Test mobility scenarios and their consequences in Velenje FUA

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**Document History**

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# Notes

# 1. Information

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| FUA Name | Velenje FUA: SAŠA region |
| Scenario Name | **Business-as-usual** |
| Date | 16th of November 2017 |
| Policy target year | 2025 |
| Contributor | dr. Aljoša Jasim Tahir, univ.dipl.geog.  Nela Halilović, dipl.geog.un.  Marko Kovač, univ.dipl.inž.vod. in kom. |

# 2. Describe this scenario

* Max. in 10 lines

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| Business-as-usual   * Continue your current transport/mobility policy in next 20 years; * EU, National and Regional Policies do not change in next 20 years; * All the trends related to mobility and FUA are the same; |

# 3. Assessment of consequences

How will the demographic structure of your FUA and the core city in it be in your planning horizon around 2025 to 2030? (No of population, age structure, etc.)

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| In core city residents will emigrate to other parts of municipality, out of urban area, but still near accessible roads to get to core city. It is expected that population in more isolated parts of the FUA will continue to decrease (e.g. Solčava, Luče, etc.), as population increase is expected in core district of Velenje and other more vibrant municipal centers along the main transport corridors (e.g. Šoštanj, Mozirje, etc.). In whole FUA the inhabitants will get old, as the result of global trends and also projections at national level can be skipped to FUA level. |

Which types of transport technology will have been diffused or will disappear in your FUA in your planning horizon around 2025 to 2030?

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| In approximately 10 year period from now, no transport technology will disappear. The reason is that in such a short period we are not expecting huge innovation without a transition period. In transition period, individual electric mobility will slightly expand and shift in environmentally clean urban transport technology is expected. Beside electric mobility, the promotion of walking and cycling at smaller distances will result in development of infrastructure and supporting infrastructure for active transport modes and recreation. Infrastructure for increasing multimodal travels will increase in Velenje (example: P+R parking). Public transport users will decrease, since it is unattractive and expensive in FUA. |

How will the share of transport mode change in your core city and FUA? Will there be higher share of journey with cars or less? Will it increase or decrease the share of public transport? Will there be more cyclists and walkers, or less?

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| In core city Velenje, the share of using cars will decrease or stagnate with increase of cyclists and pedestrians. A slight increase of users of city public transport will happen and a negative trend of using the railway will be recorded with possibility of termination the line. Within other municipalities in FUA, an increased usage of car for everyday journeys and decreased usage of public transport is expected in the future. The increase of cyclists and walkers is going to happen in Upper Savinjska valley, considering national trends of increasing the numbers of visitors in tourists and mainly investing into active tourism. Increasing of tourists will also result in increasing number of car traffic and parking spots, since area is not well connected with public transport and high share of tourists are coming by private car. |

Which part of your future prediction is not in line with upper-level transport policy (of region, country and EU)?

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| Following measures from regional and national strategy are not in line with scenarios predictions:   * increasing the usage of railway, * reducing traffic jams, * decreasing travelling times, * decreasing traffic emissions, * decreasing costs of mobility, * increasing the usage of public transport, * increasing the usage of active transport modes. |

Is the overall situation improving the living quality of your FUA?

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| The overall situation of living quality in FUA is not improving. Increasing number of cars is resulting in air and noise pollution and occupancy of public space. Physical geographical conditions of FUA are not allowing the expansion of roads (settlements and mayor services are in valleys) and increase in cars numbers is also resulting in more often traffic jams and longer travelling times. In core city the quality of living can be a bit better for residents, since there is cycling and walking infrastructure increasing and the possibilities of active transport modes are better. However, commuting from other municipalities and cargo traffic is still the negative aspect of development, which is the result of absence of the holistic approach to planning in wider region. |

What are the effects on particular demographic groups, such as children, elderly, low-income group, foreigners and migrants, students, mobility-impaired people, etc.?

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| In core city the impact on particular endangered groups of people is good, since they have more possibilities of travelling (better public transport, better conditions for walking and cycling). Considering other FUA municipalities the same groups are having troubles with mobility since moving around is getting even more inaccessible. More private car transport and less public transport options will have a negative effect on elderlies and students. It is not expected that present fuel price and economic growth will encourage alternative ways of car sharing, which could help those groups. |

How will the transport-related cost paid by each end user change? How will the transport-related cost paid by your municipalities or regional government change?

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| Changes in future will reflect also in cost allocation. Investments in new infrastructure will be paid by mostly by public sector (municipalities, national government, EU fund), but trend of increasing ownership of cars is going to cost individuals mainly. |

Will the overall change will lead to increase or decrease of transport-related energy consumption in your FUA?

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| Overall change will lead to increase of transport-related energy consumption in FUA, since motorization will increase. |

Will the overall change will lead to increase or decrease of transport-related CO2 emission in your FUA?

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| The overall change will lead to increase of transport-related CO2 emission since the number of private cars will increase, but there is also going to happen a slight increase of electric cars, which has to be taken into account. |

# 1. Information

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| FUA Name | Velenje FUA: SAŠA region |
| Scenario Name | **Making public transport more attractive (GROUP 1)** |
| Date | 16th of November 2017 |
| Policy target year | 2025 |
| Contributor | dr. Aljoša Jasim Tahir, univ.dipl.geog.  Nela Halilović, dipl.geog.un.  Marko Kovač, univ.dipl.inž.vod. in kom. |

# 2. Describe this scenario

* Max. in 10 lines

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| Making public transport more attractive   * Public transport covers 80% of the FUA’s population and workplaces/schools by 2025 within 300m of stations/stops; * High frequency of the service and longer service hours is provided; * Introduction of integrated ticket system for all types of public transport (bus, tram, railway); * Public transport fare is made affordable to everyone; |

# 3. Assessment of consequences

How will the demographic structure of your FUA and the core city in it be in your planning horizon around 2025 to 2030? (No of population, age structure, etc.)

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| The emigration from isolated rural parts of FUA will stop, since core city will be more accessible by public transport. There could even be increase in population, as young people will stay. Core city will stagnate as it is expected that process of urbanization will stop. In general, population will stagnate and the trend of aging will continue. |

Which types of transport technology will have been diffused or will disappear in your FUA in your planning horizon around 2025 to 2030?

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| In approximately 10 year period from now, no transport technology will disappear. The reason is that in such a short period we are not expecting huge innovation without a transition period. In transition period, individual electric mobility will slightly expand and shift in environmentally clean urban transport technology is expected. Public transport will be optimized, the frequencies of rides will be better. Smart solutions will be implemented in whole FUA regarding route planning (apps, route planning, etc.). Public transport will get more attractive and user friendly, buses will be equipped with bicycle holders and multimodality will increase. Infrastructure for increasing multimodal travels will increase (example: P+R parking). Integrated policy system for ticketing will be implemented for easier traveling among whole FUA. A car dependency will decrease since public transport will be affordable to everyone.  Beside public transport, the promotion of walking and cycling at shorter distances will result in increased infrastructure and supporting infrastructure for active transport modes. |

How will the share of transport mode change in your core city and FUA? Will there be higher share of journey with cars or less? Will it increase or decrease the share of public transport? Will there be more cyclists and walkers, or less?

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| A high share of car (61%) in core city will slightly decrease to 35% share, a public transport share will increase from 10% to 30% share, share of cyclists and pedestrians will increase from 29% to 35%. For concrete forecast of shares within whole FUA a base year data is needed. Within FUA a share of usage of cars will drop roughly, since public transport will be used for daily commuting and public transport share in modal split will rapidly grow. It can be also predicted that share of cyclists and pedestrians will slightly increase caused by increased multimodal choices (example: traveling to core city by bus and then changing to bicycle for short journeys). |

Which part of your future prediction is not in line with upper-level transport policy (of region, country and EU)?

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| Following measures from regional and national strategy are not in line with scenarios predictions:  - increasing the usage of active transport modes; |

Is the overall situation improving the living quality of your FUA?

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| Overall situation is improving the living quality in FUA, since there are several good consequences caused by improved public transport: Economic efficiency of public transport for users, increased productivity of residents (during ride with public transport you can already work); Ecological acceptance – less cars means less greenhouse gasses, less noise, landscape and town is not harmed; Social acceptance – not traveling alone, less accidents, increased safety; |

What are the effects on particular demographic groups, such as children, elderly, low-income group, foreigners and migrants, students, mobility-impaired people, etc.?

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| Positive effects are on particular social groups which are currently socially disadvantage in case of everyday mobility. With more attractive public transport they can afford mobility for everyday journeys. |

How will the transport-related cost be paid by each end user change? How will the transport-related cost be paid by your municipalities or regional government change?

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| First investments to improve public transport will be held by municipalities or other upper-public institutions (regional agencies, the state), but long termly with increasing of users, the public transport system can be profitable by itself, so the costs are separated by residents, provider and/or some public institutions. Beside allocation of costs, the aspect of reduced costs is also important. Less cars means less road maintenance costs for municipalities and the state and not owning a car means less costs for households. |

Will the overall change will lead to increase or decrease of transport-related energy consumption in your FUA?

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| The overall change will lead to decrease of transport-related energy consumption since there will be less cars and according to EU Environmental Agency cars consume four times more energy per passenger-km than public transport. |

Will the overall change will lead to increase or decrease of transport-related CO2 emission in your FUA?

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| Overall change in FUA will lead to decrease of transport related CO2 emission, since majority of transport will shift to public transport. |

# 1. Information

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| FUA Name | Velenje FUA: SAŠA region |
| Scenario Name | **Very high cost of energy (GROUP 2)** |
| Date | 16th of November 2017 |
| Policy target year | 2025 |
| Contributor | dr. Aljoša Jasim Tahir, univ.dipl.geog.  Nela Halilović, dipl.geog.un.  Marko Kovač, univ.dipl.inž.vod. in kom. |

# 2. Describe this scenario

* Max. in 10 lines

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| * Fuel price is double in 2025 compared to now; * Introduction of renewable energy pushes up the energy cost; * Decrease of usage of fossil fuels – decrease of negative effects (air pollution, greenhouse gasses, etc.) * Increase of usage of renewable sources of energy – cost is separated by users; |

# 3. Assessment of consequences

How will the demographic structure of your FUA and the core city in it be in your planning horizon around 2025 to 2030? (No of population, age structure, etc.)

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| Emigration from core city to suburbs and rural parts of FUA will decrease or stop as fossil fuels and energy price grows, since it is not economically efficient to commute every day to core city for work or other services. Urban area will grow rapidly. Remote areas in rural parts of FUA will either get empty or will be underdeveloped since accessibility to other parts will decrease. Population will get older since young people will emigrate to other areas where costs of living will be lower. Overall this could result in population stagnation or even depopulation in the FUA. |

Which types of transport technology will have been diffused or will disappear in your FUA in your planning horizon around 2025 to 2030?

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| In approximately 10 year period from now, no transport technology will disappear. Based on current situation and trends no major innovation without transition period is expected. Nevertheless rapid grow of energy costs will force inhabitants to quick adaptation – fossil fuel based means of transport will decrease and as a result cleaner means of transport will increase. |

How will the share of transport mode change in your core city and FUA? Will there be higher share of journey with cars or less? Will it increase or decrease the share of public transport? Will there be more cyclists and walkers, or less?

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| In core city usage of cars will rapidly decrease from current 61% share to 30% share, city public transport usage will increase from 10% to 20%, and from 29% share divided between walking and cycling now it will increase to the share of 50%, since core city is small and almost whole is accessible without car. In case of whole FUA, fossil fuel driven car usage will decrease and alternative fuel driven car usage will increase. At the same time, increasing usage of public transport is expected. Share of active modes of transport will not grow that much, since distances and morphology of landscape is not favorable. |

Which part of your future prediction is not in line with upper-level transport policy (of region, country and EU)?

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| Measures from national and regional transport policy are in line with future prediction of scenario 3. The difference is only, that in upper-level strategies cleaner transport modes will be promoted and encouraged by some infrastructural changes and soft measures. In the case of our future prediction based on this scenario, changes will happened based on some kind of punishment for using fossil fuel driven automobiles. |

Is the overall situation improving the living quality of your FUA?

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| Situation of living quality in FUA in short term frame will not improve since residents will be forced not to use private fossil fuel driven cars because of high costs and public transport is not effective. By that social disadvantaged groups will be disadvantaged even more. Greater share of renewable sources of energy will push up energy costs, so level of energy poverty could increase. Moving out of remote areas to centers will create crowded areas with lower quality of living.  In long term frame this scenario can bring positive effects, since people will be forced to change their fossil fuel driven car to environmental friendlier means of transport. Because of greater demand alternatively driven cars (electric, hydrogen, etc.) will become more affordable. Increased usage of public transport will also force providers to make public transport better, as an alternative to private car. Higher expenses on car usage will result also in increased car sharing services. The consequence of that are also social changes, since people will be more sociable. |

What are the effects on particular demographic groups, such as children, elderly, low-income group, foreigners and migrants, students, mobility-impaired people, etc.?

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| Some social disadvantage residents will get socially excluded, since high costs of energy will affect them the most. |

How will the transport-related cost paid by each end user change? How will the transport-related cost paid by your municipalities or regional government change?

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| Costs will rapidly increase for residents which will result in increased usage of public transport, active travel modes and car sharing. After rapid growth, costs will slightly decrease, but will still be high in comparison to current situation. That means less cost for municipalities and the state – less private cars means less maintenance costs for roads. |

Will the overall change will lead to increase or decrease of transport-related energy consumption in your FUA?

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| Overall change will lead to decrease of transport-related energy consumption since private ownership on cars will also decrease and more people will choose public transport or will walk and cycle for shorter distances. |

Will the overall change will lead to increase or decrease of transport-related CO2 emission in your FUA?

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| Overall change will convincingly lead to decrease of transport related CO2 emission in FUA, since consumption of fossil fuels will drop and usage of renewable sources will increase. |

# 1. Information

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| FUA Name | Velenje FUA: SAŠA region |
| Scenario Name | **National road pricing on all roads (Group 2)** |
| Date | 16th of November 2017 |
| Policy target year | 2025 |
| Contributor | dr. Aljoša Jasim Tahir, univ.dipl.geog.  Nela Halilović, dipl.geog.un.  Marko Kovač, univ.dipl.inž.vod. in kom. |

# 2. Describe this scenario

* Max. in 10 lines

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| * The national government decides to introduce nation-wide road pricing for automobiles and trucks including all types of urban roads in 2025. * The pricing is 2% of average annual household income per automobile. |

# 3. Assessment of consequences

How will the demographic structure of your FUA and the core city in it be in your planning horizon around 2025 to 2030? (No of population, age structure, etc.)

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| Road pricing based on average household income will affect mostly underprivileged social groups, which will hardly afford private car. As major improvement of public transport is not expected (only minor probably driven by private initiative), core city and other population centers in the FUA will be more attractive, so higher rate of urbanization could follow. Overall population will probably stagnate and continuation of population ageing is expected. The scenario should not affect future age structure. |

Which types of transport technology will have been diffused or will disappear in your FUA in your planning horizon around 2025 to 2030?

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| No transport technology will disappear in next ten years. Based on a scenario car usage will be more expensive and because of this also more efficient as more people will share their trips (cars will be filed to full capacity). Usage of public transport will increase and some smart solutions on how to make it more attractive will follow. |

How will the share of transport mode change in your core city and FUA? Will there be higher share of journey with cars or less? Will it increase or decrease the share of public transport? Will there be more cyclists and walkers, or less?

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| In core city share of using cars will decrease from 61% to 25%, public transport using share will increase from 10% to 25% and share of cyclists and pedestrians will increase from 29% to 50%, which is the result of accessibility to almost everywhere in Velenje without car. In case of FUA, the car usage will decrease at the same time of increasing the usage of public transport. Share of cyclists and pedestrians will not change a lot, since there are geographical barriers, which prevents wider use of non-motorized modes of transport. Less cars will be on the roads, as more people will share their trips (cars will be filed to full capacity). |

Which part of your future prediction is not in line with upper-level transport policy (of region, country and EU)?

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| Measures from national and regional transport policy are in line with future prediction of scenario four. The difference is only, that in upper-level strategies cleaner transport modes will be promoted and encouraged by some infrastructural changes and soft measures. In the case of our future prediction based on this scenario, changes will happened based on some kind of punishment for using private automobiles. |

Is the overall situation improving the living quality of your FUA?

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| The overall situation in FUA is not improving the living quality in short term frame, since there will be more mobility-disadvantaged people who will be forced to move to more central parts of FUA or will have to use not attractive public transport. In long-term frame situation will improve since road pricing will lead to more investments to transport infrastructure and increased usage of public transport will lead to improvement of public transport. Besides improving public transport, also car-sharing usage will increase. Less cars on road will result on faster travel times and less traffic accidents. Predicted changes will bring many environmental, social and economic benefits. |

What are the effects on particular demographic groups, such as children, elderly, low-income group, foreigners and migrants, students, mobility-impaired people, etc.?

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| Some social disadvantage residents will get socially excluded, since high costs of mobility in general will affect them. |

How will the transport-related cost paid by each end user change? How will the transport-related cost paid by your municipalities or regional government change?

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| Transport related costs will be paid by users mainly, through increased road tax and car ownership tax. This will result in travel cost increase for end users. Public sector will benefit from new taxes since some of the traffic sector public expenses will be replaced by funds from road pricing. Changing to public transport, car sharing and some active travel modes where it is possible could result in mitigating the effect of cost rise for end users. |

Will the overall change will lead to increase or decrease of transport-related energy consumption in your FUA?

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| Overall change in long-term frame will result in lower transport-related energy consumption. |

Will the overall change will lead to increase or decrease of transport-related CO2 emission in your FUA?

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| Overall change will lead to decrease of transport-related CO2 emissions in FUA. |