
Beyond fiscal implications of structural reforms

North Macedonia

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Measure 4: Implementation of an Intelligent Transport System (ITS) along Corridor 10

- implementation of ITS with several devices such as WIM (weight in motion) on A1 Motorway, part of Corridor X, section Tabanovce – Gevgelija, 175 km, Road Weather Information Systems (RWIS), (road weather stations built to collect data on weather conditions and air pollution). ITS will provide for variety of traffic data and the number and type of vehicles that move along corridor X, as well as meteorological data
- timeline for start of this activity is Quarter 1 od 2021.
- expected project economic impact is reduction in travel time to the border crossing points.

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2. Results Indicators

Indicator	Baseline 2018		Target 2021	
	No. of accidents /Minutes	Percentage decreased	No. of accidents /Minutes	Percentage decreased
Reduced number of traffic accidents expressed in% along Corridor 10	67 ¹⁷	0%	56	16.6% ¹⁸
Reduce travel time in% along Corridor 10 ¹⁹	103	0%	85.5	17% ²⁰

*An EU report summarising evaluation results for ITS projects implemented in Europe between 1994 and 1998 finds that a dynamic signal control can reduce travel times by 17%, increasing to 20% when the dynamic signal control strategies are integrated with information and guidance²¹. An US study indicates that one DMS (Dynamic Message Signs) is likely to reduce $100 \times (1 - \text{EXP}(-0.181)) = 16.6\%$ of crashes per year, when other factors in the model are controlled²².

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Impact on competitiveness – from ERP

Use of ICT in field of transport, related to infrastructure, vehicles or users is becoming one of the most important areas in the EU to deliver improvements in network capacity, traveller mobility and therefore enhance economic productivity. In the Western Balkans, ITS could support improvements in congestion management, incident detection and recovery, advice on diversion and rerouting, real time travel information and better journey time estimate. Harmonisation or interoperability of systems is also essential for safe cross border transport movements. The ITS will provide significant improvement in the performance of the current traffic flow through reduced delays due to timely reporting and traffic redirection. The greatest impact is expected to be increase in safety and in saving travel time. Total travel time will be reduced as a result of coordination of the timely information system for road users along Corridor X. Because of early alerting for possible delays by the system, time savings will allow the users to decrease travel costs and Corridor X will be more competitive for usage, especially for international transport. Companies carrying out transport activities will have lower costs and shorter transportation time which is also in line with digitalisation agenda.

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Back-of-envelope calculation - **Impact on competitiveness:**

- With 17% reduction in travel time, travel cost will be reduced
- Depending on the weight of travel cost in price calculations, calculate the reduction. Lower own production price is a competitive advantage.

- Data on main export articles
- Price calculation (weight of travel cost)
- Approximation of impact of SR

Measure 5: Improving of irrigation systems

The new capital investments in construction of dams and irrigation systems have already started and will continue in the mid-term run. The main goal of the measure is increase of the irrigated areas in the country up to the level of installed irrigation capacity, which is currently 144,000 ha. At the same time, the investments aim towards increase of the irrigation capacity up to 250.000 ha or half of the total cultivated land in the country. These capital investments are expected to contribute to higher crop yields of irrigated land, as well rise of the volume of physical agricultural production in the country.

Results indicators

Implementation of the measure will increase the share of possible for irrigation land in relation to arable land from the current 28.8% to 31.7% (from current 144,000 ha to 158,350 ha).

Measure 5: Improving of irrigation systems

Expected impact on competitiveness – from ERP

Contribution to improvement of living conditions/livelihood of agricultural population in the projects area, and sustainable increase of the agricultural output (production and productivity) in new irrigation schemes by improved availability and efficient use of water resources.

Income of agricultural households is expected to increase 3-5 years after the completion of the measure activities. Additionally, the measure will enable production of electricity through construction of hydropower plants on new dams that will be constructed. Access to regular irrigation for farmers is expected to contribute for sustainability of the agricultural economy, as well as increased yields, which will also contribute to increasing the competitiveness of agricultural farms – increased crop yields with irrigation versus no irrigation (corn 2,320/6,700kg/ha, cereals 2,530/4,500kg/ha, grapes 7,000/30,000kg/ha, alfa-alfa 3,000/16,000kg/ha etc). Efficient irrigation allows farmers to grow crops with higher economic value (at the moment most of the locations have crops like wheat since they don't have water to raise other crops).

Measure 5: Improving of irrigation systems

Expected impact on competitiveness – back-of-envelope calculation

- (production of electricity through construction of hydropower plants on new dams that will be constructed)
- access to regular irrigation for farmers will increase crop yields with irrigation versus no irrigation (corn 2,320/6,700kg/ha, cereals 2,530/4,500kg/ha, grapes 7,000/30,000kg/ha, alfa-alfa 3,000/16,000kg/ha etc)
- Data on available farm land (ha)
- Data on harvested corn crops, cereals, grapes, alfa-alfa (kg/ha per year)
- Improved harvest due to irrigation
- Impact on earnings – lower cost per kg

Measure 6: Consolidation and defragmentation of agricultural land

The land consolidation programme consists of number of land consolidation projects, organised on specific locations with clearly defined boundaries of the project's area. The programme started in 2017 with foreseen 19 projects, while 2 additional pilot projects have been developed in 2015–2017. Therefore, this measure refers to 21 projects.

Measure 6: Consolidation and defragmentation of agricultural land

Expected impact on competitiveness – from ERP

Improving the structure of agricultural holdings by consolidation of land parcels that are larger and better shaped should facilitate the adoption of new agricultural technologies that will lead to an efficient agricultural sector. Benefits of land consolidation in EU countries include increasing farmers' gross income and reducing working time in this area.

It is expected that average production costs of the farm holds that operate in the land consolidation project areas will decrease for approximately 20%, while their gross income would increase for at least 15%, due to the fact that they will be able to produce crops with better quality (due to investments in modern production technologies and mechanisation) and increased quantities.

Measure 6: Consolidation and defragmentation of agricultural land

Expected impact on competitiveness - Back-of-envelope calculation

Data on land parcels that will be consolidated

Data on contribution of gross income from farming on GDP

Calculation of increased income (+ 15%)