

Eerste werkbijeenkomst

26 September 2024

Voorzitter: Radboud Vorage

Welkom



Inleiding/achtergronden Geo4all programma

- Innovatie inventarisatie (2021)
- Betrekken geothermie sector en bedrijven bij vervolg
- GNL-TNO-EBN (en TKI)
- Prioriteiten en uitwerken werkpakketten
- Omvang groter dan TKI-subsidie budget!
- Passen en meten
- 23 partijen, 6,3 miljoen, 3,6 miljoen van TKI/PPS
- GNL wil (praktijk)kennis en innovatie blijven stimuleren



Innovatie Aardwarmte 2021

Inventarisatie van innovatiebehoeften en huidige stand van zaken





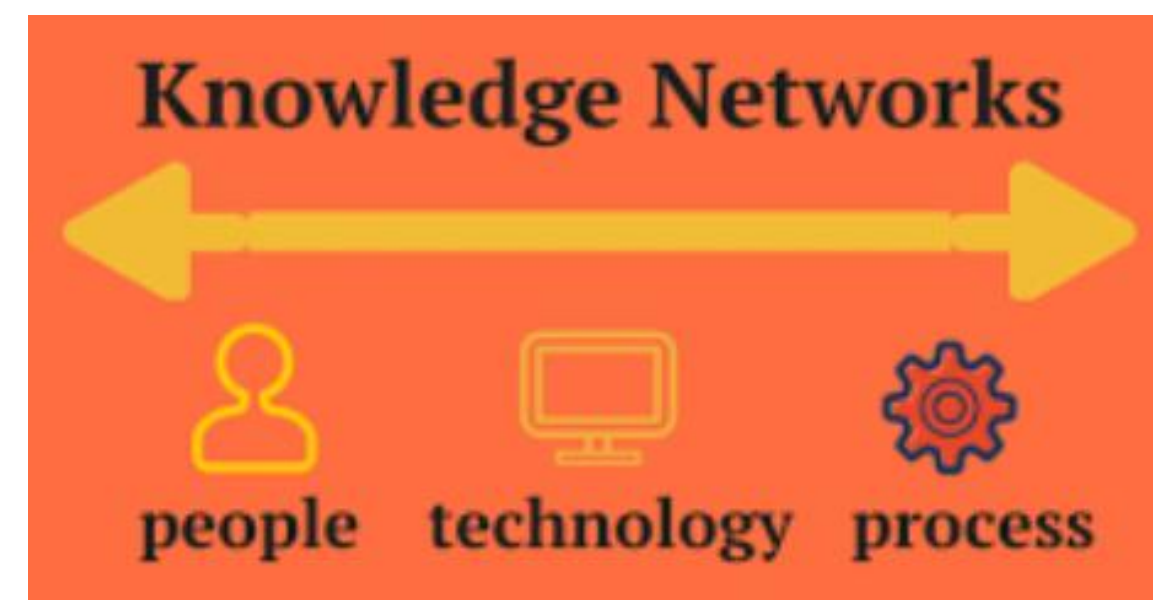
Floricultura
ORCHIDACEAE & ARACEAE



Mede mogelijk gemaakt door

Geo4all kennisnetwerk

- Samenwerking tussen mensen met kennis en ambitie
- Doelgericht inzetten van (jullie) kostbare tijd en middelen
- Het bouwen van relaties tussen de projectpartners
- Kennis en inzichten ontwikkelen die van waarde is voor de geothermie sector
- Kansen benutten om de 'business' van deelnemers beter te maken (waarde creëren)
- Mogelijkheden ontdekken om ook buiten Geo4all andere projecten/initiatieven te ontwikkelen



Programma

- 13.00 Opening, overzicht werkpakketten Geo4all en introductie projectleiders
- 13.45 Pauze
- 14.10 Werksessies per werkpakket
- 15.30 Afsluiting
- 16.00 Netwerkborrel
- 17.00 Einde

Introduction

- GEO4ALL – new research programme under TKI Nieuw Gas
- Total budget is 6.3m (3.6m subsidy + 1.1m cash contribution + 1.6 “in-kind”)
- Project duration: 4 years (2-4-2024 to 3-4-2028)
- Consortium of 23 partners (2 research institutes, 7 operators, 10 services providers, 3 greenhouse representatives and a branch organisation).
- Penvoerder is TNO
- Programme Manager: Darren Jones | darren.jones@tno.nl
- Chair Person: Radboud Vorage
- GEO4ALL Ambassadors: Radboud Vorage (GNL), Kris Hopstaken (TNO), Nora Heijnen (EBN)

Werkpakketten

- WP1 Unlocking shallow geothermal reservoirs: Elisa Calignano
- WP2 Unlocking marginal reservoirs: Application of RESULT workflow: Jens Wollenweber
- WP3 Shallow geothermal systems: Maartje Koning
- WP4 3M Cold front and induced seismicity: Elisa Calignano
- WP5 Value of geothermal production data: Hadi Dashtaki Hesari

WP1 – Unlocking Shallow Geothermal Systems

T1.1: Lessons learned medium depth (500-1500m)

Data collection, analysis, workshop. *TNO, IFT, EBN, Shell*

T1.2 Technical parameters & risks

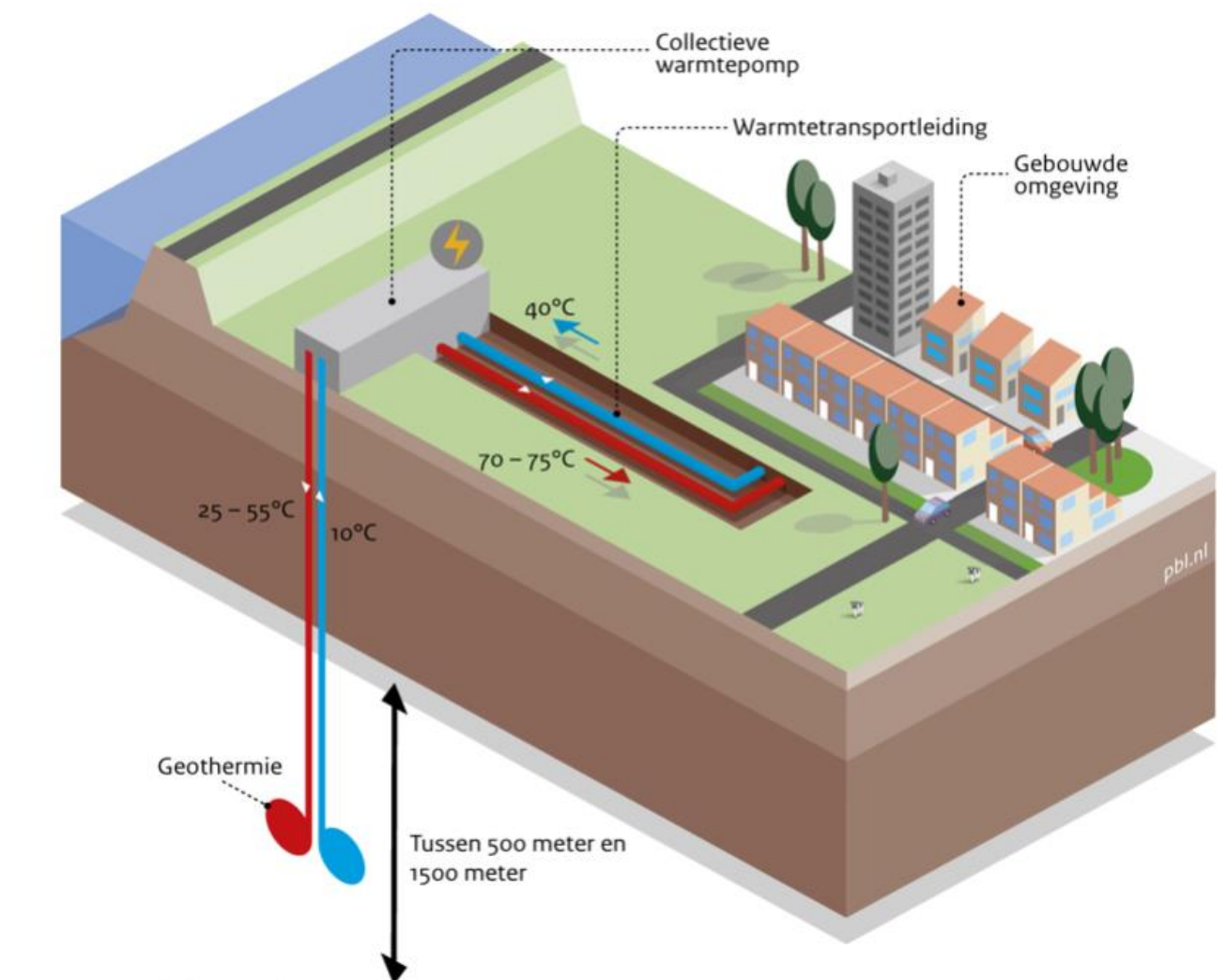
Well clogging, stability, design, risk mitigation

Workshop - *TNO, IFT, EBN, Shell*

T1.3 Reporting and dissemination (TNO, TUD)

Summary paper and roadmap for sector – *TNO, TUD*

Ondiepe geothermie (OGT) met collectieve warmtepomp



WP2 – Marginal reservoirs

T2.1: Data collection & review

Well concept scenarios, data request. Case studies (Luttelgeest, Koekoekspolder, Amsterdam, Almere)
TNO, WellPerform, ACL, Aardwarmtecluster, HVC/Vattenfall.

T2.2 Modelling well concept and economic case

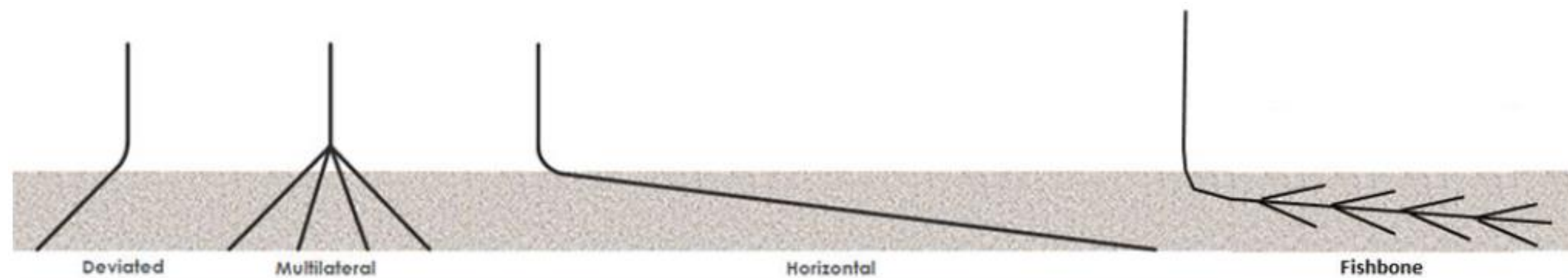
Ensemble upscaled models, performance evaluated using EVEReST field development tool.
TNO, WellPeform, Industry Partners

T2.3 Research mud

Performance, circularity, cost reduction for fluids & cuttings – *EBN*

T2.4 Reporting

Technical presentation, summary paper, workflow for Slochteren formation, workshop and recommendations for sector – *TNO, WellPerform, EBN*



WP3 – Shallow closed-loop systems

T3.1: Installation & Monitoring

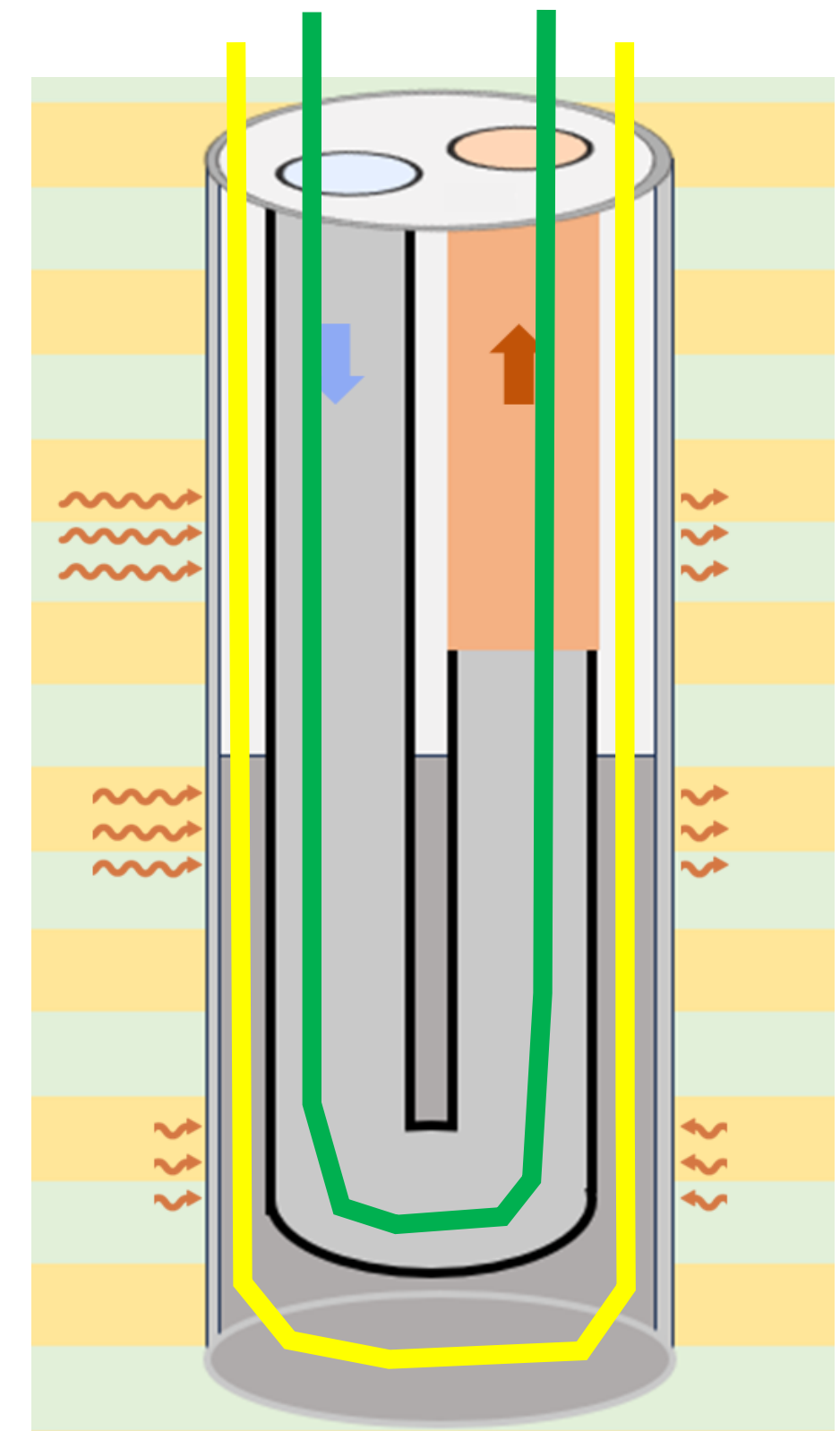
Logging (SP, GR) and BHE - fibre-optic cables – Distributed Temperature Sensing
– TEON, TNO

T3.2 Analysis

Subsurface models generated to estimate thermal conductivity. Ground workflow, well interference and leakage risk – TNO

T3.3 Reporting

Summary report on activities, findings, business case deep closed loop vs shallow, impact on legislation – TNO, TEON, EBN



WP4 – Cold front and induced seismicity

T4.1: Monitoring the cold front

In deep wells and surface stations at geothermal sites

Compare response of geothermal reservoirs (seismic, pulse tests etc)

Middenmeer, Bleiswijk and Kwintsheul

T4.2 Measuring cooling effects on subsurface

Assess cooling an pre-production and during injection

Stress test Middenmeer and Bleiswijk

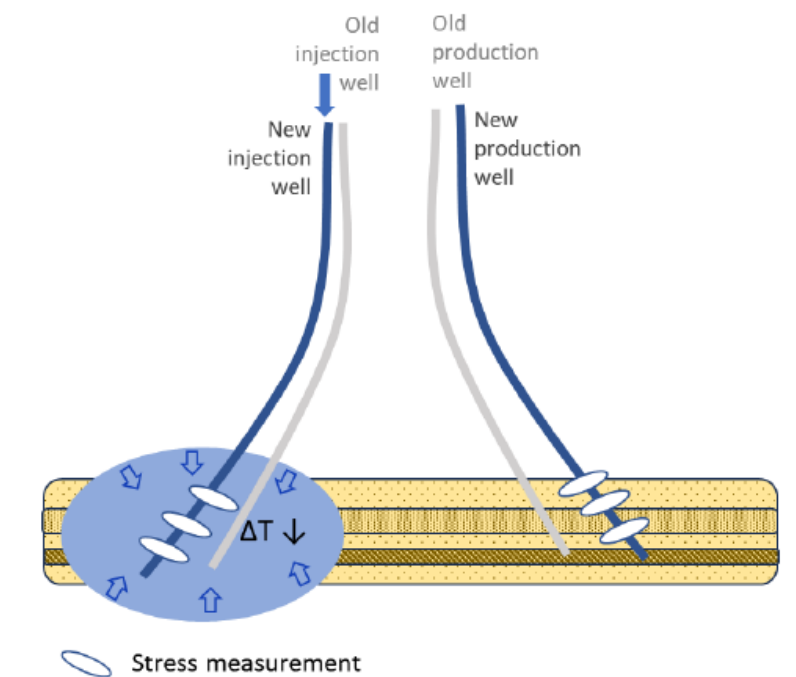
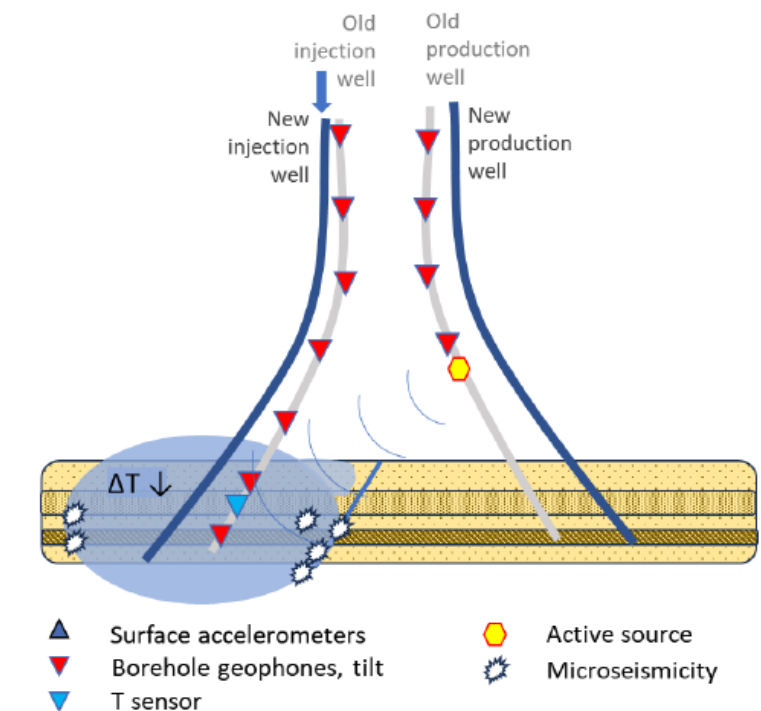
T4.3 Data processing and model calibration

Calibrate subsurface parameters (flow and induced seismicity)

Site-specific 3D models – public available

Partners – *TNO, TUD, Nature's Heat, Ennatuurlijk, EBN*

Case study example Middenmeer
Monitoring plan and stress measurements



WP5 – Value of geothermal production data

T5.1: Existing data

Select KPIs for geothermal assets and equipment

Interview with owners/operators

Case studies: ESP, injector pump, Heat exchanger

Framework/database setup to promote learnings – *TNO, AL, CABN, HVC, Aardwarmtecluster, Ennatuurlijk WEP, EBN.*

T5.2 New data

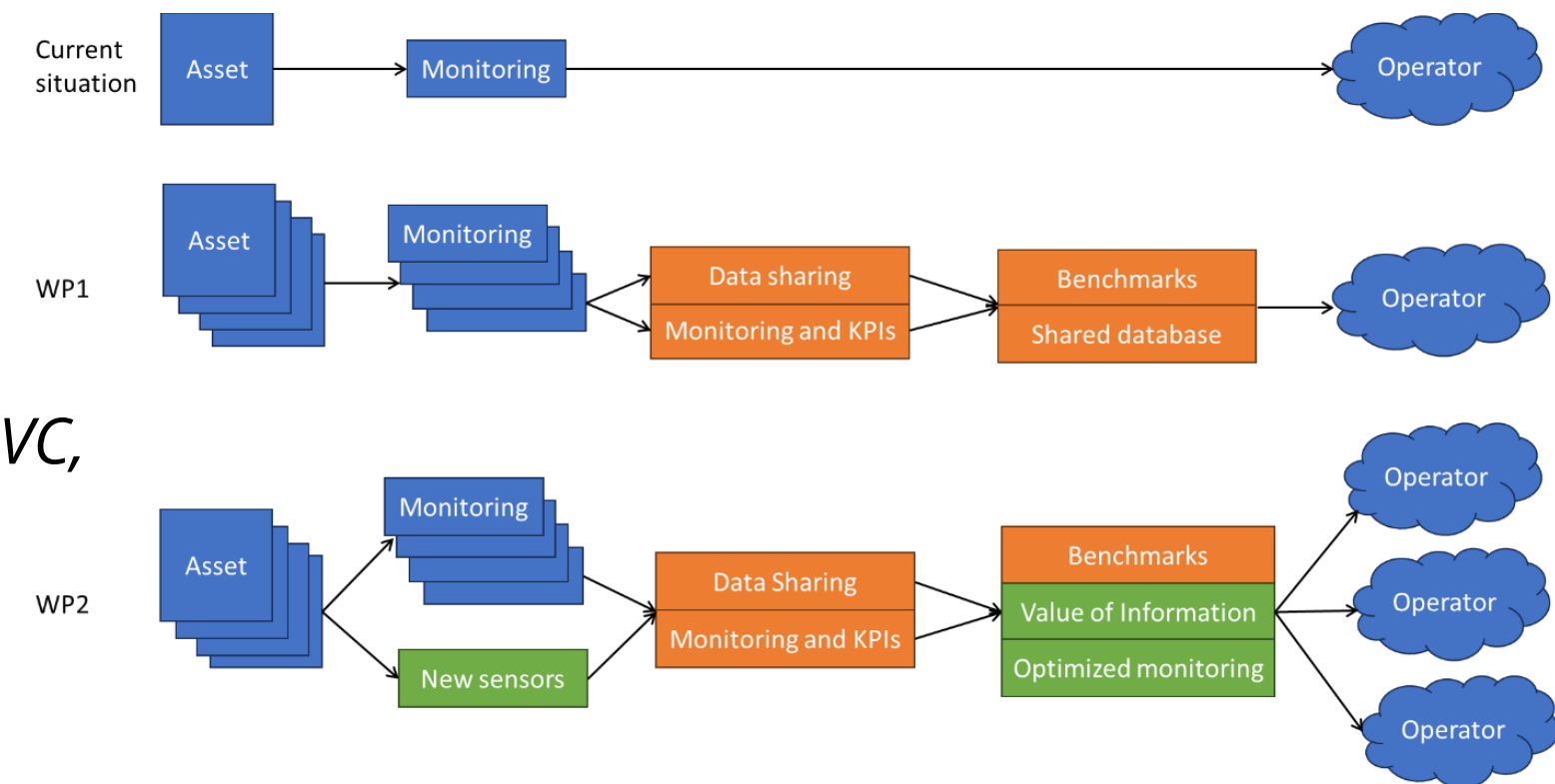
Inventory of data acquisition and monitoring options,

Lessons learned e.g. oil & gas production: corrosion, temperature, scaling.

Install new sensors and measurement in existing geothermal sites

Method of evaluation for new data

Added value of data vs costs? – *TNO, AL, WEP, Operators, EBN*








Locatie van activiteiten

Research innovation programme

13 sites across 8 provinces

GEO4ALL in NL (and beyond!)

-  WP1 – shallow geothermal
-  WP2 – marginal reservoirs
-  WP3 – closed loop systems
-  WP4 – coldfront & induced seismicity
-  WP5 – geothermal production data



Timeline

WP	Description	2024		2025				2026				2027				2028				Deliverable
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
1,1	Lessons learned		Activity	Activity																Workshop notes
1,2	Outlining technical parameters and risks		Activity	Activity																Workshop notes
1,3	Reporting and dissemination to sector		Activity	Activity	Deliverable															Summary Report and paper
2,1	Data collection and review		Activity	Go no go	Activity															Dynamic simulation models for case studies
2,2	Modelling well concept scenarios and business case			Activity	Activity	Activity	Deliverable	Activity	Deliverable											Optimization modelling results for each case study and drilling risk assessment matrix
2,3	Preliminary research mud							Activity	Activity	Deliverable										report on drilling mud research
2,4	Reporting and summary paper							Activity	Activity	Deliverable										Summary Report and white paper
3,1	Installation & Monitoring	Go no go	Activity	Activity		Activity														Processed data
3,2	Analysis - Developing insights through modelling			Activity	Activity	Activity		Activity	Deliverable											Enhanced subsurface model and insights for >500m closed loop systems
3,3	Perspectives on implementation and reporting							Activity	Activity	Deliverable										Summary Report and paper
4.1	Monitoring the cold front	Activity	Activity	Activity	Activity	Deliverable	Deliverable	Activity	Deliverable	continuous monitoring										Monitoring setup, report, and website
4.2	Measuring effects of cooling on subsurface	Go no go	Activity	Activity	Activity	Deliverable	Activity	Activity	Activity	Activity	Deliverable	Deliverable								Stress report & dataset, scientific article
4.3	Data processing and model calibration	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Public 3D models for benchmarking, articles
5.1	Existing data			Activity	Activity	Activity	Deliverable	Activity	Activity	Deliverable										Data gathering
5.2	New data							Activity	Activity	Activity	Activity	Deliverable	Activity	Activity	Activity	Deliverable				Report of data acquisition and monitoring options
6.1	Kick off event	Deliverable																		Kick off event
6.2	Project Execution Board Meetings	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Minutes
6.3	Biannual meetings with TKI				Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Minutes
6.4	Biannual general assembly				Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Deliverable	Biannual meetings
6.5	Quartely work package meetings/workshops		Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Activity	Presentations
6.6	Programme Closure																		Deliverable	Final event

Activity
 Go no go
 Deliverable

Communicatie

- Geothermie Nederland is the industry association for geothermal energy and brings together all companies and organizations with a commercial interest in the geothermal sector.
- Together with our members, we are committed to increasing the use of geothermal energy as a safe, responsible, and sustainable energy source within the energy transition.
- In close collaboration with EBN, GNL will fulfill the role for communication and knowledge transfer in the TKI-program
 - Facilitating the flow of information
 - Presenting (intermediate) results from the working groups to all partners of the TKI-project and to the business networks of Geothermie Nederland and EBN
 - Facilitating an active discussion and knowledge-transfer between all partners of the project

Communicatie

- Workpackage Leaders GNL: Frank, Floris, Hannes & Pim.

WP1 Unlocking shallow geothermal reservoirs:

Hannes Groot

WP2 Unlocking marginal reservoirs: Application of RESULT workflow:

Hannes Groot

WP3 Shallow geothermal systems:

Floris Post

WP4 3M Cold front and induced seismicity:

Frank Maartense

WP5 Value of geothermal production data:

Pim van Delft

Anouk is part of the communication group & will mainly focus on the communication activities within the program

Communicatie; Website

- [Geo4all – Innovatieprogramma \(geothermie.nl\)](https://geothermie.nl)
- Will go live very soon, (but not yet as you see... →)
- Site will focus on the Geo4all program, all the information, future results and upcoming agenda will be available.
- Intention is to broaden the scope of the website for all innovation programs in the future



Nog even geduld a.u.b.

Lees alvast over Geo4all op de website van Geothermie.nl

[Meer informatie](#)

Interviews met Workpackage leaders

WP1 – Lies Peters (PL – Elisa Calignano)

WP2 – Eduardo Barros (PL – Jens Wollenweber)

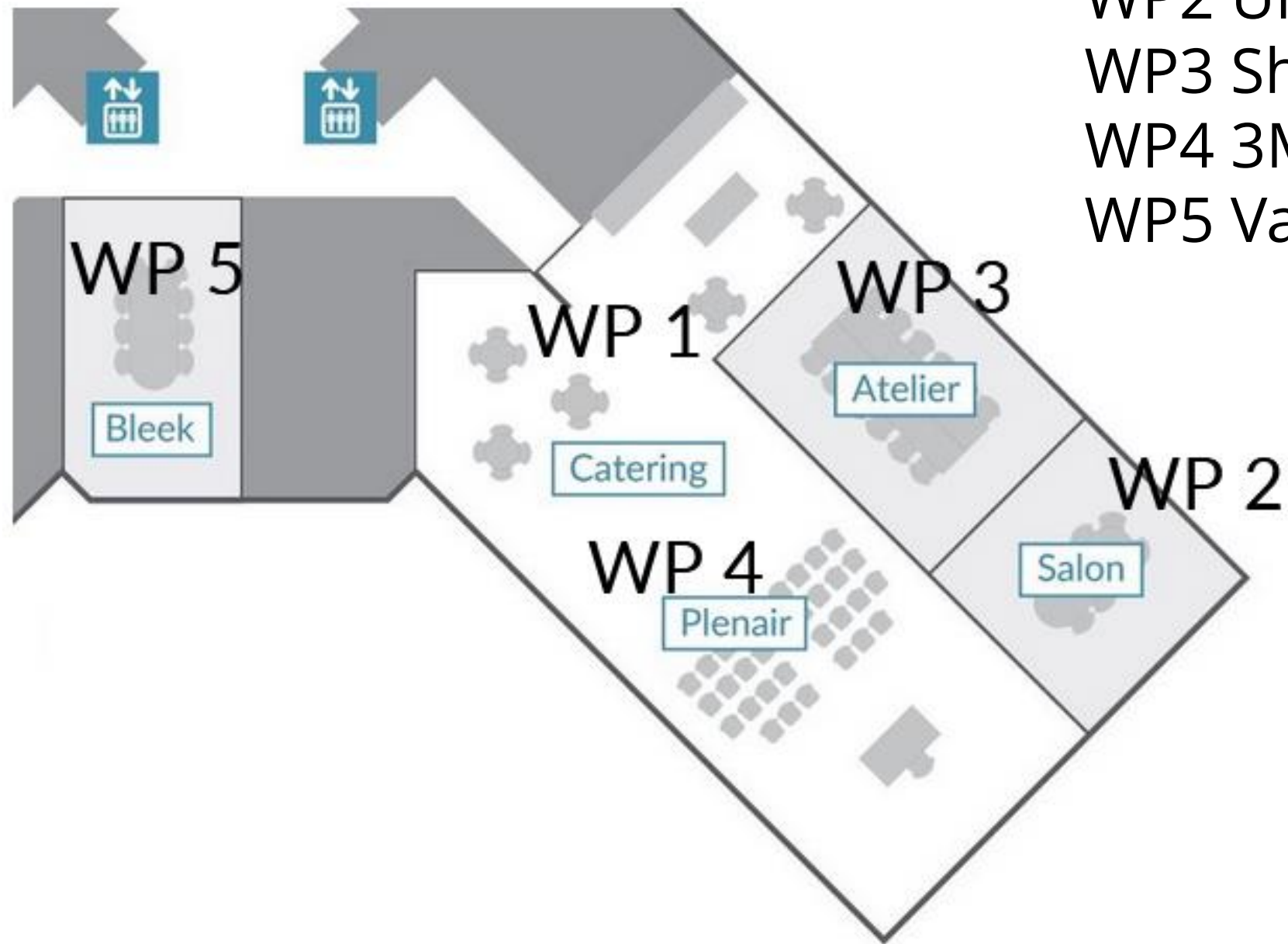
WP3 – Maartje Koning

WP4 – Loes Buijze (PL- Elisa Calignano)

WP5 – Pejman Shoeibi Omrani (PL – Hadi Dashtaki Hesari)

Werksessies

- WP1 Unlocking shallow geothermal reservoirs: Catering
- WP2 Unlocking marginal reservoirs: Salon
- WP3 Shallow geothermal systems: Atelier
- WP4 3M Cold front and induced seismicity: Plenair
- WP5 Value of geothermal production data: Bleek

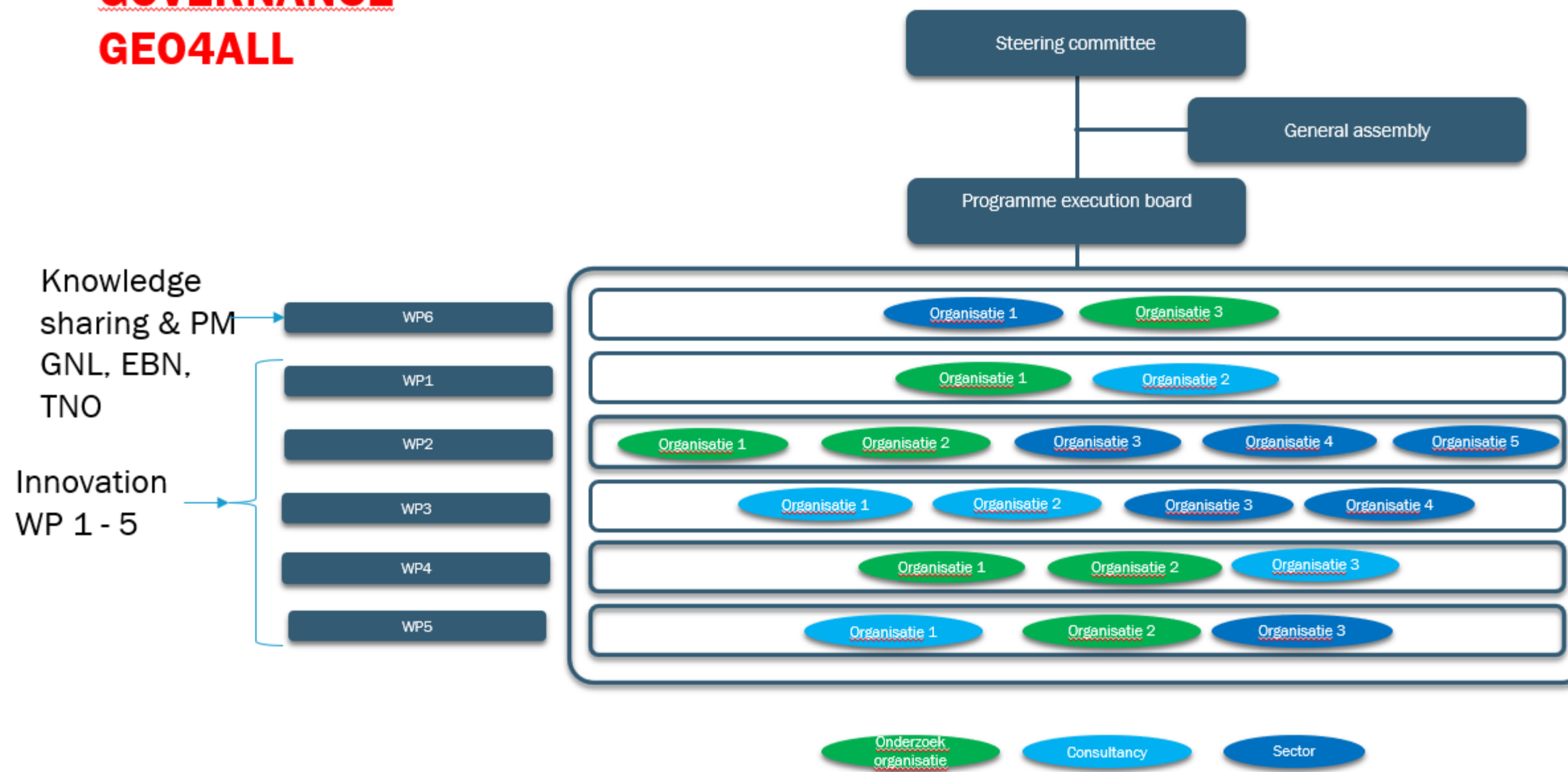


Feedback of working groups



Programme Governance

GOVERNANCE GEO4ALL



Steering Committee

Samenstelling:

Partner	Name	Back-up	Rights
TNO	Kris Hopstaken	Darren Jones	voting
GNL	Radboud Vorage	Janine Verweij	voting
EBN	Nora Heijnen	Guido van Yperen	voting
Ennatuurlijk	Alexander van Noort	Andrea Vondrak	voting
HVC	Harold Koekkoek	Chalotte de Wijkerslooth	voting
Gaia Energy	Nico Kuipers		voting
TU Delft	Susanne Laumann	Phil Vardon	voting
Service provider	Geertjan van Og	Alexander Nagelhout	voting
TKI Nieuw Gas	Berend Scheffers		Non-voting
TKI Urban Energy	Robert Jan van Egmond		Non-voting

Administration

- Half-year reporting to TKI. PM will request input from partners.
- Subsidy payments can be paid out two (2) per year with a maximum of 90% (to be discussed with TKI).
- Remaining 10% subsidy will be released after programme has finished.
- Costs incurred before start date of programme are **not eligible for subsidy**
- PM responsible for communication between consortium partners and TKI
- Substantial budget changes in project plan (>25%) must be approved by TKI
- >25kEUR budget changes must be approved by Steering Group
- Management statement required by partners who receive <125kEUR
- Audit report for partners receiving >125kEUR.
- Each partner is **responsible for monitoring and documenting own budget** (hours/equipment/third-party costs) as per the budget sheets.

Questions?

En daarna de netwerk borrel

