



SA PÄRNUMAA ARENDUSKESKUS
NÕUKOGU KOOSOLEKU PROTOKOLL

Pärnu

07.03.2022 nr 1-2/22/2

Koht: MS Teams Live ja Ringi 35 SA Pärnumaa Arenduskeskus ruum A252

Toimumise aeg: 07.03.2022

Algus kell: 13:08, lõpp 14:33

Juhatas: Irina Talviste

Protokollis: Evelin Seppor - SAPA büroojuht

Osa võtsid nõukogu liikmed: Irina Talviste, Kadri-Aija Viik, Lauri Luur, Silver Smeljanski, Varje Tipp, Ülle Vapper

Kutsutud: Erik Reinhold - SAPA juhatuse liige, Marek Alliksoo – Eesti Vesiniku Tehnoloogiate Ühing, Raiko Gustavson – eraisik.

PÄEAVAKORD

1. Eesti vesinikuorg projektis osalemine. Tutvustus Marek Alliksoo
2. Tuuleparkide abil Pärnusse investeerimisfondi loomine. Raiko Gustavson suuline ettekanne.
3. Eesti Reservohvitseride Kogu ettepanek Pärnumaa aasta isa 2022.

Koosoleku avamine.

SA Pärnumaa Arenduskeskuse (SAPA) nõukogu esimees Irina Talviste juhatas sisse SAPA nõukogu koosoleku.

Päevakorra kinnitamine

I. Talviste tegi ettepaneku kinnitada esitatud päevakord.

Otsustati: Kinnitada esitatud päevakord.

Hääletamine: Poolt 6, vastu 0

1. KUULATI:

M. Alliksoo ettekannet „Eesti vesinikuorg“ projektis osalemise kohta. Lisatud ettekanne (Lisa 1) ja põhjalikum pakkumine tegevuste ajakavaga (Lisa 2)
Toimus arutelu projektis osalemise tingimuste ja võimaluste osas.

1. OTSUSTATI:

1.1 Osaleda „Eesti Vesinikuorg“ strateegia ja projekti loomes. Projekti sisenemise tasu summas 15 000 eurot eraldada SAPA eelmiste perioodide akumuleeritud tulemist, mis 31.12.2020. a seisuga on 136 896 eurot.

Hääletamine: Poolt 6, vastu 0

2. KUULATI:

Raiko Gustavson ettekannet tuuleparkide abil Pärnusse investeerimisfondi loomise ettepaneku kohta. Materjalid lisatud (Lisa 3; Lisa 4; Lisa 5).

Toimus arutelu maakonna omavalitsuste planeeringute hetkeseisude teemal.

2. OTSUSTATI

2.1 Võtta esitatud informatsioon teadmiseks.

2.2 Märtsi kuu viimaseks nädalaks koondada SAPA-sse Pärnu maakonna tuuleparkide planeeringute hetkeseisude andmed. Andmete koondamiseks SAPA juhatusel anda vastav sisend Pärnumaa Omavalitsuste Liidu strateegilise ja ruumilise planeerimise komisjonile.

Hääletamine: Poolt 6, vastu 0.

3. KUULATI:

I. Talviste selgitust Eesti Reservohvitseride Kogu „Pärnumaa aasta isa 2022“ välja andmise ettepaneku kohta.

Toimus arutelu tunnustuse välja andmise võimaluste ja vajaduse osas.

3. OTSUSTATI:

3.1 Võtta esitatud informatsioon teadmiseks.

3.2 SAPA juhatus suhtleb Eesti Reservohvitseride Kogu esindajaga, soovitades tunnustuse „Pärnumaa aasta isa 2022“ välja andmise ettepanek esitada Pärnumaa Omavalitsuste Liidu üldkogule.

Hääletamine: Poolt 6, vastu 0.

(allkirjastatud digitaalselt)

Irina Talviste
nõukogu esimees

(allkirjastatud digitaalselt)

Lauri Luur
nõukogu aseesimees

(allkirjastatud digitaalselt)

Varje Tipp
nõukogu liige

(allkirjastatud digitaalselt)

Evelin Seppor
koosoleku protokollija

(allkirjastatud digitaalselt)

Kadri-Aija Viik
nõukogu liige

(allkirjastatud digitaalselt)

Silver Smeljanski
nõukogu liige

(allkirjastatud digitaalselt)

Ülle Vapper
nõukogu liige

Lisad:

M. Alliksoo ettekanne: Eesti Vesinikuorg 07.03.2022 (Lisa 1)

Pakkumine ja tegevuste ajakava: 20211228 Hydrogen Valley Estonia offer&Flux and NEC (Lisa 2)

Joonis: EU tuule sessurss (Lisa 3)

Pärnumaa tuulikutepargid ja Arengufondi võimalus (Lisa 4)
Pärnumaa tuulikuteparkide joonis 2022 (Lisa 5)

Eesti Vesinikuorg

07.03.2022

Mis on „Vesinikuorg“?

Vesinikuorg on sama vesinikule, mis Räniorg (Silicon Valley) on ettevõttlusele, **magnet**.

Vesinikuorg on konsept, mille **eesmärk on võimaldada integreeritud vesiniku ökosüsteemide tekkimist ja kiirendamist**.

Selle ülene eesmärk on kliimamuutuste leevendamine ja regionaalne majandusareng.

Tegu on kindlaksmääratud geograafilise regiooni ulatus miljonitesse ulatuva investeeringuga hõlmates olulist osa **väärtusahelatest** alustades **tootmise, ladustamise ja transpordiga** kuni lõppkasutuseni erinevates sektorites, nagu **tööstus, mobiilsus ja energeetika**.



36
Vesinikuorgu



20 Riiki



32,5 miljardit
investeeritud

„I want Europe to be a front-runner, a front-runner while building a global market for hydrogen. Last spring, the European Commission was part of a coalition of countries pledging to create 100 hydrogen valleys around the world.“

- President von der Leyen

Hydrogen Valleys

Paving the way for the emerging hydrogen economies



* Number of hydrogen valleys per country as of May 31, 2021

Source FCH 2 JU, Inycom, Roland Berger

- Kliima eesmärkide saavutamine
- Tööstuse arendus / Moderniseerimine / Õiglane üleminek
- Töökohtade loomine ja säilitamine / Puhtad töökohad
- Strateegilised investeeringud / Uued ärimudelid / Võimalused / Atraktiivsus
- Energia julgeolek / kindlus
- Tulevikukindlus
- Tulud koju ja ettevõtluse kasv
- Teadusarendus ja haridus
- Tervis / Parem keskkond



- Tartu taotles FCH Regions Projekti Arendus Toetust 2020 alguses ning lõi seeläbi esimese konsortsiumi Tartu ettevõtete vahel lisades jälgijatena Keila ja Rakvere. (Linnadevaheline heade kavatsuste kokkulepe)
- **Eesti liitus Vesiniku IPCEI initsiatiiviga** (Üle-euroopalised strateegiliselt tähtsad projektid) ning teostas projektikorje
- Laekus 1,5 miljardi jagu projekti huviavaldusi millest klassifitseerus ~1 miljard! (Eesti RRF'i jagu) – **Esimene laine €111M**
- **Tallinna Sadam tegi endale Vesinikustrateegia!**
- **Keila linn tegi endale Vesinikustrateegia!**
- **Eesti tellis vesinikuressursside kasutuselevõtu analüüsi**
- **Toimusid Eesti Vesinikpäevad! – 32 ettekannet**
- Osalejaid 100+ kohal, 8 11 riiki, 700+ veebis
- **Eesti tellis vesinikuteekaardi!**
- **Mitmed visiidid, ühisüritused, osalemised** – HEAVENN looja Patrick Cnubben, New Energy Coalition, &Flux Petrus Postma. Eestit külastanud **SAF arendaja SkyNRG**
- **Eesti Vesinikuoru presentatsioon kõrgtasemelisel „Wind Meets Gas“ sümposiumil, Groningenis**
- **Eestist oli maailma suurim osalus Euroopa Vesinikunädalale** (suhtarvus)
- 14-15 Dec &Flux, New Energy Coalition ja Groningeni lennujaam Eestis
- **Ümarlaudadel ~60 inimest** erinevatest organisatsioonidest **Era/Avalik**
- Lennuklastri tellimusel, &Flux ja Vesinikuühing koostamas „**Eesti lennunduse H2 Strateegiat**“
- Eesti Vesiniku Ühingult **sisend ja LoS järgmise FCH Regions PDA tegijatele**

Selleks, et Eestis süttiks oma «jõulupuul» tuled, on kavas luua kliimaneutraalsete transporditehnoloogiate arenduskeskus. Meie inspiratsioon ja julgustav näide on Groningen oma superklastriga. Me peame hollandlaste HEAVENN ning meie ZeroEST keskuse vahele looma vesiniku- ning tarkuste ja kogemuste jagamise koridori.

«Elekter on hea, see on sprint, see on lahe. Aga mina imetlen kümnevõistlejaid, sest nemad peavad olema head 10 alal korraga. Te ei pruugi olla kiireim ega parim, kuid te olete sportlaste kuningas. Ja vesinik on roheline tulevikumajanduse erinevaid sektoreid ühendav kuningas,» ütles Hydrogen Europe juht Jorgo Chatzimarkakis.

Me oleme 10 aastat maas, mistõttu võitjate hulka saame vaid siis, kui jätame mõned järgmised kõrgused vahele.

Kristo Reinsalu, Eesti Lennuklaster

Regionaalne Sünergia:

- **Tartumaa**
- **Harjumaa**
- Ida-Viru?
- Pärnumaa?
- Saared?
- **Ettevõtlus ja akadeemia**
- Tugev **merenduse ja lennunduse** sektorjaalne kaasus!
- Poliitiline tugi
- Euroopa tugi

Tuumikgrupp (investeeriv) – €15k	Toetus / partnerlus
Tallinna Sadam Tartu Linn Tartu Terminal Tallinn Airport Alexela University of Tartu Estiko	Skeleton Technologies Stargate Hydrogen Xfly TS Ships Taltech Estonian Aviation Academy Põlva Teised vesinikuühingu liikmed
Kinnitamisel	
Eesti Energia Liwathon HHLA Varmata Utilitas Gren	Lääne-Harju vald Paldiski Hiiumaa Saaremaa Pärnu Ida-Viru

- Selge **visioon ja pakkumine**
- **1a+ kogemust** Eestis (Koostanud strateegijaid/visioone ja koostööd teinud)
- New Energy Coalition (HEAVENN) oli **Euroopa esimene H2 Org**, konsepti looja ja vaid **üks kolmest**, kes on päriselt **FCH JU rahastust taodelnud** (teised Orud on mujalt või tingimustele vastates staatuse saanud)
- Asuvad Brüsselile lähedal, teavad isiklikult olulisi inimesi ning **omavad hindajate valideeringut**
- Hydrogen Valley pole tavaline Horizonsi projekt, see rahastus & staatus on tugev risk ka Euroopale ning **me ei saa minna proovima kellegiga kes seda varem teinud pole.**
- **Meil pole eksimise ruumi**, oleme juba maha jäänud (bussi piloteerimised ei vii enam uudistesse)
- Kui soovime RRF'i või Just Transition'ist saada rahastusvõimendust või riigi H2 strateegiale korralikku sisendit
- Toovad **sünergiad ja projekti võimalused** (TEN-T, TEN-E, CEF, AFID, ERDF etc.) – ehk spillover kasu

Kaardistatud (vajalik) jaotus koostöök:

1. Taastuvenergia (maal ja meres), s.h. Hollandiga on tuule arendustes juba tugev partnerlus
2. Hoiustamine, transport, transmissioon, tankimine
3. Kasutus transpordis - ühistransport, rasketransport, merendus, lennundus
4. Kasutus hoonestuses / s.h. Off-grid, võrgu balanseerimine
5. Kasutus tööstuses – feedstock (SAF, e-kütused, keemiatööstus)

Kohalik Omavalitsus

- Sisend Energia ja kliimakavasse (ja selle täitmisse)
- EU projektide võimekus
- Pääs konsortsiumitesse
- Investeeritavuse tõus
- Kohaliku ettevõtluse areng
- Maine ja teadlikuse kasv
- Vastavus EU taksonoomiale (võimaldades 0-emissioon investeeringud)

Ettevõtted

- EU projektid ja rahastusallikad
- Sünergia RRF, Õiglane Üleminek ja teised meetmed
- Pääs konsortsiumitesse
- Börsiettevõttele aktsia hinna tõus
- Ettevõtte jätkusuutlikus ja investeeritavus
- Maine
- Vastavus EU taksonoomiale – näiteks EIB rahastustel

Luuk Buit, Groningeni provints

“Hydrogen and greening are high on the priority list.” The Province also works a lot with companies like Gasunie and Groningen Seaports. At the end of last year, dozens of companies and governments drew up the Investment Plan for Hydrogen North Netherlands. **“By working together, we can really make significant progress and put innovations into practice. The lead time between thinking and acting has become much shorter and that is something that we really need in the current climate crisis.”**

[The Groningen region is experimenting with hydrogen. 'We want to scale up' - Innovation Origins](#)

Lahend rohe-energeetika probleemidele (energia salvestus)
Lisauks transpordi sünikuneutraalseks muutmisel (akud ja vesinik)
Võrgu balansseerimine, energia julgeolek, varustuskindlus
Vesinik on uus kauba artikkel!

[More than 80% of energy companies are investing in hydrogen or considering entering the market, survey finds | Recharge \(rechargenews.com\)](#)

[8 reasons why hydrogen is the next big thing in energy - Solar Impulse Foundation](#)

Fatih Birol, Rahvusvaheline energia agentuur (IEA)

“Hydrogen is today enjoying unprecedented momentum. The world should not miss this unique chance to make hydrogen an important part of our clean and secure energy future.”

https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en
<https://ec.europa.eu/sustainable-finance-taxonomy/>

- Sektorite vaheline koostöö ja sünergiate ära kasutamine
- **Energia julgeolek ja jätkusuutlikus (vesiniku tootmine kohalikest taastuvenergia resurssidest)**
- **Turuloomed, uued turud ja võimalused**
- Eksisteeriva taristu efektiivsuse tõstmine, kasutus
- Puhta energia tööstuses ja linnades kasutamine, samal ajal ka vee resurssi kasutus
- **Tootmise, tarnimise ja hoiustamise desentraliseerimine**
- Regulatsioonide kehtestamine ja testimine
- Teadlikuse tõstmine, (sotsiaalmajanduslik, keskkond), s.h. digikaksikiku loome
- **Toetada vesiniku orgude loomet Euroopa regioonides kus veel H2 orge pole.**
- **Minimaalselt 5000 tonni rohelist vesinikku aastas (desentraliseeritult)**
- Vähemalt kahe sektori esindatus:
 - Tööstus – teras, metallurgia, klaas, ammoniaak, metanool
 - **Energia – Kombitootmine, teenused, tagavara Energeetika, kriitiline taristu, gaasivõrkude dekarboniseerimine**
 - **Transport – bussid, autod, raskeveokid, kaubikud, erisõidukid (prügi, tänavapuhastus), rongid, merendus (s.h. sadama logistika), lennundus (väiksed, suured, droonid), kahveltõstukid jne.**
 - **Majanduskasvu soodustamine – PPP, s.h. haridus, oskustööjõu koolitamine, ettevõtlus, töökohtade loome**
- Õiglane üleminek
- **Eelnevatest projektidest õpe, koostöö (eriti - HEAVENN, Big-Hit, Hysland)**
- Sünergiad teiste meetetega (ESIF, RRF, JTF, CEF, Innovatsiooni, moderniseerimise, LIFE etc.)
- **Vähemalt 1 partner peab olema Hydrogen Europe või Hydrogen Europe Research liige (H2Est, Tartu Ülikool)**

10 Tuumikliiget paika (rohkem = eelarve Eesti projektijuhile/tegevustele)
Regionaalne sünergia ja kattuvus paremaks!

Luua & Flux'i juhtimisel H2 Oru juhtstruktuur

Eesti Vesiniku Ühing on valmis võtma juhtrolli H2 Oru elluviimisel
Kuid vajab selleks veel eraldi projektijuhti (Eesti Patrick Cnubben)

Eesti Riik otsustama ja päriselt toetama!

Vesiniku Strateegia 2030 – Tervele Eestile läbi Vesinikuoru protsessi.

Clean Hydrogen Partnership rahastus **€25M** (1 taotlus aastas)
Märtsis avaneb

2022-2026 EU + RRF + Era/Avalik = Eesti H2 Oru maht €100M+

Märts/Aprill avaneb uus FCH PDA (potentsiaalne **€50k PDA support**) –
Plaanis regioon laiendada tervele riigile H2V nimel
(eelnevalt osales Tartu, observerid Keila ja Rakvere)

Tugistruktuurid protsessis:

- **Eesti Vesinikuühing**
- (Hydrogen Europe)
- Eesti Lennuklaster
- Tartu Linnavalitsus
- Tartu Ülikool
- Tallinna Sadam (Hub)
- Tallinna Lennujaam (Hub)

- Merenduse H2 Strateegia
- Lennunduse H2 Strateegia

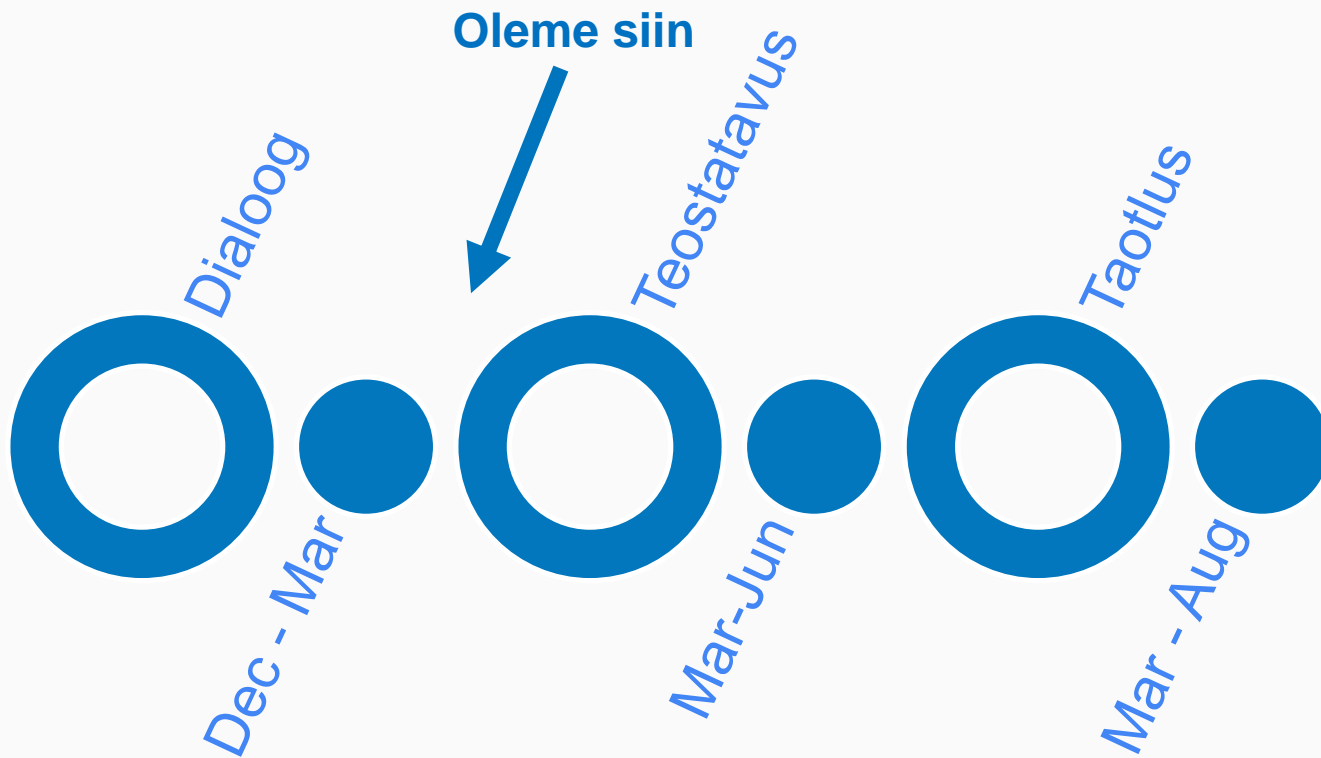
- Brüssel (Kadri Simson!)

Ettevalmistus / Teostatavusuuring

- Kõigi vesinikuoru projekti konseptide kaardistamine
- EL nõuetele vastavuse kooskõlastamine projektidele
- Vesinikualaste avalike seisukohtade koondamine ühtseks strateegiaks
- Narratiivi koostamine, väärtuspakkumise eripärasuse defineerimine
- Brüsselis asjakohase teabe teavitamine ja hindamine
- Väärtuspakkumise positsioneerimine rahvusvahelises ökosüsteemis
- Projektiomanikele väljakutse esitamine pühendumuse ja sünergia osas teiste projektidega
- Ökosüsteemi kaardistamine, puuduvate lülide määratlemine ja nende lünkade täitmise võimalused
- Hinnata väärtuspakkumist vesinikuoru nõudmiste ja piirangute valguses
- Otsus vesinikuoru taotlemise ja lisatoimingute üle, et maksimeerides eduvõimalusi

Taotlus

- Projektide nimekirja läbivaatamine ja tugevdamine
- Turu puuduvate lülide ja uute projektide määratluste tekitamine
- Strateegia ja narratiivi teravdamine
- Dialoog Brüsseliga lõpliku taotluse ettevalmistamise üle
- Rahvusvahelise koostöö võimaluste ja ühisprojektide, s.h. teaduse arengu hindamine.
- Otsus piiriüleseks vesinikuoruks valmistumise kohta
- Koostada lõplik väärtuspakkumise dokument
- Vesinikuoru staatuse taotluse koostamine
- Esitamine



Teostatavus

- 57k

Taotlus

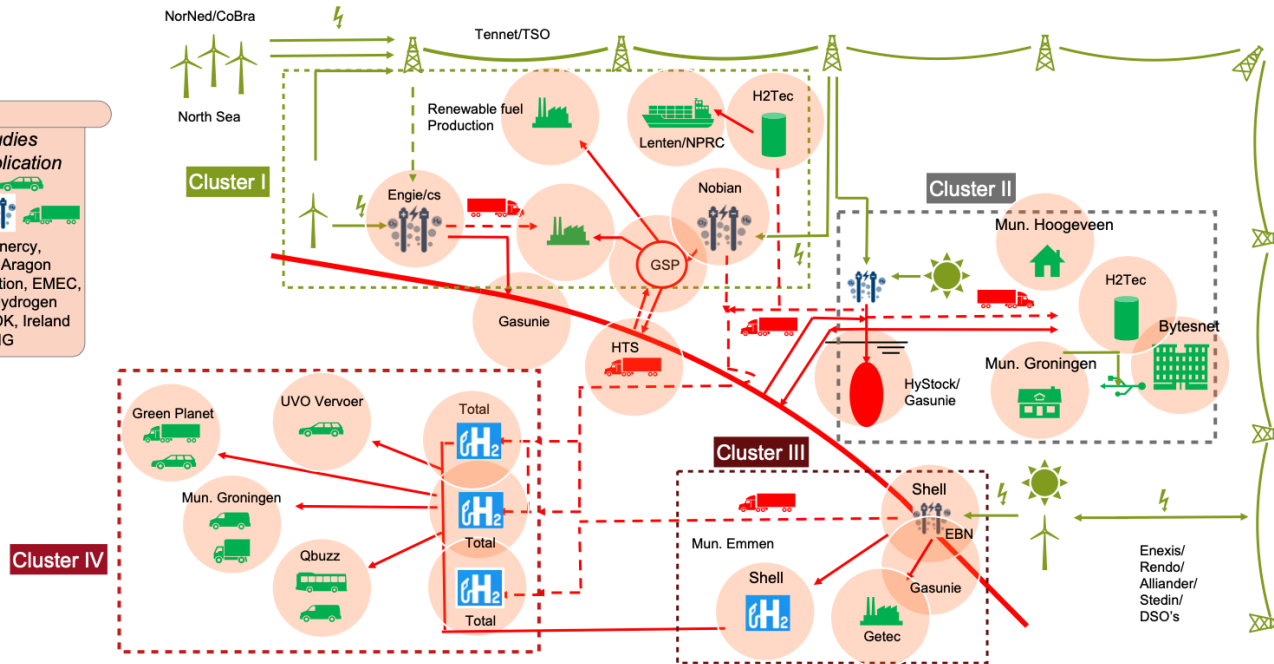
- 95k (võimalik 50k EU)
- Tähtaeg 20.09.22

Täiendav teave

Hydrogen valleys | HEAVENN (h2v.eu)

Studies & Replication

RUG, Energy, Hincio, Aragon Foundation, EMEC, EWE, Hydrogen Valley DK, Ireland HA, ERIG



Taotluse aasta: 2019

Projekti kestus: 01/01/2020
– 31/12/2025

Oktoober 2021 seis: [25 %]

Eelarve: 83.000.000 €

FCH JU toetus: 20.000.000€

Teised vahendid:

20.000.000€



[Hydrogen valleys | BIG HIT \(Building Innovative Green Hydrogen Systems in Isolated Territories\)](#)
(h2v.eu)

Projekti kestus: 2014 – 2022

Eelarve: 13.500.000 €

LEAD DEVELOPER

Foundation for the development of new hydrogen technologies in Aragon (project coordination), ITM Power (technical leader), Scottish hydrogen and fuel cell association

[Partners — BIG HIT](#)

BIG HIT (Building Innovative Green Hydrogen Systems in Isolated Territories)

BIG HIT is a six-year demonstration project which aims to create an integrated low carbon and localised energy system establishing a replicable model of hydrogen production, storage, distribution and utilisation for low carbon heat, power and transport.

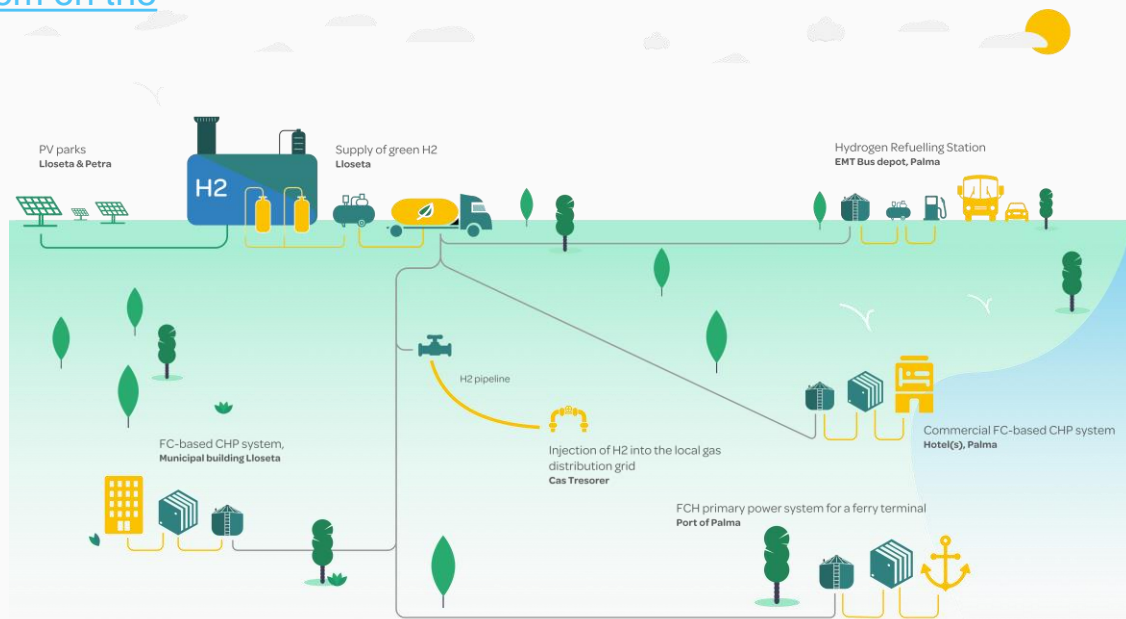


[Green Hysland in Mallorca, the first green hydrogen project in a Mediterranean country due to get European funding | \[www.fch.europa.eu\]\(http://www.fch.europa.eu\)](#)


EU Rahastus: €10M
Eelarve €50M
Kestus: 2021 - 2025

[Green Hysland - Deployment of a H2 Ecosystem on the Island of Mallorca](#)


GREEN HYSLAND aims to build a wide EU Coalition for H2 deployment in Islands with highly followed EU initiatives and projects active in the clean H2 sector and/or working on the decarbonisation of islands, cities and regions. This large multilateral strategic partnership will help raise awareness on the potential of clean H2 for the decarbonisation of EU islands. This page is thus the starting point of a forum around these issues. Below, you will find all the initiatives and projects which have already joined the coalition, GREEN HYSLAND's "H2 Island Hub".



Develop a Competence Centre for Drone Technology based in Estonia (2023)



Objective: Increase international visibility and focus of Aviation Academy to attract job in Estonia's key areas of competence; innovation



Means: In sync with Ministry of Education targeted cooperation universities globally

Measures:

- Empower competent authority to increase manpower and to draft appropriate legislation
- Develop partnerships (ex. "Hydrogen Valley")
- Analyse standards and monitor trends
- Bundle experience gained in drone technology

[‘Hydrogen valley’ projects sprout up across Europe – EURACTIV.com](#)

[What is a hydrogen valley? - Hydrogen Central \(hydrogen-central.com\)](#)

[“Hydrogen Valleys”: demonstrating the power of hydrogen – Mission Innovation \(mission-innovation.net\)](#)

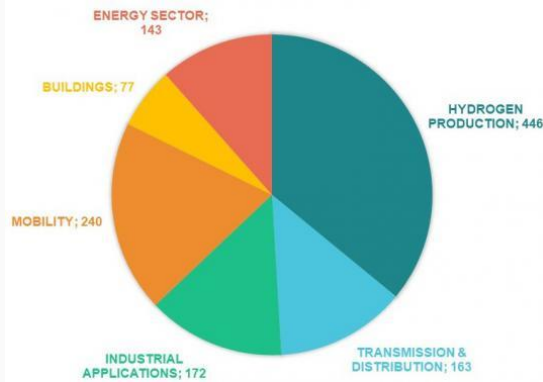
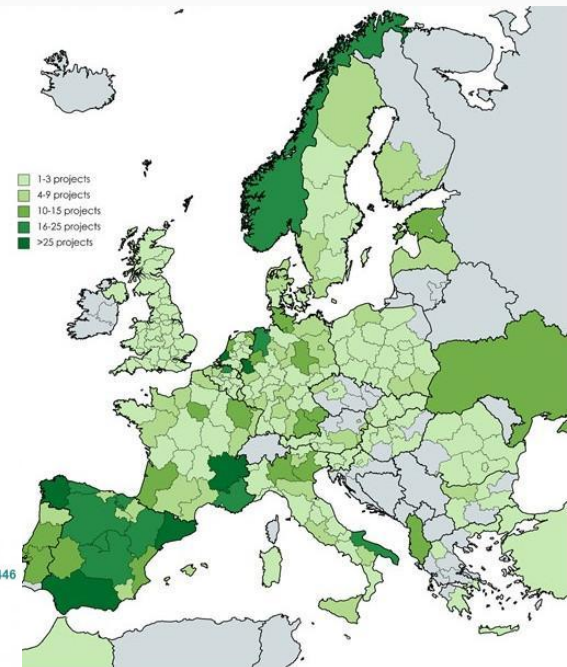
[Commodities 2022: Year set to be a 'critical investment point' for European hydrogen | S&P Global Platts \(spglobal.com\)](#)

Total investment in clean hydrogen in Europe is expected to reach up to €470 billion by 2050.

[Hydrogen: Europe's Industry rolling out hydrogen projects on massive scale | European Commission \(europa.eu\)](#)

[EIB signs advisory agreement with Hydrogen Europe](#)

[Project pipeline \(europa.eu\)](#)



Kontsept	Barjääridest ülesaamine	Regulatsioonid ja standardid	Vastavus EU / Maailma suundadega	Toorik teistele
Väärtusahelate kattuvus	Rahastuse leidmine läbi rahastajate teadlikuse tõstmise	Lubade taotlemise lihtsustamine, koostaotlused (näiteks tuul+vesinik)	Innovatsiooni võimaldamine	Geograafiline uudsus
Kohalike väärtuste ära kasutamine kohalike vajaduste rahuldamiseks	Pika ajaline strateegiline pühendumus	Seaduse loojatega tihe koostöö:	Seadusandlus (Fit for 55)	Testkeskond ja õppeplatvorm
Äriline mõistlikkus – tootja ja tarbija kokkuviiimine	Selge visioon ja struktureeritud teekaart = erainvesteeringud	<ul style="list-style-type: none"> a) Riiklik strateegia b) Regulaatorne keskkond c) Koos regulatiivsetest barjääridest ülesaamine 	Mitte oodata direktiivide järel sihtides miinimume	Avatus (AK templeid vältida)
Avalik tugi, s.h. Poliitiline tugi	Paindlikkus ja avatus mitigeerivad tehnoloogilise riski	<ul style="list-style-type: none"> d) Matchmaking (koos = lihtsam) 	Ülepiiriliste probleemide lahendamine (Ühtne turg printsiip)	Rõhuda „unikaalsetele faktoritele“
Partnerlus ja koostöö			Pikk perspektiiv	Sünergiate loome
				Kirsid!
				Rahvusvaheline koostöö

Täname

Kontakt lisaküsimusteks

Marek Alliksoo

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Marek.Alliksoo@h2est.ee

Establishing a Hydrogen Valley in Estonia

Our offer
December 28th 2021



Preface

The question is not whether energy and feedstock systems are changing, the question is when and how fast. The recent 'Fit for 55' package as part of the European Green Deal by the European Commission understates that Europe aims to be the world leader in this transition. Industry complies and adjusts its strategies along the Green Deal.

If there is one certainty in transitions, it is that they are full of uncertainties: both challenges and opportunities. The challenge of managing your company of governing your country through a transition is therefore naturally a challenge of managing uncertainties.

What is certain however, is that green hydrogen will play an essential role in future proof energy and feedstock systems. Whether as an energy carrier or as a feedstock, hydrogen has unique qualifications to play that role.

Industry has been working with hydrogen for generations. The novel **value chain of green hydrogen comprising generation, transport, storage, and application technologies** are however growing rapidly. Hence, while it is a substance industry is comfortable with, the role in future proof systems is yet to be developed.

The European Commission aims to accelerate this learning curve by identifying 'Hydrogen Valleys' and providing substantial support to these valleys to accelerate their learning curve. By investing in innovation challenges that are relevant to the member states, the Commission wants to solve specific challenges and thereby make a difference in practice, not theory. The role of decarbonizing the energy system is of paramount importance to combat climate change and other environmental threats, like air quality and noise.

Estonia is committed to the same learning curve. By constructing a Roadmap and committing € 5 + 50 million to innovation challenges regarding hydrogen in industry and energy, the country wants to learn how and under what conditions green hydrogen may prove to be a solution to the challenges it faces in the transition. This is a substantial investment, and yet could also function as a multiplier by acquiring the Hydrogen Valley status and the related innovation funds.

Furthermore, as Europe is incorporating green hydrogen related solutions in (for instance) REDII, REDIII, AFID, TEN-T, TEN-E, Clean Vehicle Directive and SAF mandates, it is becoming **unavoidable to invest in this transition today as industry will move towards these transitions in any case.**

On the ground in Estonia, **the public and private parties in several regions are ready to commit** to become a Hydrogen Valley. Estonian government will approve a strategic document named Hydrogen Roadmap in the nearest future. In the Tartu region, there are strong dynamics regarding hydrogen. Next to Tartu, the Tallinn region functions as a second focal point. And in the Keila, Paldiski, Pärnu and Ida – Viruuma region possibly strong hubs can be formed. Several coalitions, the Estonian association of Hydrogen Technologies and ZeroEST Climate Neutral Air Mobility Hub aim to create an ecosystem wherein those projects can be accelerated. The public sector strongly supports this transition on a regional as well as national level.

In the end, acquiring a status as a 'Hydrogen Valley' is about accelerating the learning curve for future proof energy and feedstock systems. With the status and the related national and international support and funding opportunities, regions can learn how and under what conditions green hydrogen will prove to be a solution.

Adding value to the Valley

&Flux and New Energy Coalition aim to add value to the transition of the Estonian energy and industry systems. **Acquiring a Hydrogen Valley status is a means towards this end.** It is not about the status and the related support measures itself; it is about the learning curve in the transition and acquiring a position in the novel hydrogen field.

To make that transition a successful one, several underlying ingredients will have to be developed, matured and / or strengthened. The Hydrogen Valley status and subsequent application will build on these ingredients, and it is in the details of these ingredients where we aim to add value.

In the first place, there needs to be a **clear shared vision towards a functioning industrial ecosystem where green hydrogen has its value.** Yes, there are several projects and initiatives under development and there are several parties that invest in these projects. But the added value will in the end come from the **synergy and mutual dependencies between those projects and partners to materialize.** By working on a broader knowledge base, a joint infrastructure, a range of applications and a smart market for green hydrogen, each of the individual projects will function better.

Secondly, there needs to be a **clear national Hydrogen Strategy,** based on societal values and fitting the challenges government, regions, and industry value chain players face in the hydrogen economy transition. This roadmap needs to be just, economical and – in the end – commercially sound. We aim to provide the private and public partners with a narrative that fits these conditions. The Estonian government will approve a strategic document named Hydrogen Roadmap in the nearest future and we strive to make this strategy fit the Roadmap seamlessly.

Thirdly, the Estonian –**Hydrogen Valley and its shared value proposition must be recognized internationally,** in the public sense (Brussels) and the private sense (attracting foreign investments). We aim to help Estonia in this positioning, building on the synergies in industry and the further development of the Hydrogen Roadmap developed by the national government. The Netherlands can be a unique partner in this, given their advanced position in industry, mobility and built environment and their experience in positioning the first Hydrogen Valley in Europe.

The fourth and last field where we aim to add value is – next to synergy, strategy, and positioning – is to **establish a governance structure** with a Steering Committee that fosters ecosystem **dynamics and drives progress.** Providing the basis for dialogue, co-operation, co-planning, and investment plans. By challenging possible Hydrogen Valley project partners to be as concrete as possible, by searching for synergies between projects, by informing government on private commitment and by helping the actual dialogue between public and private parties, we aim to accelerate the ecosystem already in the process of the application for a Hydrogen Valley. In that way, the value we bring will have proven its worth, regardless of the outcome of the application itself. Moreover, once the Hydrogen Valley status is obtained it becomes easier for individual value chain companies to apply for international support and subsidies and attract foreign direct investments, as the Hydrogen Valley helps to financially de-risk. **We strive for a governance that helps in the fair distribution of subsidies to create win-win value cases, as Hydrogen Valley partners need each other for a stable supply of and demand for of green hydrogen.**

Our win-win approach

During our visits to Estonia and our talks with key stakeholders in December 2021 we learned that the time is now to accelerate the dynamics in Estonia regarding the hydrogen economy through three parallel operations.

- 1) Develop a Hydrogen Valley strategy for the whole of Estonia (phase 1A)
- 2) Create a governance structure with the leading partners in the Hydrogen Valley strategy (phase 1B)
- 3) Prepare for an application to become a Hydrogen Valley (phase 2)

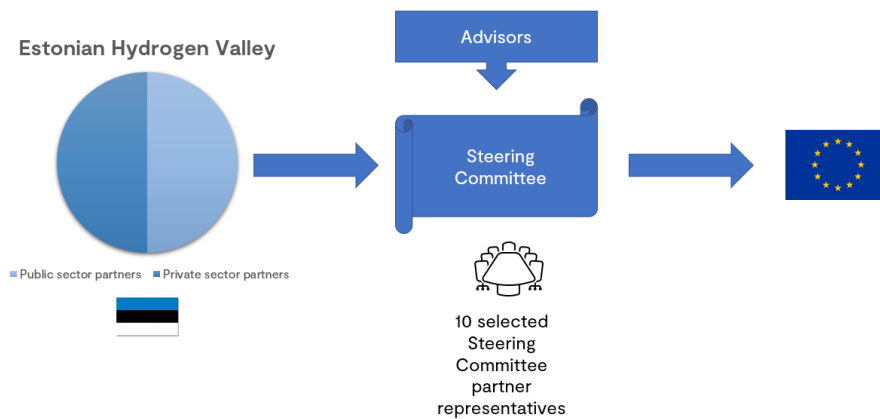
1A. Develop a Hydrogen Valley strategy for the whole of Estonia

We have a well-informed overview of the plans and initiatives on hydrogen in Estonia. They cover the fields of 1) renewable wind (onshore, offshore) and solar energy generation and conversion to hydrogen, 2) storage, transport, (import) terminal and 3) use cases in a) mobility (fuelling, public transport, ferries, heavy duty), b) aviation, c) public heating, d) industry e.g. chemical applications and production of sustainable hydrocarbons and sustainable fuels. Furthermore, we now see central nodes mature in Tallinn/Paldiski and Tartu and possibly strong hubs in Keila, Pärnu and Ida-Virumaa (for now). This calls for a collective Hydrogen Valley strategy covering the whole country where we will specifically focus on dependencies to be tackled and interactions and synergies to be reached. In the coming months we hope to assist you in coming to this strategy by providing the basis for dialogue, co-operation, co-planning, and innovation and investment plans. We strive to create win-win value cases, as Hydrogen Valley partners need each other for a stable supply of and demand for green hydrogen. By working on a broader knowledge base, a joint infrastructure, a range of applications and a smart market for green hydrogen, each of the individual projects will function better. The first preliminary mapping of Hydrogen Valley value chain partners is presented below



1B. Create a governance structure with the leading partners in the Hydrogen Valley strategy

We propose to just get this train going by identifying the 10 leading (public or private) organisations that will advocate for and collectively invest in the Hydrogen Valley strategy and application. As soon as they are identified, they will form a management or high level steering group that will decide on the strategy and governance to be initialised and maintained (programme management) after the application. Additional parties will be welcome and asked to co-invest, their contributions will be added to the funds the governance decides on. The Hydrogen Association and possible other organisations could be given the position as advisor. Optionally, the Steering Committee can decide to install working groups on specific topics to deliver high quality input during the application process and implementation phase of the Hydrogen Valley, as well as focussing on the international context (neighbouring countries, Netherlands, others).



2. Prepare for an application to become a Hydrogen Valley

Based on the Hydrogen Valley strategy and the governance on the one hand and the dynamics in Brussels and the demands for an application and status on the other hand, we will assist the governance body to be able to file an application (presumed to be around September 2022, depending on the BXL process on finale approval of programs).

The New Energy Coalition has a strong relation with the European organisations and expert organisations that work on the hydrogen transition. With their experience and network, we can bring the detailed knowledge of what Europe is looking for and what are keys to a successful application to Estonia. It might even be that there is enough common ground between the challenges in the Netherlands and Estonia to position ourselves as a cross border Hydrogen Valley, aimed at explicitly learning from cross border challenges and practices. In the end, acquiring a status as a ‘Hydrogen Valley’ is about accelerating the learning curve for future proof energy and feedstock systems. With the status and the related national and international support, network and funding opportunities, regions can learn how and under what conditions green hydrogen will prove to be a solution.

Action Plan

The process until submission of a request for a Hydrogen Valley status can be structured into two phases, the first being a preparation for and evaluation of all the ingredients needed for an application in the specific Estonian context and the second being the actual application process.

Phase 1A: Develop the Hydrogen Strategy and prepare for a decision to apply for a Hydrogen Valley status

- Time: January 2022 – June 2022
- Investment (out of pocket): 50 Days * € 1.200 = € 60.000
- Revenue: Broad public and private support on the Strategy and decision to apply for Hydrogen Valley status

This first phase will consist of the following parallel action lines (congruent with Estonian Hydrogen Roadmap):

- 1a) Drawing up a concept list of all projects to be incorporated in the Hydrogen Valley
- 1b) Developing a canvas for each of the projects to be described in, fitting EU requirements
- 1c) Compiling all relevant regional public positions on hydrogen into a cohesive approach
- 1d) Drawing up a Strategy that positions the unique value proposition of the valley
- 1e) Aligning the Strategy with the national Hydrogen Roadmap
- 1f) Informing and evaluating the relevant information in Brussels (through international symposium)
- 1g) Positioning the Strategy in the international industry ecosystem
- 1h) Challenging the project owners on dependencies and synergies with other projects
- 1i) Assisting on co-operation, co-planning and innovation and investment plans
- 1j) Defining missing links and ways to fill those gaps
- 1k) Evaluate the Strategy considering the Hydrogen Valley demands and restrictions
- 1l) Define cohesion with other EU strategies as TEN-T, REDII and others and international co-operations
- 1m) Decide on application for a Hydrogen Valley and added actions to maximize chance of success

Activities 2022	January			February			March			April			May			June			July			August			September													
Per week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36		
Phase 1A: Develop a Hydrogen Valley strategy																																						
1a) Concept list of projects									X																													
1b) Developing a canvas																																						
1c) Compiling regional public positions																																						
1d) Drawing up a Strategy																																						
1e) Aligning with Hydrogen Roadmap																																						
1f) Informing Brussels (symposium)																																						
1g) Positioning the Strategy																																						
1h) Challenging the project owners																																						
1i) Assisting on developing plans																																						
1j) Defining missing links																																						
1k) Evaluate the Strategy																																						
1l) Define cohesion with EU																																						
1m) Decide on application																																						
STEERING GROUP MEETING	X																																					

Phase 1B: Create a governance structure with the leading partners in the Hydrogen Valley strategy

- Time: February 2022 – May 2022
- Investment (out of pocket): 20 Days * € 1.200 = € 24.000
- Revenue: A decision on a working Governance structure compliant with EU requirements

- 2a) Verify roles and responsibilities of Hydrogen Valley value chain partners
- 2b) Select 10 Steering Group partners and Chair
- 2c) Approve Steering Group by democratic vote
- 2d) Draft and verify a Code of Conduct for partners
- 2e) Draft and verify a Terms and Conditions of governance body
- 2f) Register legal entity of governance body compliant with EU requirements for hydrogen valley application

The first 10 investing parties form a selected steering committee, lead the process to implement the Hydrogen Valley strategy and application and decide in the next six months how a sustainable governance is established. These partners pay their financial contribution directly to &Flux and we guarantee supporting the Steering Committee (or management team) and deciding on sustainable governance. &Flux and NEC will (strategically) support in the design of the governance and the decision making process regarding the governance. The actual execution of the governance is excluded from this offer.

Activities 2022	January			February				March					April				May				June				July				August				September					
Per week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36		
Phase 1B: Create a governance structure																																						
2a) Verify roles and responsibilities								X																														
2b) Select Steering Group								X																														
2c) Approve Steering Group								X																														
2d) Code of Conduct																X																						
2e) Terms and Conditions of governance																X																						
2f) Register legal entity of governance																X																						
STEERING GROUP MEETING	X																																					

Phase 2: Prepare for an application to become a Hydrogen Valley

- Time: June 2022 – September 2022
- Investment (out of pocket): 40 Days * € 1.200 = € 48.000
- Possibly additional € 50.000 EU support through EU ‘PDA’ to be acquired
- Revenue:
 - Improved synergy in industrial projects and co-operations
 - A higher technical readiness level by learning from each other
 - A higher Community readiness level through synergies between projects
 - A higher Investment readiness level through better developed projects
 - A fitting Strategy from a public-private perspective
 - International positioning of the Estonian Value Proposition
 - Application for a Hydrogen Valley Status

In the third and final phase we will work on following parallel action lines together with the Steering Committee:

- 3a) Reviewing the project list and strengthening the Strategy
- 3b) Challenging the market on missing links and new project definitions
- 3c) Dialogue with Brussels on the preparation of a final application
- 3d) Evaluating international cooperation chances
- 3e) Decision on preparing for a cross border Hydrogen Valley
- 3f) Draw up a final value proposition document
- 3g) Drawing up the application for a Hydrogen Valley status
- 3h) Decision to apply by Steering Committee
- 3i) Submit application by Steering Committee

Activities 2022	January			February				March				April				May				June				July				August				September				
<i>Per week</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Phase 2: Prepare for Hydrogen Valley application																																				
3a) Strengthening the Strategy																																				
3b) Challenging the market																																				
3c) Dialogue with Brussels																																				
3d) Evaluating cooperation chances																																				
3e) Decision cross border Valley																																				
3f) Draw up a final document																																				
3g) Drawing up the application																																				
3h) Decision to apply																																				
3i) Submit application																																				
STEERING GROUP MEETING	x																																			

Team

The &Flux team will consist of [Petrus Postma](#), [Leonoor den Ottolander](#), [Mark Zuyderwijk](#) and [Thea Kampert](#). Together they have in depth experience on all the expertise required for this challenge.

The team on the side of New Energy Coalition will consist of specialist [Patrick Cnubben](#) and project managers [Gerbrun Andringa](#), [Julio Garcia etc.](#) We will also include an international expert team facilitating the set up of the Hydrogen Valley ambitions.

Included in the team are some of the efforts of [Marek Alliksoo](#), of SKYCORP. We believe that with incorporating his experience and his checks and balances, our work will benefit in relevance and accurateness.

Combining our strengths to deliver

&Flux and New Energy Coalition aim to achieve the results through using both our strengths and unique positions. New Energy Coalition with their experience in the Netherlands, Brussels, and international domain, &Flux with their experience in creating new value chains and building public-private collaborations.

In transparent cooperation we aim to help and facilitate the founding public and private partners through the steps developing the Hydrogen Valley strategy of becoming a Hydrogen Valley and preparing the relevant steps towards application and strategy implementation. We will each focus on the points where we can add the most value, while of course continually working together on the overall result. The fields of experience and thus, the focus of &Flux and New Energy Coalition will be divided as follows.

&Flux	New Energy Coalition
Estonian value chain partner collaboration	European Union relations
Ecosystem and governance	Application of Hydrogen Valley

In this approach, we partly include the efforts of Marek Alliksoo of SKYCORP, who has been one of the driving forces behind (green) hydrogen dynamic in Estonia from the start. We believe that with incorporating his experience and his checks and balances, our work will benefit in relevance and accurateness.

We are convinced that while the last 1,5 years has taught us how to work efficiently online, this challenge is not all about efficiency. It is about quality and commitment as well, and those factors typically work better face to face than online, in Estonia as well as in Brussels. This implies we will work in a 'blended' way, mainly online but with several high-density excursions to Estonia and Brussels as well.

Expectations and keys to success

To constructively build the Hydrogen Valley strategy, establish a sound governance body and deliver a high-quality Hydrogen Valley application, we expect strong commitment and engagement from partners. More specifically, in financial terms, co-investing in &Flux and The New Energy Coalition to guide you through the process from January – September 2022. Furthermore, we expect you to deliver a non-monetary contribution by dedicating time to attend stakeholder meetings and delivering high quality input upon request to meet all the requirements of the Hydrogen Valley application.

To establish a well functioning public private partnership of the Hydrogen Valley, we want to safeguard keys to success:

- Fair representation of public and private interests
- Establish an independent legal entity for Estonian Hydrogen Valley
- Collaborative attitude and behaviour
- Establish a level playing field for competitiveness
- Transparency and open communication both during meetings and in writing
- Estonian Hydrogen Valley Steering Committee partners all financially invest and take ownership of the application process

Financials

Total investments require the following;

Total cost &Flux / NEC (€ 1.200/day)	110 Days	€ 132.000
Total cost Sky Corp (€ 1.200/day)	10 Days	€ 12.000
Travelling expenses (€ 500 / 3 day visit / person)	16 Visits	€ 8.000
Total cost		€ 152.000

Please note that as well as transitions are about managing uncertainties, our offer is an estimate of efforts required based on our assessment of December 2021. Unforeseen scope changes and project deviations may occur that substantially affect our required time. While we are committed to the results as described in this offer, we will stay in contact with the steering group on substantial deviations in our expenses related to scope changes or project deviations in order to jointly decide on what can and what can not be expected of &Flux and NEC to deliver within the given offer and budget. And this works two ways: if there is a lot of information already available and on spec, this may cost us substantially less time.

28 December 2021

Petrus Postma

Director &Flux BV

Patrick Cnubben

Manager New Energy Coalition

About &Flux

Circular, sustainable, and resilient, that is what &Flux stands for. We aim to accelerate future proof economy through creating new value chains and coalitions that make those value chains work. Future proof organisations – whether public or private – cannot and will not exist without a clear strategy on how to operate without harming the environment. But we like to think in chances: we can build a new economy that thrives on re-using materials, on short cycles and on sustainable cooperation. We create and accelerate this new economy in sustainable heat projects, international green hydrogen projects, climate adaptation programs and feedstock transition programmes.

&Flux - Flagship value chain projects

Port of Tallinn Hydrogen Strategy (2021)

As described by the EU, ports will play an important role in the hydrogen value chain as ports facilitate import and export of hydrogen. The Port of Tallinn asked &flux to make the outline for a hydrogen vision. We conducted research into the potential hydrogen value chain and synthesized a first analysis of the renewable energy potential. Next to that &flux mapped the potential value chain from beginning to end and possible partnerships. Lastly, &flux advised the Port of Tallinn on their role in this value chain.

The strategy emphasizes the role of Port of Tallinn in the hydrogen value chain as an enabler and facilitator. More specifically, to facilitate the import and export and hydrogen production (from offshore wind) the port is where the infrastructure begins, from where hydrogen can be distributed inland. The Baltic Sea offers great opportunities in terms of offshore wind, which again underlines the important role of Port of Tallinn. Besides the role of Port of Tallinn in the value chain, hydrogen can play an important role in making its internal logistics climate neutral.

This resulted in the adoption of the Hydrogen Strategy by the Board and the Port of Tallinn now being one of the interested parties in the Estonian Hydrogen Valley approach.

By successfully delivering the Hydrogen Strategy for the Port of Tallinn, &flux has enhanced its understanding of the Estonian context and has become acquainted with key stakeholders across public and private organizations.

Estonian Aviation Cluster Hydrogen Action Perspective (2022)

The European aviation sector is committed to meeting the Paris Agreement goals in keeping climate change well-below 2 degrees. In reaching these goals the European Commission proposed an EU-wide blending mandate on Sustainable Aviation Fuel (SAF), as well as uplifting obligations for airlines as part of the “Fit for 55” package.

In the beginning of year 2021, &flux developed a hydrogen strategy for Port of Tallinn that presents hydrogen (and the products made from it) as a new economic proposition for Estonia. Next up, a similar approach shall be applied for the Estonian aviation sector, which eventually will contribute to the success of Hydrogen Valley proposal as such.

&flux will deliver the project management during this assignment. To write the Hydrogen Action Perspective for the Estonian Aviation Cluster, the following tasks are to be done: 1. Desk research and analysis of the current energy demand within the whole scope of the Estonian Aviation Cluster. 2. Identify and elaborate on the possible hydrogen solutions in the energy ‘map’ and clarify the potential of each solution in terms of impact, economy, and timeframe. 3. Interviews with partners within and outside of the Estonian Hydrogen Cluster and Estonian Association of Hydrogen Technologies to identify possible projects in the short term and the keys for success. This will lead to drafting an analysis on the hydrogen possibilities and a strategic presentation on hydrogen for the Estonian Aviation Cluster.

Morocco Hydrogen Import (2020)

In 2050, 20% of Europe’s total energy demand will be fulfilled by hydrogen. The use cases will mostly be for industry and mobility like shipping and aviation. To meet this demand many countries in Europe are planning and starting up projects for hydrogen production. The challenge is that the total potential for hydrogen production in Europe will not be enough to meet demands. Therefore, hydrogen import, from places with many sun hours is of vital importance for Europe to becoming climate neutral.

In solving this challenge, &flux saw the opportunity to set up a hydrogen value chain from Morocco to Rotterdam. Morocco is an interesting location for hydrogen production because of its many sun hours and coastal location with opportunities for offshore wind. &flux had a leading role in initiating a collaboration between multiple Dutch and Moroccan parties to set up such a value chain. The result was a prefeasibility study for which the parties in collaboration researched the energy production, hydrogen production, conversion of hydrogen for shipping, shipping costs, necessary infrastructure, and possible off set markets. &flux led the project and working groups into producing the report.

About New Energy Coalition

New Energy Coalition brings parties together to create partnerships and coalitions that accelerate the transition to a sustainable energy economy. With plenty of jobs and suitable education. These collaborations – ‘coalitions’ as we call them – consist of companies, government authorities and knowledge institutions, nationally and internationally. New Energy Coalition has varying roles in these coalitions, from organizer, coordinator to knowledge partner. Besides connecting parties and forming coalitions, we share the knowledge gained in the coalitions with the outside world.

New Energy Coalition - Flagship hydrogen use cases in Hydrogen Valley HEAVENN in Groningen

New Energy Coalition is the architect of Heavenn creating the first Hydrogen Valley of Europe.

Building the Valley

The concept of a Hydrogen Valley is targeted to create/organize a regional (green) Hydrogen ecosystem. In this regional ecosystem the various projects are connected and collaborate to create a functional and operational green Hydrogen value chain. This novel value chain is 100% green and clean involving the elements of generation of renewable energy, conversion and transport and distribution of green Hydrogen and the subsequent use in at least two of the three applications in industry, mobility and the built environment. But also involving knowledge transfer and development, enveloping vocational to academic and post academic level. This ambition necessitates in parallel to establish a progressive and forward looking policy on regional and national level which is harmonized with the goals set by the European Green Deal and its Fit for 55 package.

These elements are available in Heavenn the first European Hydrogen Valley. Descriptions of the use cases in industry, mobility and built environment are given hereunder. The Heavenn project envelopes more aspects on top of the aforementioned, amongst else large scale storage and supporting studies and investigations are included.

The Hydrogen Valley project helps to create visibility and accelerates the potential green Hydrogen projects are opening up. The Hydrogen Valley proposition is acting like a slingshot for green Hydrogen innovations and investments in other business domains like aviation and datacenters and attracts investment opportunities.

Industry

Greening industrial and chemical industries and connecting industrial infrastructure and supporting studies.

Two industrial clusters in Eemshaven/Delfzijl and the Emmen industry clusters are participating. These two clusters are spatially separated by a distance of 60 km but are already cooperating in identifying joint propositions.

In the Eemshaven/Delfzijl cluster the development, engineering, construction and deployment of several electrolyzers and infrastructure is envisaged: A 20 MW unit will be realised connected to the already existing methanol production which is based on natural gas utilization. The generated green Hydrogen will demonstrate the uptake of the green Hydrogen in this industry and thereby replace the use of natural gas for that percentage. A 60 MW electrolyser will be established to generate the Hydrogen required for the production of SAF in Delfzijl. Both electrolyzers will benefit from the establishment of a collaborative power supply and distribution structure (plug and socket) as well as the development of hydrogen infrastructure connecting the production and utilization site.

In the Emmen region the green Hydrogen case is built on the development, engineering, construction and deployment of a 4-10 MW electrolyser (the size can be increased based on upward going offtake in industry and mobility) at a reconstructed natural gas cleaning site. The green Hydrogen will be made available to a HRS on the location and is transported in a new built dedicated pipeline connected to the GETEC industry park. Here the Hydrogen will be injected into a natural gas fuelled gasturbine which will be retrofitted to be able to absorb natural gas and Hydrogen. The gasturbine will provide high temperature heat to the industries located on the GETEC site.

Both systems in Eemshaven/Delfzijl and Emmen will facilitate the further growth of the intended green Hydrogen generation and industrial uptake. In addition to the investments, supporting studies are also executed, like the feasibility for an import/export Hydrogen terminal and determination of footprint and LCA studies.

Mobility

Moving towards the implementation of green Hydrogen infrastructure & vehicles, preparing for growth in zero-emission mobility.

The development of zero-emission mobility is very much anticipated in Heavenn. Here the development and deployment of Hydrogen Refuelling Stations (5) is combined with the deployment of vehicles like passenger vehicles for business, taxi and individual use (105), light and heavy transport vehicles (20) as well as garbage trucks (4) and coaches (2). The latter will be used and operated in public transport and will be built further on the availability and infrastructure of the 30 hydrogen FC buses operating in the region. Here also connections are made to regionally operating Hydrogen distribution businesses to fulfill the ambition to use regionally produced Hydrogen rather than import from outside the Hydrogen Valley.

The mobility domain also encompasses the deployment of an inland water ship which will sail between Delfzijl and Rotterdam demonstrating the first IWT Hydrogen powered ship and the connected HRS system for ships.

Built Environment

Getting started and setting the pace with utilization of green Hydrogen in residential areas.

The use of natural gas is very wide spread in the Netherlands and subsequently the North Netherlands. Here the Municipality of Hoogeveen has taken the brave and forward looking step to develop a Hydrogen fueled new build neighbourhood in which 100 homes will be built and equipped with Hydrogen as the zero-emission energy vector. The homes will be equipped with FC and combustion boilers. The whole energy system will be developed initially the Hydrogen will be provided using trailerized transport in the near future it will be connected to the regional Hydrogen backbone. Furthermore the next step will be to retrofit an existing neighbourhood (1.100 homes) from natural gas to Hydrogen. Here also the neighborhood is intended to become connected to the regional Hydrogen backbone. In this domain also supporting studies will be executed.

&flux

**New
Energy
Coalition**

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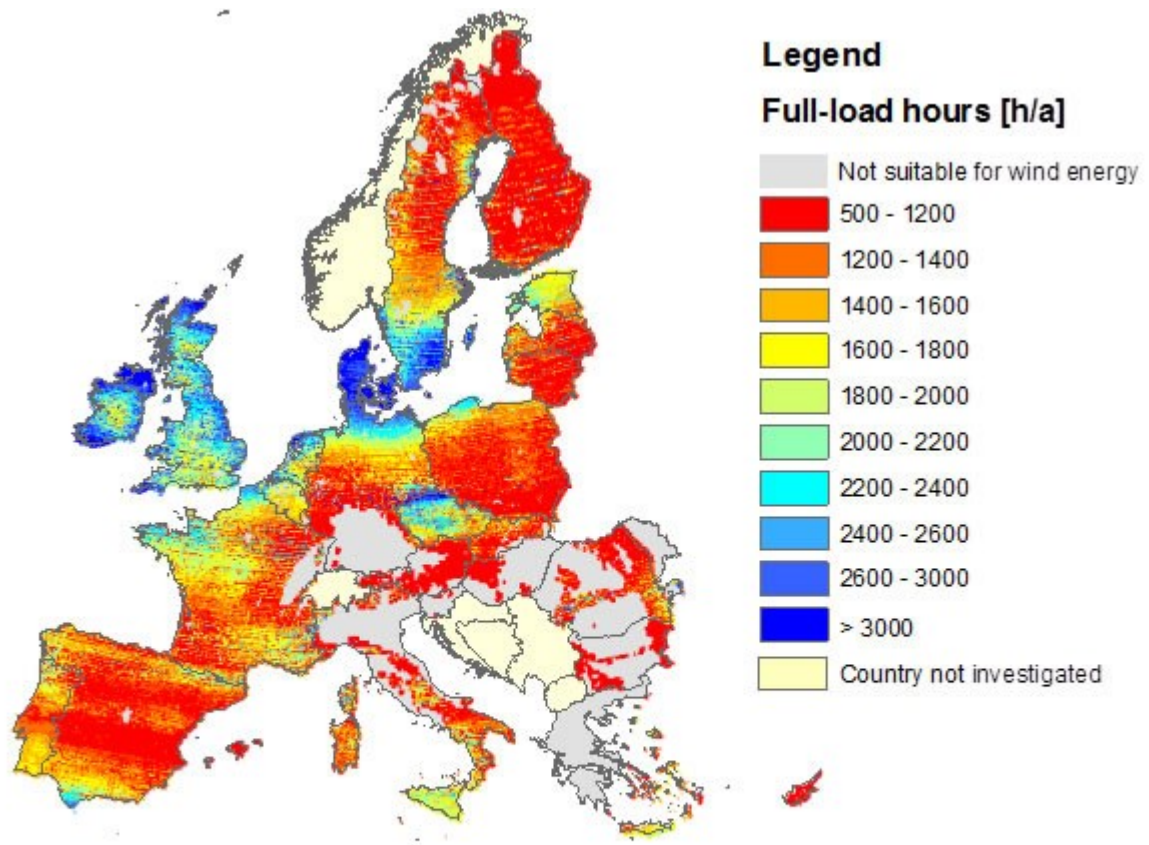


Figure 4-2: Annual full-load hours for onshore wind energy in the EU.
Source: (Held 2011)

https://green-x.at/RS-potdb/potdb-long_term_potentials.php

PÄRNUMAA TUULEPARGID JA ARENGUFONDI VÕIMALUS

Tuuleparkide alginfo:

2018. aasta seisuga oli Eestis üle 20 tuulepargi, kokku 139 tuulikut üldvõimsusega 309,96 MW ning nendega toodeti 591 GWh elektrit

<https://et.wikipedia.org/wiki/Tuulepark>

Seega: 1 MW toodab ca. 1906,70 MWh müüdatavat elektrit aastas

Tuuleparkide nimekiri: <https://et.wikipedia.org/wiki/Tuulepark>

TUULEENERGIA ON PÄRNUMAA ÜHINE RESSURSS. (VÄLIS)KAPITAL TAHAB SELLE RESSURSI ENDA KASUKS TÖÖLE PANNA. KAS ME OSKAME SELLE RESSURSI KASUTAMISE EEST KÜSIDA ÕIGLAST KOMPENSATSIIONI?

Pärnumaa tuulepargid:

Summad on teoreetilised ja indikatiivsed ning sõltuvad tegelikest võimsustest ja läbirääkimistest

Nimi, info	Arendaja	võimsus MW	müüdav KWh	Arendaja pakub: komp v1 €/MWh 0,25	Eesti min. eelnõu: komp v2 €/MWh 0,5	Võiks olla KOV min.: komp v3 €/MWh 1	Hea tulemus: komp v4 €/MWh 1,5	sh 0,5 Arengufondi €
tulumistasu ehk kompensatsioon:								
Tootsi (1 osa 70-80 MWh)	Enefit (hakkab ehitama)	75	143 002	35 751	71 501	143 002	214 503	71 501
Tootsi (2 osa ?)	Enefit (Tootsi kokku 138 MW)	63	120 122	30 030	60 061	120 122	180 183	60 061
Põhja-Pärnumaa	Sunly/Utilitas/Metsamaahalduse	150	286 005	71 501	143 002	286 005	429 007	143 002
Sindi-Sauga	Eurowind	150	286 005	71 501	143 002	286 005	429 007	143 002
Põlendmaa	Sunly/Enefit/Metsagrupp	66	125 842	31 461	62 921	125 842	188 763	62 921
Saarde	Enefit/Metsamaahalduse	70	133 469	33 367	66 734	133 469	200 203	66 734
PÄRNUMAA MAISMAA TUULEPARGID KOKKU 1 AASTA:		574	1 094 444	273 611	547 222	1 094 444	1 641 667	547 222
Liivi meretuulepark	Eesti Energia	1000	1 906 698	476 674	953 349	1 906 698	2 860 046	953 349
Saare-Liivi meretuulepark	Utilitas	5890	11 230 449	2 807 612	5 615 225	11 230 449	16 845 674	5 615 225
MERETUULEPARGID KOKKU		6 890	13 137 147	3 284 287	6 568 573	13 137 147	19 705 720	6 568 573
PÄRNUMAA TUULEPARGID KOKKU 1 AASTA:		7 464	14 231 591	3 557 898	7 115 796	14 231 591	21 347 387	7 115 796

Muud Liivi lahe tuulepargid:

Tuuletraali meretuulepark	Tuuletraali	380	724 545	181 136	362 273	724 545	1 086 818	362 273
Nelja meretuulepargi	Utilitas	7200	13 728 223	3 432 056	6 864 111	13 728 223	20 592 334	6 864 111

MÄRKUSED:

- NORRA VARDAR AS, ON BUSKERUDI OMAVALITSUSTE ENERGEETIKA INVESTEERIMISFIRMA, MILLE KAPITAL ON TÄNASEKS CA 180.000.0000 €. [viide siin](#)
- NORRAKATE VARDAR AS INVESTEERIB LÄBI SUNLY PÄRNUMAA TUULIKUTEPARKIDESSE. [viide siin](#) SAI ALGUSE HÜDROENERGIAST [VARDAR AS AJALOO VIIDE:](#)
- PÄRNUMAA ARENDUSKESKUSEL OLEKS REAALNE VÕIMALUS OLLA KOV KOOSTÖÖ EESTVEDAJA NING OLLA ÕIGLASE TUULEENERGIA KOMPENSATSIIONI NÕUSTAJA JA LÄBIRÄÄKIJA.
- PÄRNUMAA TUULEENERGIA ARENGUFOND OMAKAPITALIGA 10.000.000 € ON REAALNE EESMÄRK
- ARENDAJATEGA SAAB LÄBIRÄÄKIDA NIIKAUA KUI ERIPLANEERINGUD EI OLE KEHTESTATUD JA EHITUSLOAD VÄLJASTATUD. SEE ON AJAKRIITLINE PROTSSESS 2022-2023
- PÄRNUMAA TUULEENERGIA ARENGUFONDI LOOMISE VÕIMALUS ON ÜKS KORD JUST PRAEGU MEIE ELUEA JOOKSUL
- NORRAKAD SUUTSID SEDA ÜHISELT TEHA , KAS MEIE SUUDAME?

