Rogier Dieteren

Renewable Energy 2011
RETS AND MUNICIPALITY SITTARD-GELEEN

Tuesday
29 March

13.30-14.30

RETS

Gemeente Sittard-Geleen

INTERREG IVC

European Union
European Regional Development Fund

het Groene Net

Overview of Presentation

1. What is Het Groene Net?
2. Origin of Het Groene Net project
3. Technology of Het Groene Net
4. Development scenario
5. Investments
6. Benefits of Het Groene Net
7. Developments and decision-making up to now
8. Planning
9. Animation
10. Interactive discussion centred on three problem statements

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Het Groene Net Project

Who: Het Groene Net is a sustainable energy company that will be established mid-2011 by the municipalities of Stein, Beek and Sittard – Geleen, and the province of Limburg.

What: Sustainable industrial surplus heat of the Chemelot-site and renewable heat from the biomass plant BES will be used for heating and cooling 5,000 homes and 40 buildings in Sittard, Geleen, Stein, Beek, Holtum Noord

(30,0000 home equivalents)

How: Via the underground north-south distribution network of MAA Beek to Holtum Noord with branches to Stein, in which warm water of 90 degrees is distributed from the generator to the user

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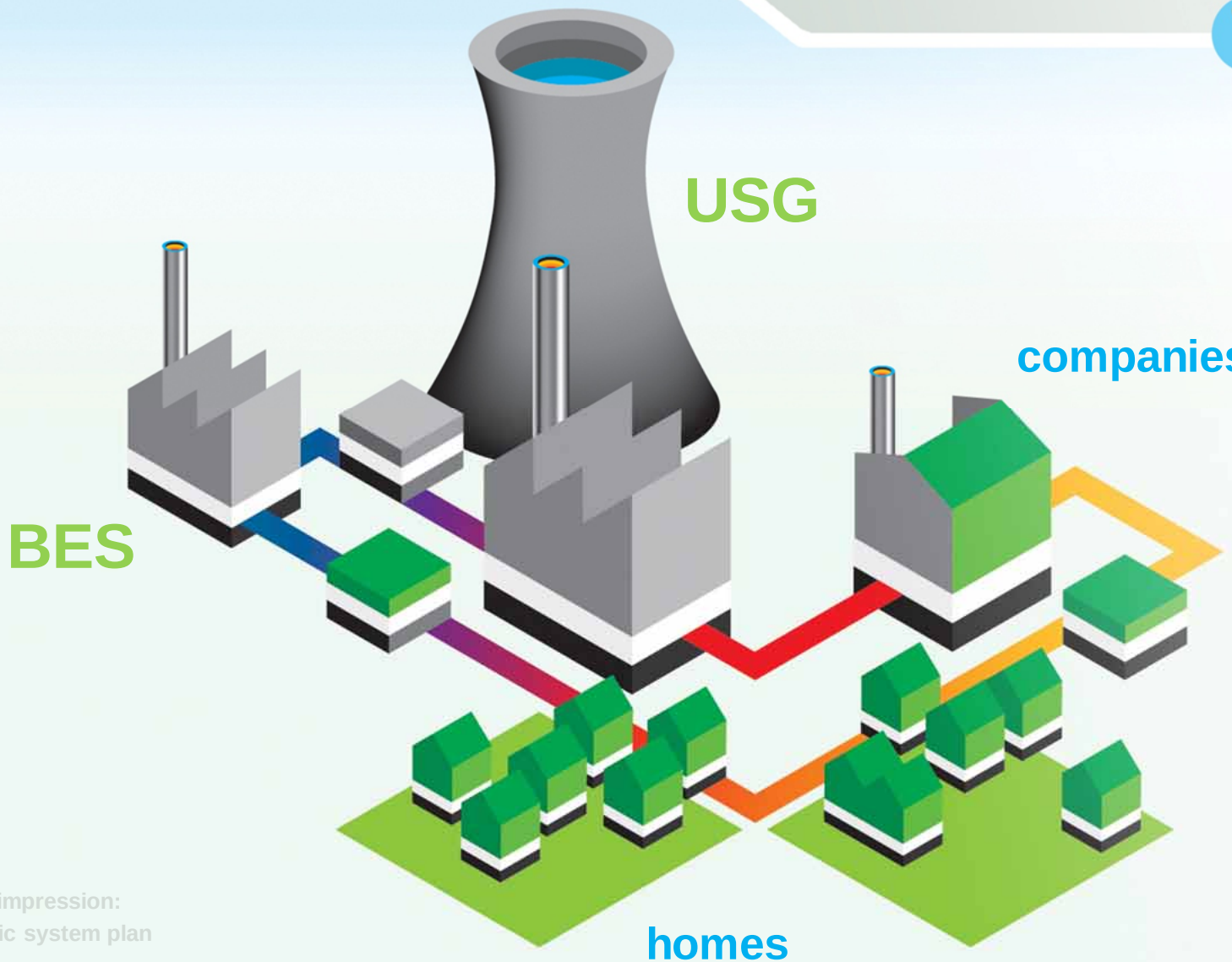


artist's impression:
Isometric system plan

Origin of the Project

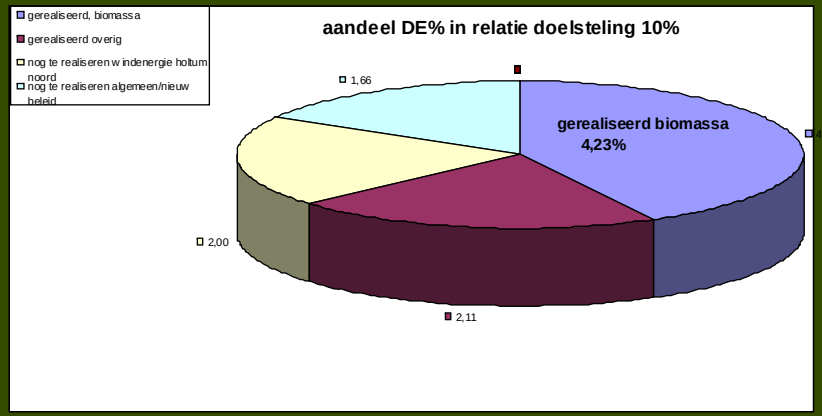
- Targets of the Climate and Sustainability Policy (from 6 to 20%)

- Offer by industrial complex Chemelot-site

- Amendment of the Municipal Council of Sittard new build sustainability Dobbelsteen in the city centre of Sittard BVO 50,000m2

- Demand from the market

- Heat of Bio-energy plant Sittard used at 35% efficiency
- Rising energy costs for the consumer (+200% in 10 years)



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Study into Surplus Heat

Investigation into the surplus heat supply of BES and Chemelot-site in relation to market demand

- Supply: ca. 7 PetaJoules surplus heat available
- Demand: until 2020 ca. 0.8 PetaJoules

Conclusion:

1. Supply >> demand
2. Based on availability, a surplus heat project should be feasible.

Market: no willingness to take up project, it is a task for the government.

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Project Idea

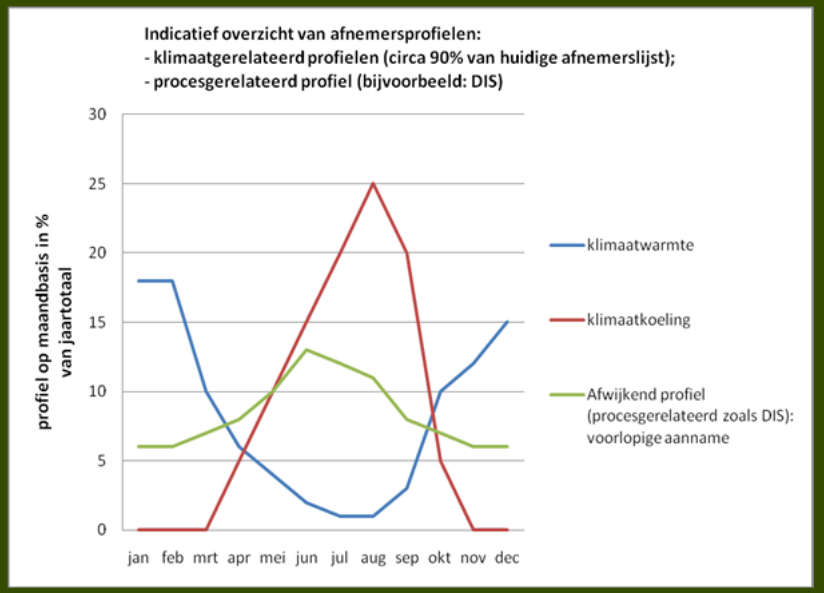
Utilise 100% of the capacity of BES Bio-energy plant and industrial surplus heat of Chemelot for:

heating (T = 90/65 C)

and

cooling (T = 6/12 C)

of companies, buildings and homes in Sittard-Geleen, Stein and Beek.



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Heat Producer 1: BES

BES: Biomass incineration for heat production 8 megaWatt
+ ORC technology for generating electricity 1.2 MW

Input: 25,000 tonnes of mixed green waste from the region

Output:
8,700 MWh electricity for 3,000 homes
+
190,000 GJ heat:
- 60,000 GJ Hoogveld area 1,100 homes
- 10,000 GJ for Business Complex Vixia

- 120,000 GJ not used

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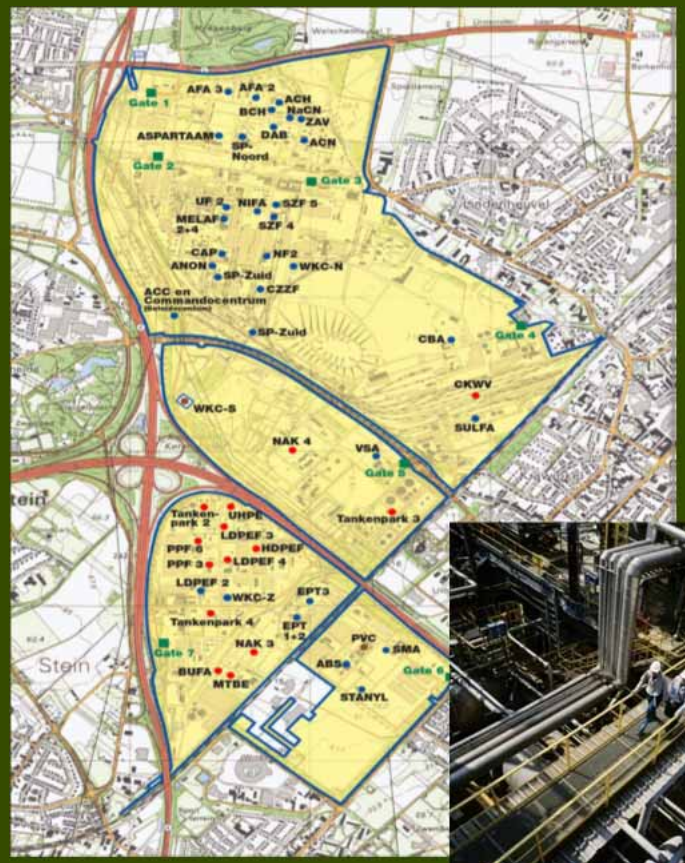
Heat Producer 2: USG

Utility Support Group = cost company

Total surplus heat = 7 PetaJoule from exothermal processes

Ca. 1 Petajoule “easy” to release



Chemelot-site

800 ha industrial estate

- DSM
- SABIC
- Sekisui
- EDEA
- Research Campus
- USG
- OCI

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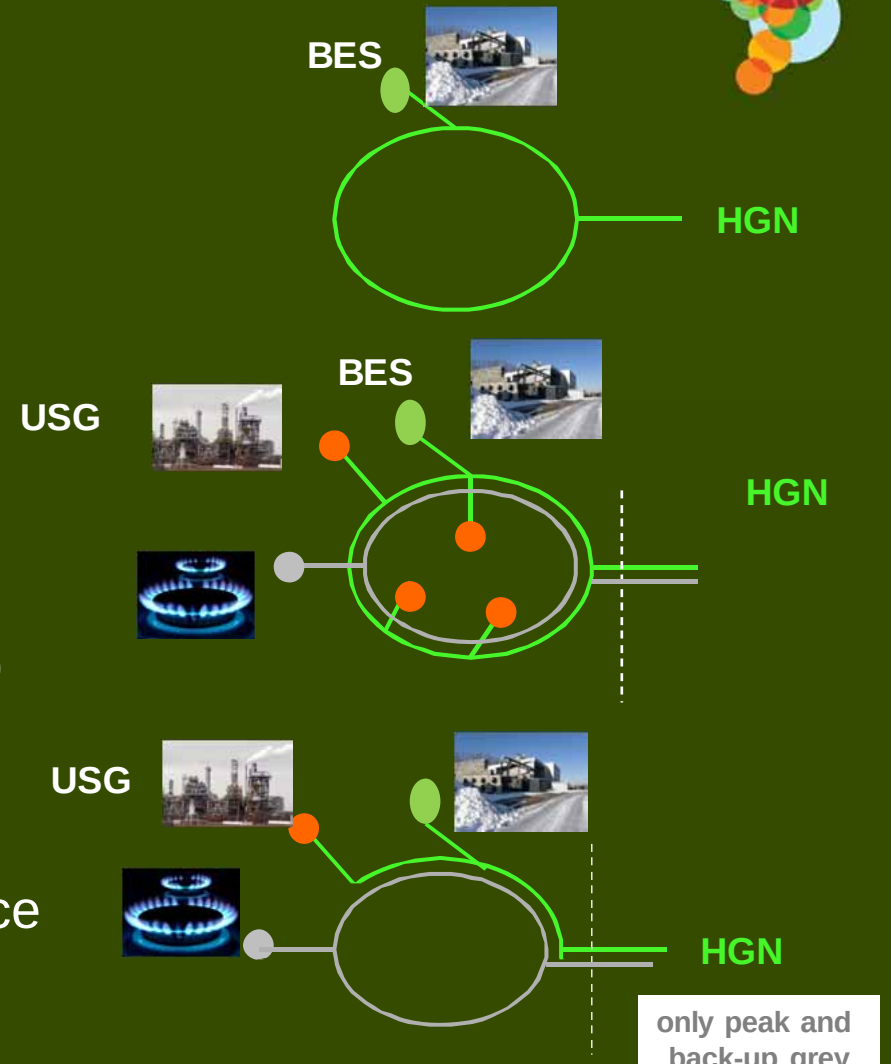
Heat Release

Via green scenario

1: 120 kGJ supplied by BES

2: Connection to 3 BAR steam network “regular” (> 50% green)
effect green gas?

3: Direct release at hot water source (100% green)



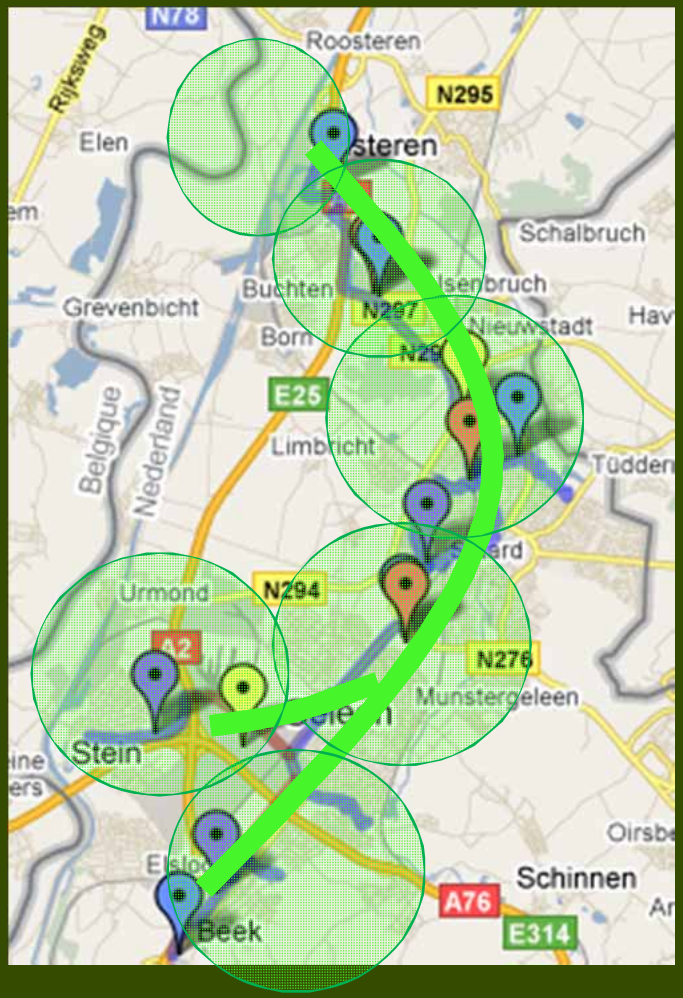
Development Scenario

- Government invests together with market party(-ies) in ‘backbone infra’
- ‘Concession Areas’ for distribution and supply of heat

Benefits

- Low-risk growth due to possibility of “connecting beads”
- Het Groene Net can be realised in its full capacity
- Maximum use of market party competences (installation and exploitation)

Potential Customers



Potential projects energy customers:

36 companies including Nedcar, Campina, Dis
Medical Center Orbis + 6 care homes
3 large education organisations
Nearly 5,000 homes in Sittard-Geleen, Beek and Stein
Municipal buildings and organisations
Shopping centres
Fortuna football stadium
Makadocenter Beek
Stein City Centre Plan
Etc.

backbone

‘bead’

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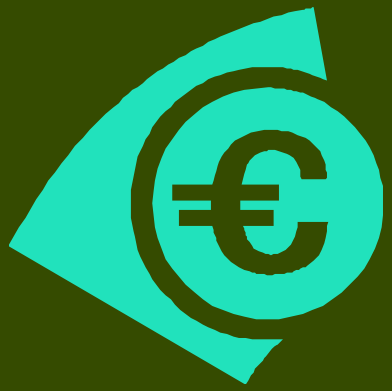
Investments



- 30 km Primary network/Backbone	€ 31 million
- 30 km Secondary netwerk + connections	€ 11 million
- Realisation 5 substations	€ 20 million
- Backup facilities (essent Hoogveld station, EDEA station, Orbis, Nedcar	€ 10 million
- Cold generation installations (absorption coolers)	€ 10 million
	---------- +
Estimated total costs	€ 82 million

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Effect of het Groene Net

- Environment: - fossil fuel savings of 26 million m3 natural gas / year
  - CO_2 emission reduction of 47,000 tonnes/year
- User: - lower energy costs for the user (-15%)
  - space gain, low-installation user buildings
  - safer homes, no replacement investment
- Local Gov. - realisation climate targets at low(er) costs
- Business - improved carbon footprint
  - lower energy costs, low-installation buildings
- Region - establishment advantage for new companies
  - improved consolidation of existing companies

Continued: Effect of Het Groene Net

- producers USG: - improvement of own CO2 emission targets
  - socially responsible use of surplus heat (societal value CO2 = € 500,000/j)
  - image (connection of industry with city)

BES - 100% efficient use of bio-energy from mixed green waste (consolidate position)
- rendement central increases from 47% to 80%

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Steps Completed Up To Now

- Start 2009 Development basic concept
- April 2009 UKP subsidy from Minister Verhoeven.
- Juli 2009 Collaborative Agreements with partners.
- 09-jan'10 Development Basecase Groene Net.
- Feb 2010 Decision of authorities to further develop Businesscase.
- Juli 2010 Market Consultation
- Nov 2010 Delivery Businesscase. Project is feasible.
- Dec 2010 Positive decision of authorities on businesscase, collaboration with private partner via competition-centred dialogue.

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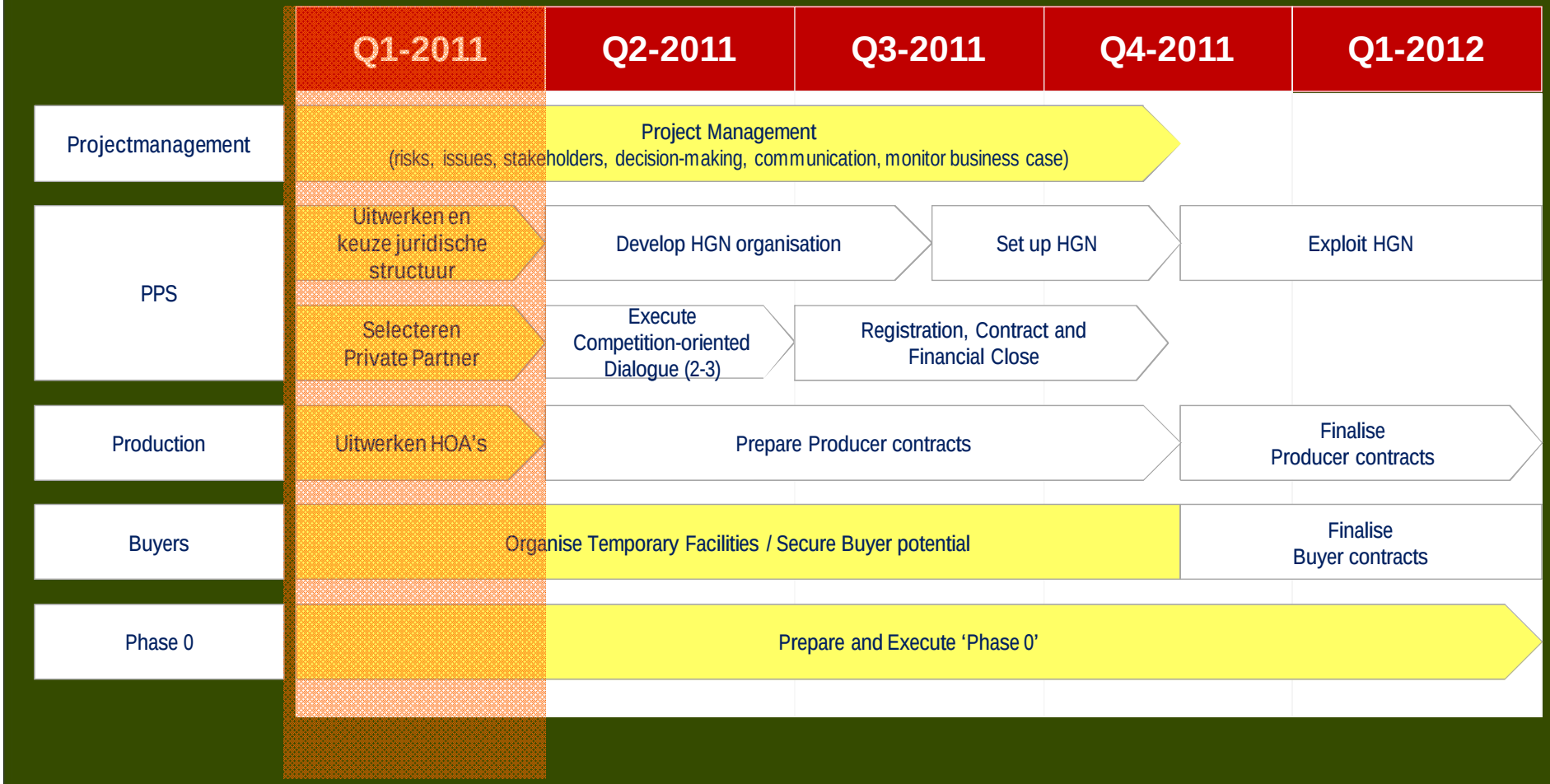
Planning Groene Net



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Private Partner Selection via competition-oriented dialogue

Producers and Buyers Principles

HOAs

Legal – Organisational Principles

Banning

Risk Management Principles

Risk Analysis Selection Criteria

Financial Principles

BusinessCase

Selection Guideline

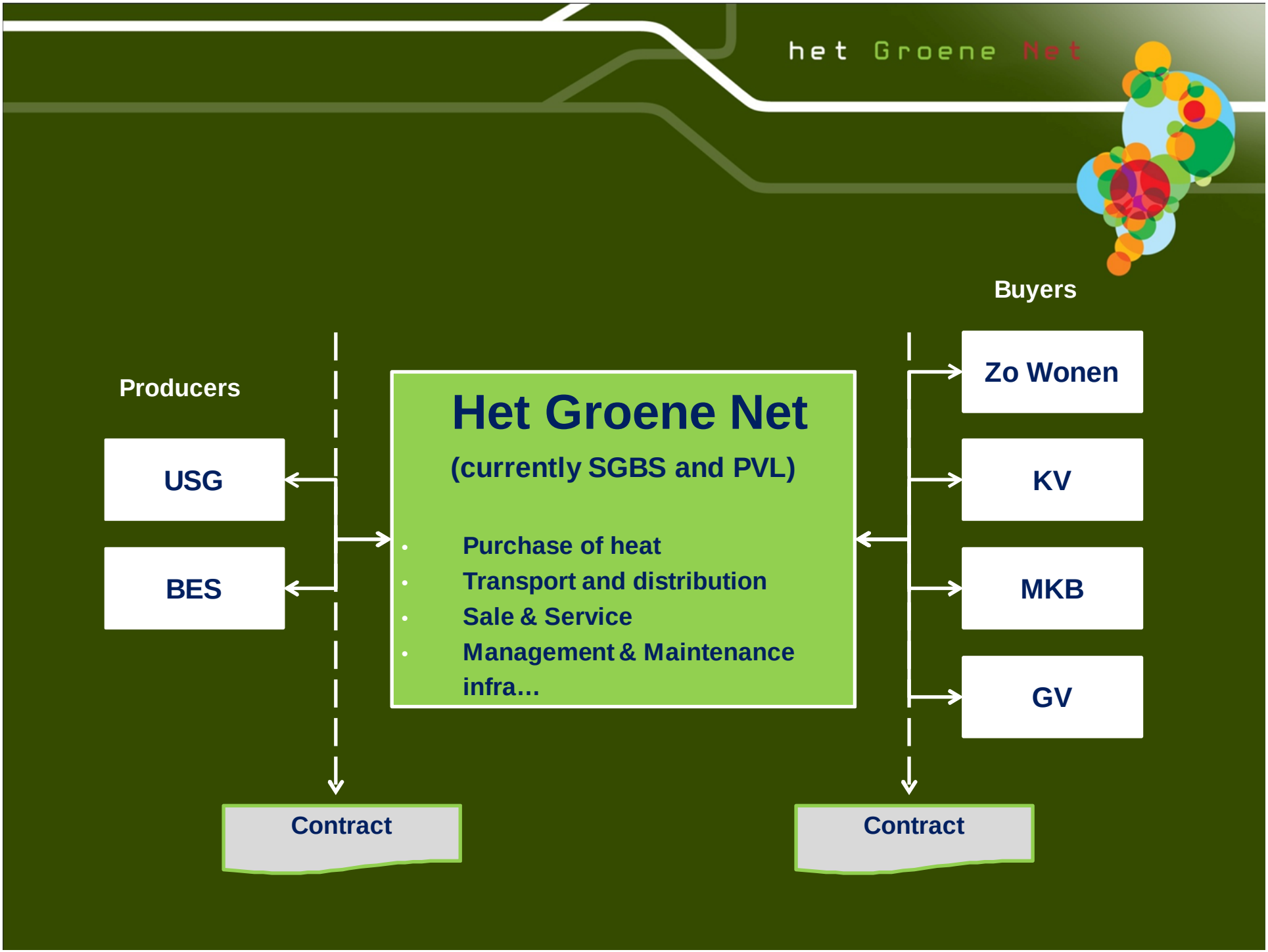
Quotation demand *(initial)*

Tighten PvE and permit criteria

Round 1	Round 2	Round 3
Technology Organisa-tion …	Improve Business Case	Risks Contract Finance

Prepare Quotation demand *(definitive)*

Quotation demand *(definitive)*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Buyers
Producers
Het Groene Net
(currently SGBS and PVL)
Purchase of heat
Transport and distribution
Sale & Service
Management & Maintenance infra…
USG
BES
Zo Wonen
KV
MKB
GV
Contract
Contract

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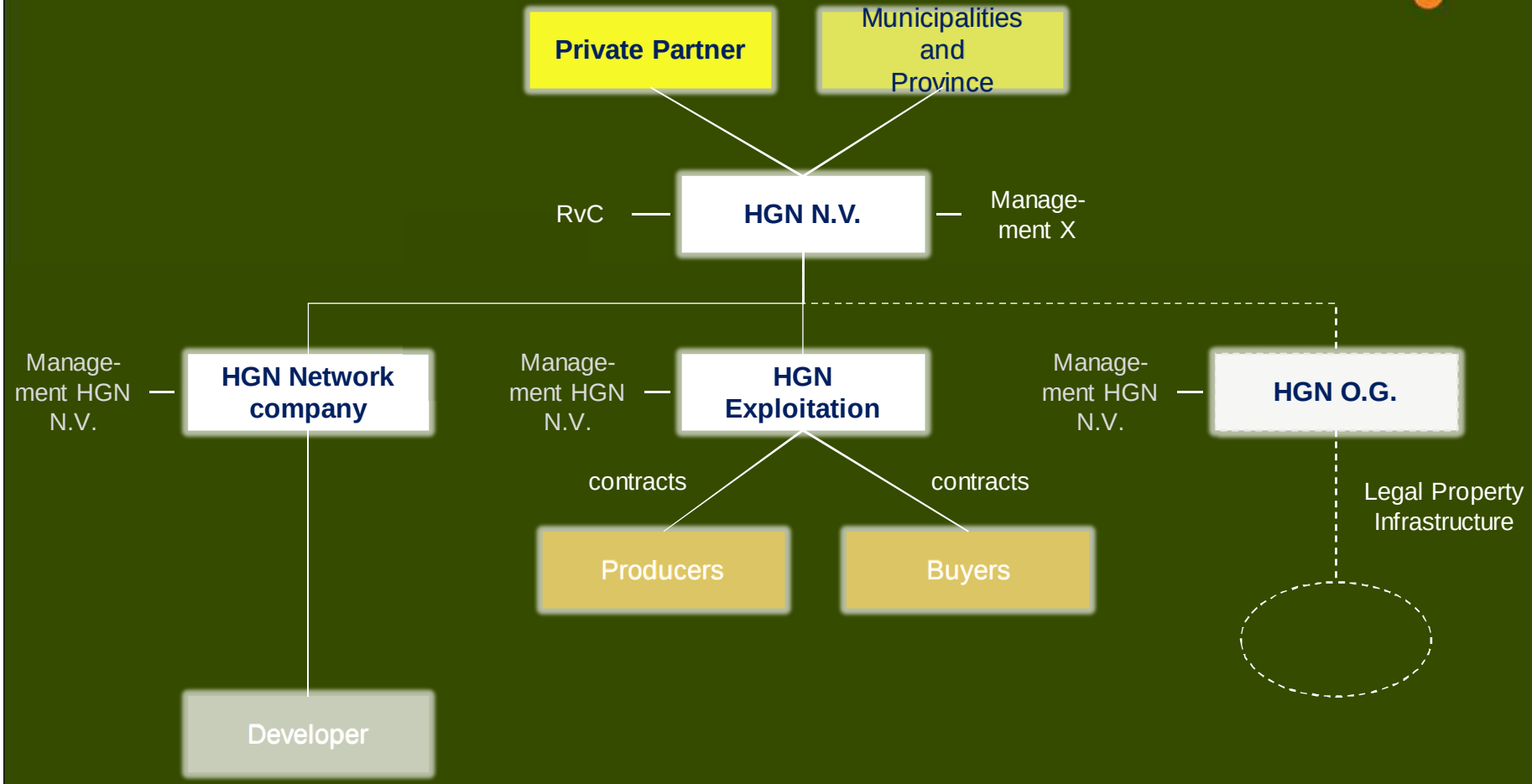
Legal Structure HGN



Animation

Het Groene Net

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Statement 1

The government acts in the public interest by

setting up local energy companies.

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Statement 2

Industrial surplus heat is sustainable.

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Statement 3

Het Groene Net is the best sustainability solution for this region

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The End

Thank you for your attention.

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