

Permanent summer or winter time: Framework for impact assessment



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31/10//2019 VTT – beyond the obvious

Aim and scope

- The aim was to provide a simple framework to assess and compare the potential impacts of different alternative time systems
- This framework is made to support further discussion and comparison with easy to use Excel tool, guiding to ask the relevant questions regarding impacts
- The impacts in the framework are a summary of the existing research

Three scenarios

- Baseline: Current daylight saving time (winter-summer time)
 - Finland UTC+2/3
 - France UTC+1/2
- Alternative: Permanent summer time
 - Finland UTC+3
 - France UTC+2
- Alternative: Permanent winter time
 - Finland UTC+2
 - France UTC+1

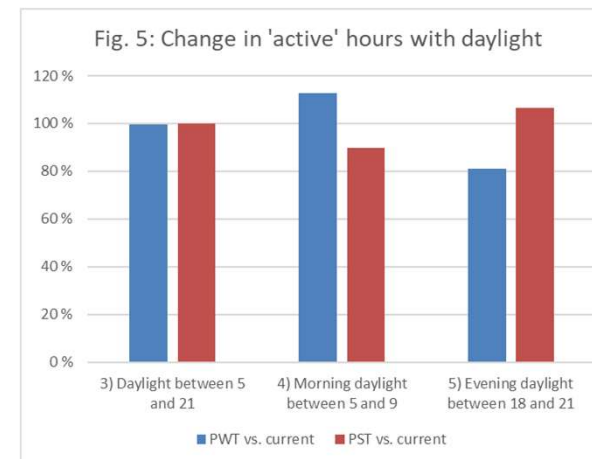
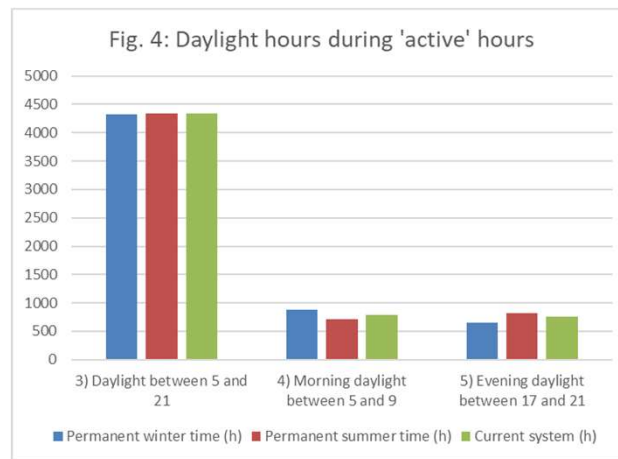
Structure of the framework

- First stage is to identify how the scenarios influence the daylight hours, especially during 'active' hours
- Second stage is to identify how implementing a scenarios would relate to the potential impacts

Daylight hours

| Select city from the dropdown list | Select the end of morning used in the calculations | Select the beginning of evening used in the calculations |
|------------------------------------|--|--|
| Helsinki | 9:00 | 17:00 |

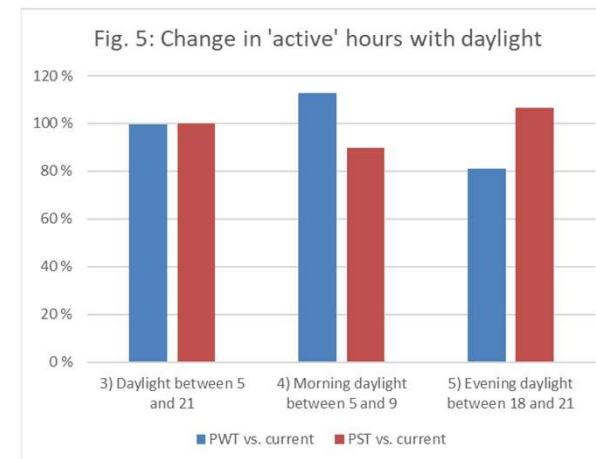
First the location and times can be set.



Daylight hours during 'active' hours in the scenarios are visualized.

Daylight and the scenarios

- Permanent winter time increases **morning daylight**
- Permanent summer time increases **evening daylight**
- Effect on the total daylight hours during 'active' hours is near zero
- The magnitude of the effect depends on the location and the used time limits for morning/evening



Dimensions of impacts

| Dimension | Description |
|--------------------|--|
| Impact mechanism | What happens? |
| Impact | What is influenced? |
| Potential KPI(s) | Key Performance Indicator or its potential source if readily available |
| Sensitivity | Driving factor for the impact mechanism 1) Morning daylight 2) Evening daylight 3) All day daylight 4) Single system change 5) Regular time adjustments due to current system |
| Magnitude | Negligible, minor, or major |
| Exposed population | Minor, major, all |
| Level of evidence | Concern (not studied), Hypothetical (not studied), Weak / mixed (studied), Believable (not studied), Suggestive (studied), Solid (studied), No evidence (studied) |

Relating the impacts to scenarios

- Strengthening or weakening of impact mechanisms are assessed relative to the scenarios, or shown if the impact mechanism is related to the changing the system

| | | | | | Permanent winter time vs. current system | | | Permanent summer time vs. current system | | | One-time impacts of abolishing seasonal changes (= changing the system) | Long-term impacts of abolishing seasonal changes (= not having daylight saving time anymore) |
|--|--|---------------------------|----------------------------------|----------------------|--|---------|---------|--|---------|---------|---|--|
| | | | | | Morning | Evening | All day | Morning | Evening | All day | | |
| Location | | | | | Daylight during active hours | | | Daylight during active hours | | | | |
| Helsinki | | | | | 13 % | -19 % | 0 % | -10 % | 7 % | 0 % | | |
| Location and time values can be changed at sheet A Daylight. | | | | | Strengthen (1) or weaken (-1) | | | Strengthen (1) or weaken (-1) | | | Incurs (-1) | |
| Category | Impact mechanism | Impact | Potential KPI(s) | Sensitivity | | | | | | | | |
| Agriculture | Time adjustments needs rescheduling of human work | Extra work and adaptation | ? | Regular time changes | | -1 | | | 1 | | | 1 |
| Energy | Increase in summer evening light may increase correlation between solar panel production and household electricity use | Energy consumption | Share of photovoltaic production | Evening daylight | | -1 | | | 1 | | | |
| Energy | Summer time can reduce electricity consumption during summer evenings | Energy consumption | Electricity consumption | Evening daylight | | | | | | | | |
| Energy | With permanent winter time, decreased need for heating in the morning | Energy consumption | Heating consumption | Morning daylight | 1 | | | -1 | | | | |

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04/12/2019