkent, Andijan and Jizzakh Region



Source: Own research and illustration

2 Rationale of the cluster approach and necessary preconditions

Clusters are geographic concentrations of companies and supporting institutions that are actively collaborating in related fields and value chains. International experience indicates that, in principle, the cluster approach can be used to address a number of challenges and opportunities related to managing the structural transformation process in Uzbekistan.

Various countries have successfully leveraged clusters to increase the efficiency of policy tools in areas, which are also of strategic importance for the development of the automotive industry in Uzbekistan, e.g.:

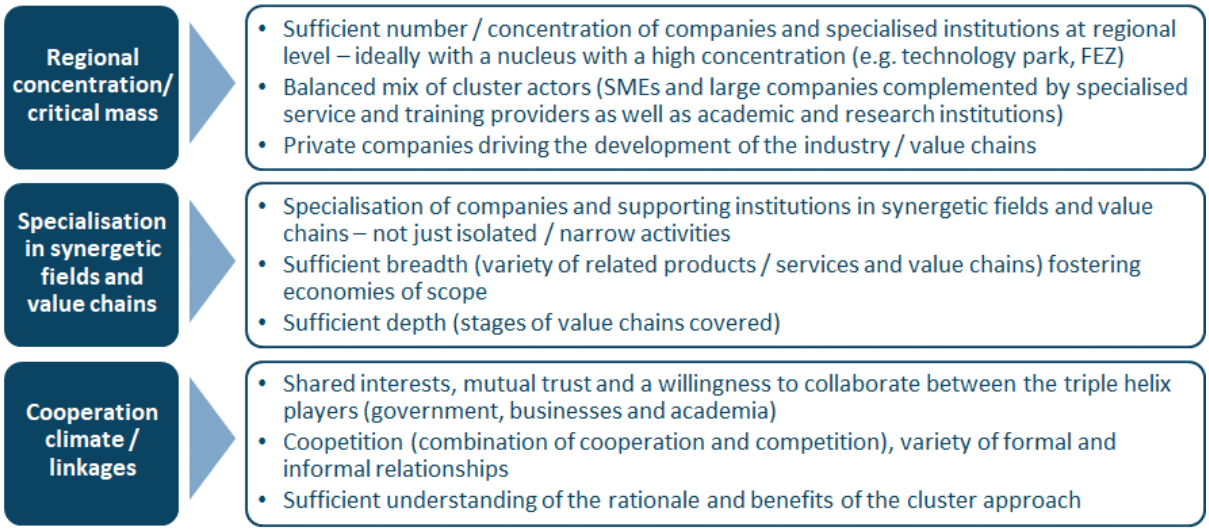
- Promoting innovation and entrepreneurial development
- Developing and upgrading value chains
- Attracting investment and increasing / diversifying exports
- Enhancing the skills base and creating new jobs.

Clusters offer promising opportunities not only for governments, but also for…

- Companies (e.g. increasing productivity drawing on specialised assets, improving access to customers and markets, reducing risks involved in innovation activities)
- Academia (e.g. commercialising research, aligning education programmes to market needs, developing international relations, tapping new funding sources).

However, there is also evidence showing that not every concentration of companies can be developed into a cluster. Certain preconditions have to be met, which relate in particular to the structural characteristics of the specific (emerging) clusters as well as to the general framework conditions for cluster development in a country. Figure 2 provides an overview of the relevant preconditions.

Figure 2: Preconditions for the development of (emerging) clusters



Source: Own research and illustration

3 Assessment of the cluster potential

The subsequent sections summarise the results from the assessment of the cluster potential, which is based on the mentioned interviews with key stakeholders of the automotive industry as well as complementary research. The sections are structured in line with the identified three main preconditions (1) regional concentration and critical mass, (2) specialisation in synergetic fields and value chains and (3) cooperation climate and linkages.

3.1 Regional concentration and critical mass

International experience shows, that – in quantitative terms – cluster initiatives need to attract at least 25 members to be viable. In Germany, cluster initiatives have on average 125 members. Regarding this precondition, a sufficient concentration of companies and specialised institutions can only be found in the Andijan Region. Only this region has a sufficient concentration – in quantitative terms – with about 200 companies and 30,000 employees in the automotive industry. The newly established automotive hub, which comprises an area of approximately 100 hectares, could form a nucleus in the medium term. In addition, with the Andijan Institute of Machinery a renowned educational and research institution is present in the region.

In the Tashkent and Jizzakh Region, the concentration of relevant companies is not sufficient to generate cluster-related synergies. While offering an attractive academic landscape (e.g. Turin Polytechnic University), the Tashkent Region is lacking the critical mass in terms of businesses – with approximately 20 companies in relevant value chains. The automotive industry in the Jizzakh Region currently comprises less than 10 companies. In the medium term, the expansion of ADM could offer the potential to attract further suppliers and service providers to the region.

However, the strong role of large (state-owned) companies is limiting the potential for the development of an automotive cluster in the Andijan Region. It should be noted, that – in the context of cluster development – critical mass is not about large companies. The presence of a few large companies and their supply chains does not form a cluster. According to international experience, cluster development is primarily driven by private companies. SMEs are the backbone of clusters, as they play a critical role for regional innovation dynamics. Approximately 70% of the 73,000 members of EU cluster initiatives are SMEs.

However, currently, large companies – either fully state-owned companies or partly state-owned joint ventures – play a very strong role in relevant value chains in the Andijan Region. Against this background, considering the qualitative dimension of regional concentration / critical mass, the necessary preconditions for cluster development are only partly met in the Andijan Region.

3.2 Specialisation in synergetic fields and value chains

Criteria related to the specialisation pattern of the automotive industry are also fulfilled only in the Andijan Region. According to the interviews, more than half of all automotive companies in Uzbekistan are concentrated in the Andijan Region covering a broad spectrum of synergetic fields and value chains

(e.g. plastic and metal components). Thus, the automotive industry in the Andijan Region has the necessary breadth and depth to generate synergies and foster economies of scope.

The rather dispersed structure of the automotive industry in the Jizzakh and Tashkent Region is not conducive for the development of clusters. In the Jizzakh Region, the activities of the few companies (e.g. assembly of vehicles, production of glass, filters, cables, batteries, brake pads) differ significantly in terms of processes, raw materials as wells as skills and infrastructure needs. The potential for collaborative activities is limited in such an industry structure.

The same applies to the automotive industry in the Tashkent Region. The automotive supplier UzAuto Motors Powertrain is playing a strong – but rather isolated – role in the automotive industry in the capital region.

3.3 Cooperation climate and linkages

While there is some interest in collaborative skills development and innovation activities, in general, the current level of cooperation in Uzbekistan's automotive industry is considered to be too low and stakeholders lack the necessary awareness of the cluster approach.

Typically, successful clusters are based on the principle of coopetition: While cooperating in one field, companies remain competitors in others. However, currently, there is a lack of both cooperation and competition in the automotive industry in Uzbekistan. In particular in the Andijan and Tashkent Region, most relevant value chains are controlled by fully or partly state-owned companies. Collaboration mostly takes place on a commercial basis – among companies (e.g. sourcing transactions) and between companies and universities (e.g. fee-based trainings).

Overall, linkages and the level of trust between the triple helix players (businesses, academia, government) are still rather weak. Across all regions, many actors in the automotive industry are not (fully) aware of the rationale and benefits of the cluster approach and their roles within it.

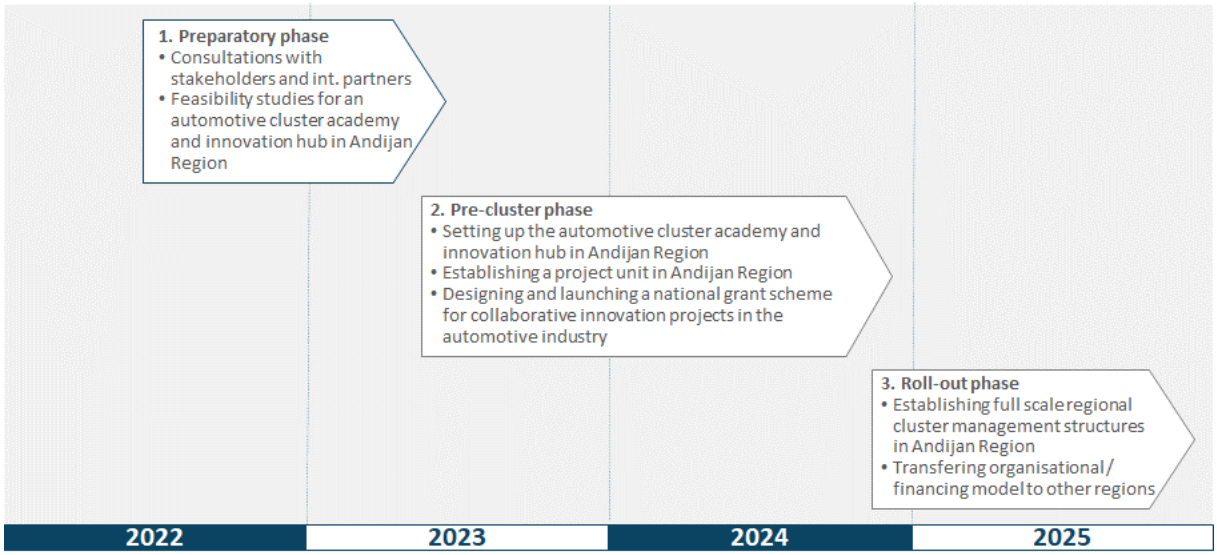
4 Conclusions and recommendations

The results from the interviews and complementary research carried out clearly show a need and potential to improve the competitiveness of the automotive industry – in particular in light of a WTO accession. At the same time, considering the findings on the cluster-specific preconditions, a phased introduction of a cluster-oriented approach is advisable. From a cost-benefit perspective, implementing a broad-based automotive cluster programme straight away including setting up stand-alone regional cluster management structures on a large scale does not seem to be promising.

Against this background, a road map for introducing a cluster-oriented approach to support the development of the automotive industry with three phases (1) Preparatory phase, (2) Pre-cluster phase and (3) Roll-out phase is proposed. Each time, before a new phase is entered, the interim results should be critically reflected in order to decide if the process should be continued or if alternative strategic options offer more promising opportunities (e.g. sectoral measures). Figure 3 below provides an overview of the different phases, which are explained in further detail in the subsequent sections. The road map combines measures at the regional and national level. To prepare the grounds for broad-based cluster development efforts, the initial focus is on measures improving the cooperation climate

taking up common challenges and interests and on sensitising stakeholders for the rationale and potential of the cluster approach.

Figure 3: Road map for introducing a cluster-oriented approach to support the development of the automotive industry in Uzbekistan



Source: Own illustration

4.1 Preparatory phase

Cluster development should be driven by collaborative efforts of the stakeholders of the automotive industry in the regions and in particular the private sector. Against this background, the focus of the initial phase is on sensitising the key stakeholders as well as international partners for the potential of the cluster approach and to develop a common understanding of the way forward. Furthermore, the phase serves to prepare projects that improve the cooperation climate demonstrating the benefits of collaborative efforts to increase the competitiveness of the automotive industry.

The following activities are foreseen:

- **Stakeholder consultations:** As a first step, consultations with the key stakeholders of the automotive industry should be carried out. The main focus should be on the Andijan Region. In addition to regional actors (companies, Andijan Institute of Machinery, Automotive Hub, local government), relevant stakeholders at the national level (e.g. relevant ministries and agencies) should be involved. Building upon the results from the assessment, the proposed road map should be discussed and refined to develop a common vision and understanding of the way forward.
- **Round table with international partners:** Taking into account the results from the stakeholder consultations, a round table with international partners that have a relevant focus should be organised. The round table serves to jointly reflect the road map and to secure and align international support for cluster-related measures. The round table should be prepared by individual meetings with international partners to discuss their interests, planned activities and requirements with respect to supporting selected measures.

- **Feasibility studies for an automotive cluster academy and innovation hub in the Andijan Region:** The interviews carried out have shown an interest in collaborative activities in the areas of skills development and innovation. Both areas typically play an important role in cluster programmes and offer a promising potential to demonstrate the benefits of the underlying approach. Against this background, it is proposed to conduct feasibility studies for two projects, which could form core elements of a future regional cluster initiative: (1) an automotive cluster academy providing needs-oriented training and degree programmes and (2) an automotive cluster innovation hub offering the industry-specific hard and soft infrastructure for collaborative innovation projects. Building upon an in-depth assessment of the automotive companies' needs as well as a review of existing / planned facilities (e.g. UzAvtosanoat's plant academy) and relevant international experience (see examples below), the feasibility studies should define the service portfolio, the organisational and financing model for the two projects.

Practical example: ATEC Training Academy (Portugal)

- ATEC Training Academy is a non-profit TVET (Technical Vocational Education and Training) association based on a cooperation between Volkswagen, Siemens, Bosch and the Portuguese-German Chamber of Commerce and Industry with assistance from the Portuguese Government
- ATEC is present in 7 Portuguese cities, located on or next to major investment sites of the automotive industry
- Furthermore, an eLearning platform has been established
- The academy provides tailor-made vocational training programmes and advisory services for companies in the areas electronics & automation, car mechatronics, industrial mechanics, IT, personal & organisational development and lean management
- Amongst others, 2.5 years dual vocational training programmes, 1 year qualification programmes for graduates without work experience and technological specialisation courses are offered

Practical example: Manufacturing and Automotive Innovation Hub (Canada)

- The Manufacturing and Automotive Innovation Hub is a collaborative workspace and laboratory to rapidly solve industry problems with novel technology solutions and to help Canadian automotive manufacturers adopt advanced manufacturing approaches
- The Hub is part of the National Research Council of Canada (NRC), the largest federal R&D organisation
- All levels of the automotive supply chain as well as equipment providers can test advanced technology onsite the 75,000 square foot hub and collaborate with NRC specialists getting expert assistance for their projects
- The hub comprises a manufacturing lab to visualise and develop advanced manufacturing processes and an automotive lab to integrate and develop technologies related to connected/autonomous vehicles, vehicle light weighting and alternative propulsion/electrification

4.2 Pre-cluster phase

The focus of this phase is on improving the environment for cluster development at both the regional and national level. While implementing the two pilot projects, further formats and support services, which could form part of a future cluster initiative, could be tested in the Andijan Region. It is recommended to complement those regional activities by a national grant scheme for collaborative innovation and R&D projects in the automotive industry to improve the cooperation climate and stimulate innovation throughout the country laying the ground for further future cluster initiatives beyond the Andijan Region.

The following activities are foreseen:

- **Setting up an automotive cluster academy and innovation hub in Andijan Region:** Based on the results from the feasibility studies, the two pilot projects (1) automotive cluster academy and (2) automotive cluster innovation hub should be implemented. The implementation process should be complemented by targeted communication efforts to create awareness and ensure buy-in from the regional stakeholders and potential users.
- **Establishing a project unit in Andijan Region:** To coordinate and monitor the implementation of the two pilot projects, the Ministry of Economic Development and Poverty Reduction should establish a lean project unit in the Andijan Region. An advisory committee should integrate the key regional stakeholders – in particular SMEs. In addition to implementing the two pilot projects, the project unit should test further cluster-related dialogue formats and support services to prepare the next phase and motivate the companies and further actors to participate in joint activities. Those could comprise, amongst others, B2B or B2Science matchmaking formats, information events on technology-/market-related trends and relevant incentive programmes or joint delegation visits to successful automotive clusters abroad.
- **Designing and launching a national grant scheme for collaborative innovation projects in the automotive industry:** As mentioned above, the road map should also entail measures improving the environment for cluster development beyond the Andijan Region. A grant scheme for collaborative innovation projects could make an important contribution in this respect. The design of the grant scheme (e.g. eligible beneficiaries, projects and costs, aid intensity, funding volume and mechanism) should reflect the results from the stakeholder consultations and relevant international experience (see practical example below). A competition-based selection mechanism is advisable to ensure transparency. Furthermore, such a selection process offers a promising potential for complementary communication and awareness raising efforts (e.g. events to announce successful applicants).

Practical example: Grant scheme "New vehicle and system technologies" (Germany)

- Under the grant scheme, the German Federal Government provides non-repayable cash grants for collaborative innovation and R&D projects in the automotive industry
- Using a competition-based selection mechanism, the scheme supports industrial research, experimental development and feasibility studies performed by consortia of two or more business partners or businesses and research institutions

- The main focus is on projects contributing to the development / upgrading of value chains in the fields of new vehicles and system technologies including autonomous driving, low-emission vehicles and production processes
- The aid intensity depends on the project type, the composition of the consortia and the size of the participating companies:
  - Industrial research: aid intensity up to 50% / EUR 20 m per firm
  - Experimental development: aid intensity up to 25% / EUR 15 m per firm
  - Feasibility studies: aid intensity up to 50% / EUR 7.5 m
- The aid intensity can be increased by up to 20% if SMEs or research institutions are involved in the consortia
- The scheme forms part of the programme "Investments in the future of automotive manufacturers and suppliers", which also includes grants for the modernisation and digitalisation of production processes as well as cluster development projects. The total funding volume of the programme amounts to EUR 1.5 bn for the period 2021-2024

4.3 Roll-out phase

The focus of the final phase of the road map is on establishing a full scale regional cluster initiative in the Andijan region, which reflects international best practice. Depending on the results and experience gained, the developed policy tools as well as organisational and financing model could be transferred to other regions with emerging automotive clusters.

The following activities are foreseen:

- **Establishing full scale regional cluster management structures in the Andijan Region:** Taking into account the experience gained during the previous phase, in particular with respect to the implementation of the pilot projects and testing of further formats and support services, the project unit should be converted into a regional cluster initiative. Particular emphasis should be on strengthening the triple helix approach integrating the academic and business community in the management and steering structure of the initiative. It should be assessed whether a membership-based model (see example from Poland on the next page) or an open model offering services to all regional actors in the automotive industry (see example from Germany on the next page) should be used. Furthermore, it should be assessed if an existing institution, e.g. the Andijan Institute of Machinery or the Automotive Hub, could host the cluster management. In such a constellation, the cluster management has direct access to the expertise and contact networks of the host organisation allowing to generate considerable synergies.

  In any case, the organisational model should be based on a new allocation of roles and a close collaboration between government, academia and the business community. Commitment from government is very important – to convince companies to buy in. However, government should take over the role of a facilitator, not of the leader. Cluster development should be driven by the private sector, in particular SMEs.

  The portfolio of cluster-related services should be widened comprising e.g. information and cooperation platforms, business development services (e.g. participating in international trade fairs, organising regional supplier days, twinning with automotive clusters abroad), recruitment

services, incubation and acceleration programmes, laboratory and maintenance services as well as cluster marketing and investment promotion activities.

- **Transferring organisational / financing model to other regions:** The experience gained – in terms of suitable services and formats as well as the organisational and financing model – should be critically reflected and transferred to other regions to increase the impact of cluster development measures. From today's perspective, the Tashkent and Jizzakh Regions represent promising candidates. However, further regions could be involved, e.g. based on a competition-based approach for providing technical and financial assistance to regional automotive cluster initiatives. Furthermore, the developed model could be utilised to support the development of clusters in other industries and value chains. In addition, particular emphasis should be placed in this phase on aligning related policy areas and tools (e.g. industrial infrastructure, zone development, education and science) reflecting an integrated approach and creating a conducive environment for the development of clusters in Uzbekistan.

Practical example: Silesia Automotive Cluster (Poland)

- More than 170 companies and institutions are collaborating in the cluster – including large corporations, SMEs, universities, R&D institutions, technology centres and training providers
- Next to automotive OEMs (e.g. Opel, Fiat) and tier 1 suppliers (e.g. ZF and Marelli Group), the membership comprises companies and institutions, which specialise in related fields, e.g. robotics, electronics, metal, plastics
- The Katowice Special Economic Zone (SEZ) forms the nucleus of the cluster, which covers an area with a radius of approximately 150 km around the zone
- The service portfolio of the cluster management, which is hosted by the SEZ administration, comprises amongst others:
  - Information services (e.g. newsletters, thematic analyses, technology information platform)
  - Innovation & cooperation (e.g. B2B and B2Science platforms, brokerage services)
  - Automotive Silver Experts (retired experts)
  - Supplier database
  - Skills & recruitment (e.g. career and competence project, dual study programmes)
- Membership fees amount to approximately EUR 1,000 p.a. for a standard membership and EUR 500 p.a. for SMEs

Practical example: Cluster Transport, Mobility and Logistics of the Federal States of Berlin and Brandenburg (Germany)

- The Cluster Transport, Mobility and Logistics of the Federal States of Berlin and Brandenburg represents an example of an open cluster approach fully financed by public funding
- More than 17,000 companies as well as universities and research institutes in the fields of automotive, aerospace, rail transport, logistics and transport systems can benefit from the services and activities of the cluster management without a formal membership
- Based on a masterplan that has been jointly developed, the service portfolio focuses on the priority areas (1) traffic and mobility management, (2) automation and connectivity, (3) digital production, (4) new vehicle and aircraft concepts, (5) emerging technologies, (6) information technologies, (7) renewable energy and (8) safety and security

- Cluster structures comprise a cluster speaker as well as speakers for each priority area from the business and academic community, a cluster management hosted by the development agencies of the Federal State of Berlin and Brandenburg and an advisory board
- The organisational model allows to generate synergies at the interface with other cluster initiatives that are managed by the same agencies
- Funding of is provided by a special innovation support scheme of the Federal States which is co-financed by the European Regional Development Fund (ERDF)