Project: Močenok

Project Development Assistance for Regions
Močenok is a village and municipality in Šaľa District, in the south west Slovakia. Some activities will be located on Močenok’s land.

NVAS is the National Hydrogen Association in Slovakia. Within the project, NVAS initiated the project and PDA and are the main project contact for internal and external stakeholders.

Duslo is the chemical industry company in Slovakia, producing fertilizers and rubber chemicals. Duslo would like to reduce its CO$_2$ emissions from ammonia production and provide green hydrogen for the transport sector, both by implementation of a green hydrogen production hub.

Eurowind Energy is renewable energy developer and operator. EWE provide their expertise for the development of the renewable energy sources.

ZSSK is a state owned passenger train company, operating railway routes across the country. Within the project, ZSSK will own and operate an initial 2 fuel cell trains on regional routes in South West Slovakia.
## PROJECT SPECIFICS

### Renewable energy source

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind energy</td>
<td>36 MW</td>
</tr>
<tr>
<td>Photovoltaics</td>
<td>14 MW</td>
</tr>
<tr>
<td>Annual production</td>
<td>130 GWh/y</td>
</tr>
</tbody>
</table>

### Green hydrogen production

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electorlyzer type</td>
<td>PEM/Alkaline</td>
</tr>
<tr>
<td>Installed capacity</td>
<td>20 MW</td>
</tr>
<tr>
<td>Predicted full load hours</td>
<td>4,743 h/y</td>
</tr>
<tr>
<td>Green hydrogen production</td>
<td>2,096 t/y</td>
</tr>
<tr>
<td>Energy consumption</td>
<td>111 GWh/y</td>
</tr>
<tr>
<td>Expected start of operation</td>
<td>2025</td>
</tr>
</tbody>
</table>
LOCAL SPECIFICS & CHALLENGES

**land – locked country**
- limited potential for renewable energy production – quite low workload of the unit, other limitations of the area
- very limited possibility for CCS

**unclear future legal situation**
- future conditions for utilization of nuclear electricity are unclear – would be beneficial
- unpredictable carbon prices, possible quotas for green hydrogen
- future support scheme in Slovakia is still unclear

**existing infrastructure**
+ long term tradition in hydrogen production
+ brown field for new production facilities is available
+ railway route to be decarbonized is nearby the $H_2$ production
+ intensive transport via lorries
- currently no hydrogen mobility at all
CONCLUSIONS

**decarbonization**
- From the technical point of view, the project is feasible and can contribute to decarbonization of ammonia production as well as mobility

**optimal scheme**
- Thanks to broad partnership, several business schemes were investigated and optimal scheme was identified

**minimized transport**
- Local energy sources, local hydrogen use in both ammonia production and mobility

**flexibility**
- Utilization of green hydrogen does not depend on future hydrogen mobility development.

**public transport decarbonization**
- Using hydrogen in fuel cell unit trains is probably easiest way of decarbonization of considered train route
- Source of green hydrogen for the public transport in surrounding Cities
- Possible application of hydrogen powered lorries for the distribution of Duslo’s products
big thank you to:

FCH JU for supporting the project
Element Energy for project administration, knowledge and advice
All project partners for great cooperation