Eesti energiatehnoloogiate arendusstrateegia eeluuring

Tellija: MAJANDUS- JA KOMMUNIKATSIOONI-MINISTEERIUM

Läbiviijad: SWOT CONSULTING, HEIVÄL CONSULTING

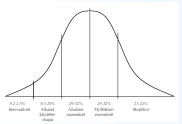
Tõnu Hein

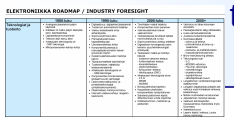
Uuringu protsessi kirjeldus

Väliskeskkonna informatsioon

Current state
- statistics
- universities and research centres
- companies
- main activities

Future trends and objectives
- trends
- technology roadmaps
- technology pyramids
- life cycles
- competition, customers





Future development areas
- reduction of energy consumption
- new energy sources and technologies

Eeluuringu protsess

1) Scope of survey (definition and fine-tuning the scope of the development strategy project roles and resources)

2) Analyse and evaluation of current state based on Estonian basic data

3) University and research centre face-to-face interviews (20 - 30 persons)

4) Company face-to-face interviews (separately to energy producers, distributors and users, 20 - 30 persons.)

5) International benchmarking & objective current state analysis (Boston matrix)

6) Proposal for future development areas and actions

7) Commitment and fine-tuning workshop(s)
- presentation of the development strategy project results
- commitment
- strategic decisions
- future development areas and main actions

8) Mutually agreed conclusions, main findings and answers to key questions

9) Detailed action plans (key stake holders)

10) Implementation

11) Follow up

Sisekeskkonna informatsioon

Current state
- statistics
- universities and research centres
- companies
- main activities

Future trends and objectives
- resources and competences
- technologies
- networking and partnerships

Future development areas
- to be determined in the project

Vision

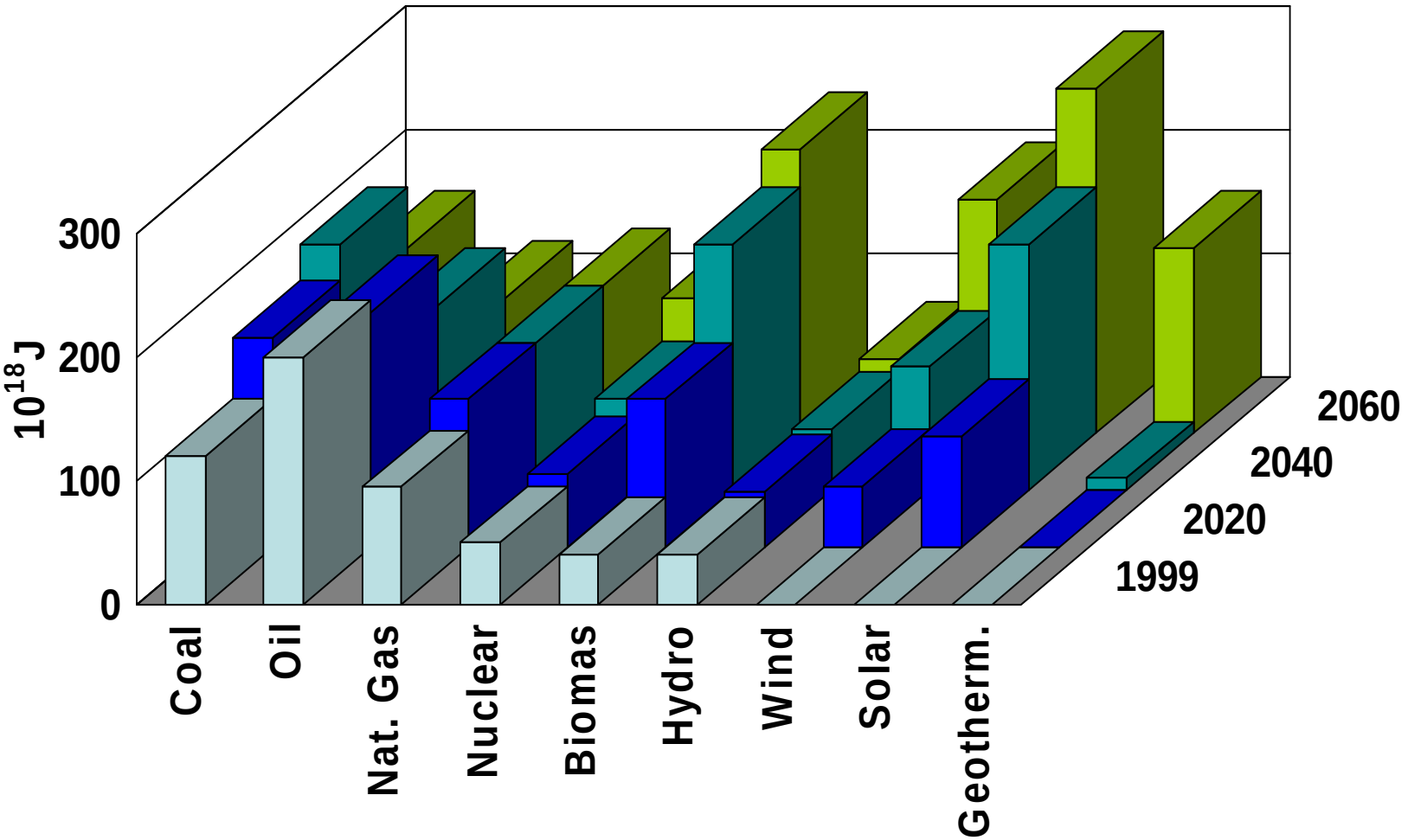
Estonia is one of the worlds leading developers of technologies for oil shale processing and low grade oil resource utilisation.

Estonia has high competence level of utilising other sources of energy and maximising the use of local renewable energy sources in innovative, environment friendly and effective manner.

Efficiency and energy saving are common objectives for all Estonian energy related technologies.

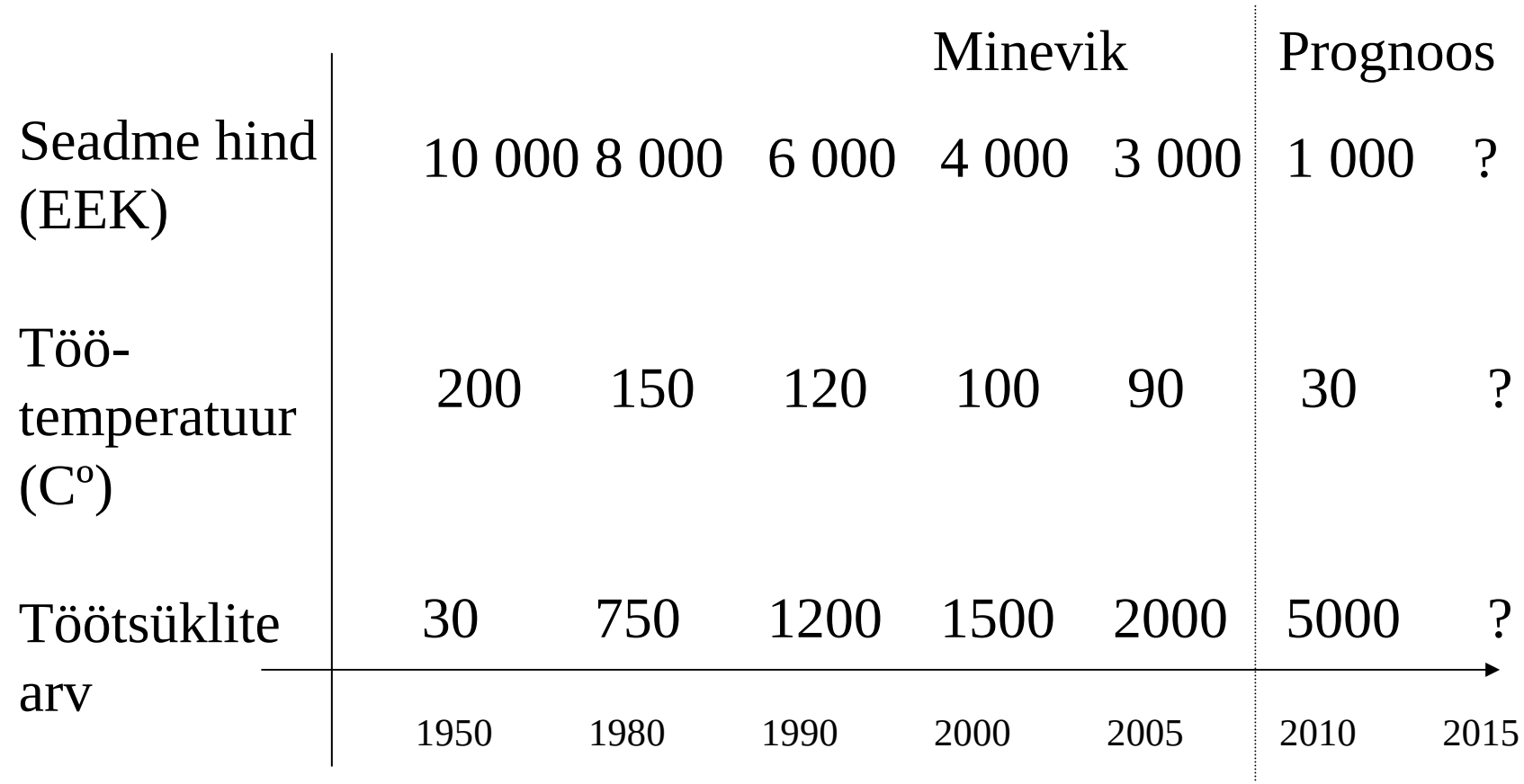
Estonia will develop new technologies for emerging sources of energy.

Energiakandjate *ROADMAP*



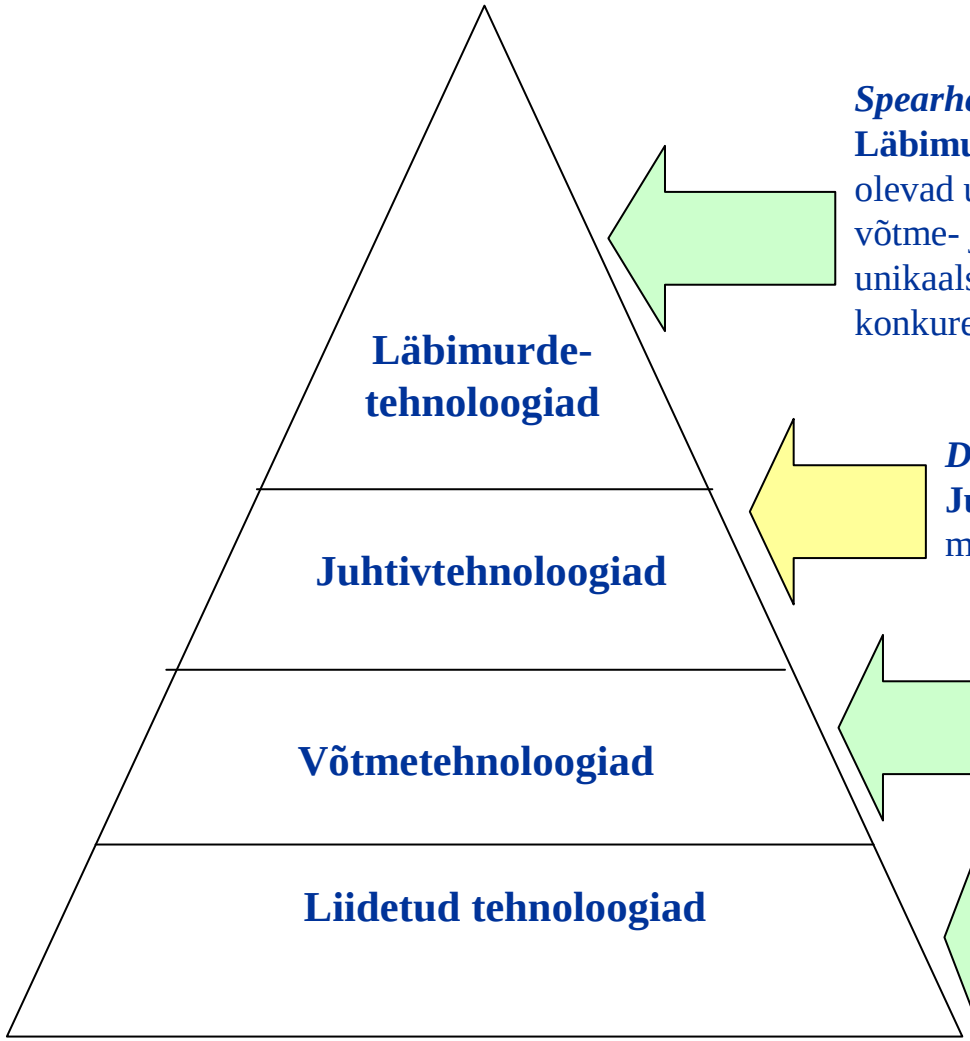
Allikas: Enn Mellikov

Tehnoloogia arengutee - *ROADMAP*



Allikas: HeiVäl Consulting

Eesti energiatehnoloogiate kompetentsipüramiidid



Spearheads
Läbimurdetehnoloogiad on rahvusvahelise edu põhialuseks olevad unikaalsed tehnoloogiad, mille väljatöötamisel toetutakse võtme- ja liidetud tehnoloogiatele. Läbimurdetehnoloogiad on unikaalsed teadmised ja oskused, millega ollakse suutelised konkureerima rahvusvahelisel tasemel.

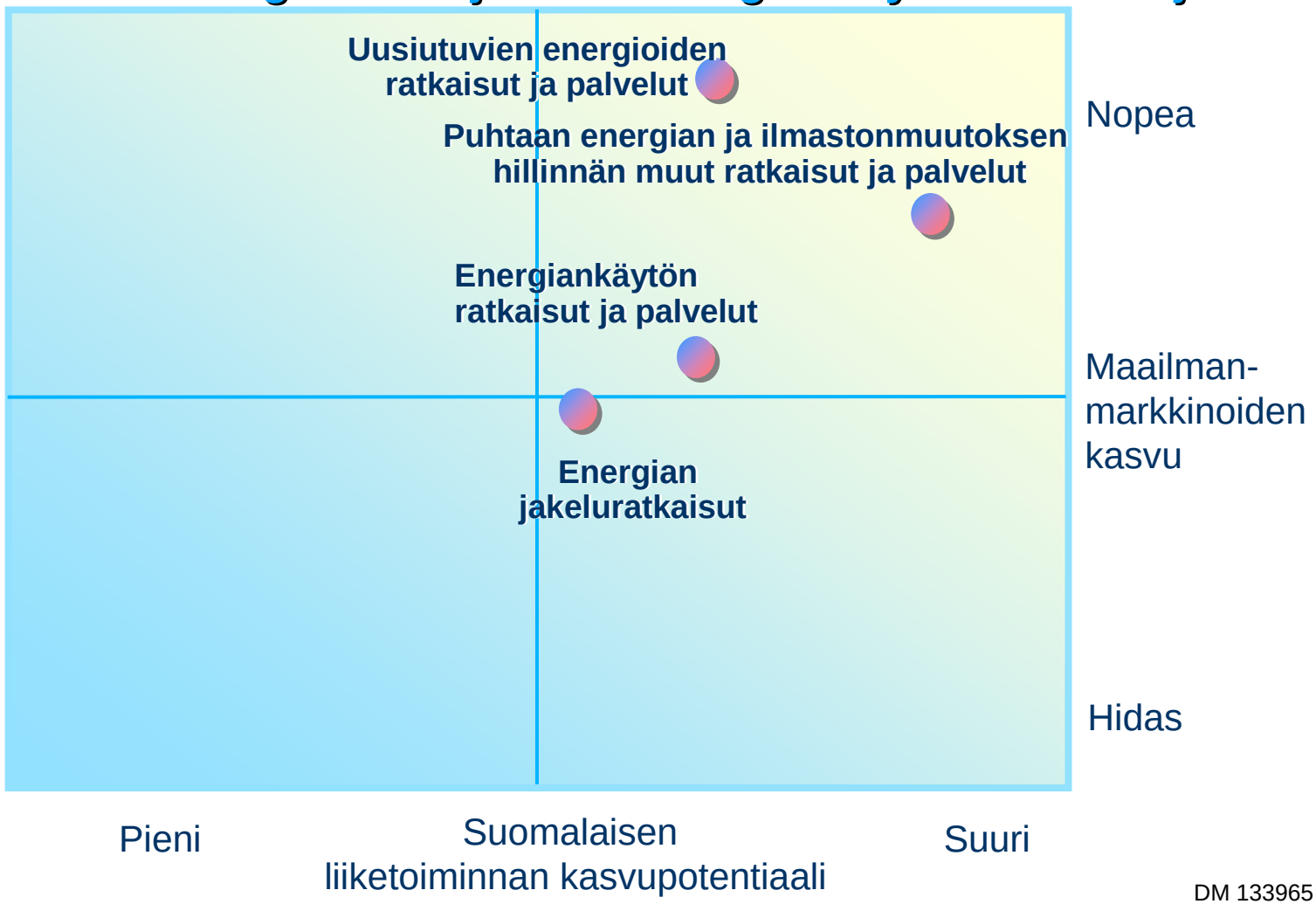
Distinctive level technology
Juhtivtehnoloogiad on sellised oskused ja teadmised, mille tase on Eesti keskmisest üle.

Key technology
Võtmetehnoloogiad on võtmeoskused, fundamentaalsed kompetentsid, põhiteadmised antud valdkonnas. Võtmetehnoloogiate arendamine ei ole piisav tingimus konkurentsieelise säilitamiseks.

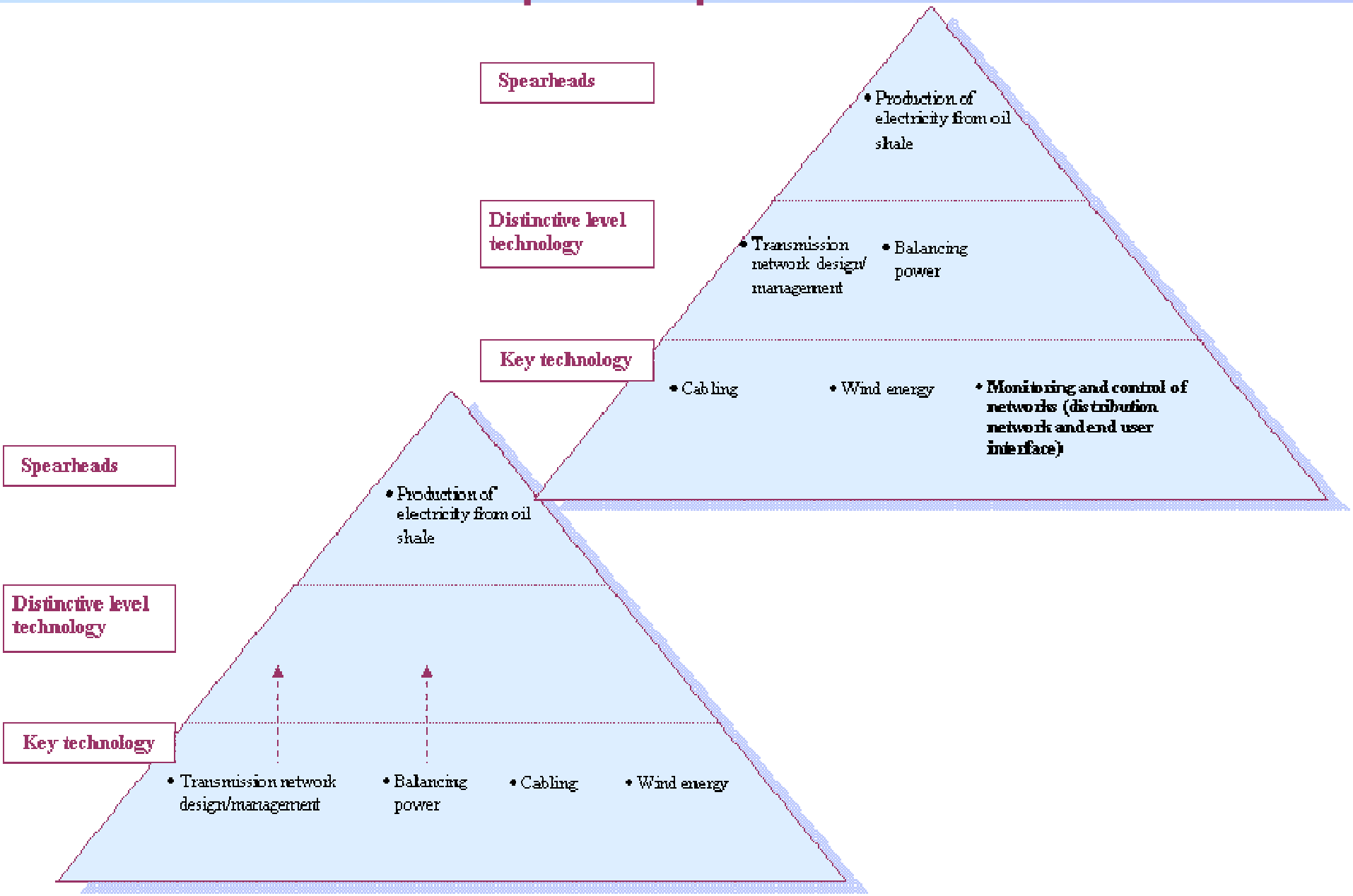
External technology
Rakendatavad sisseostetavad tehnoloogiad, mille arendamine ei ole strateegiliselt oluline.

Energiaklusterin kasvualueet

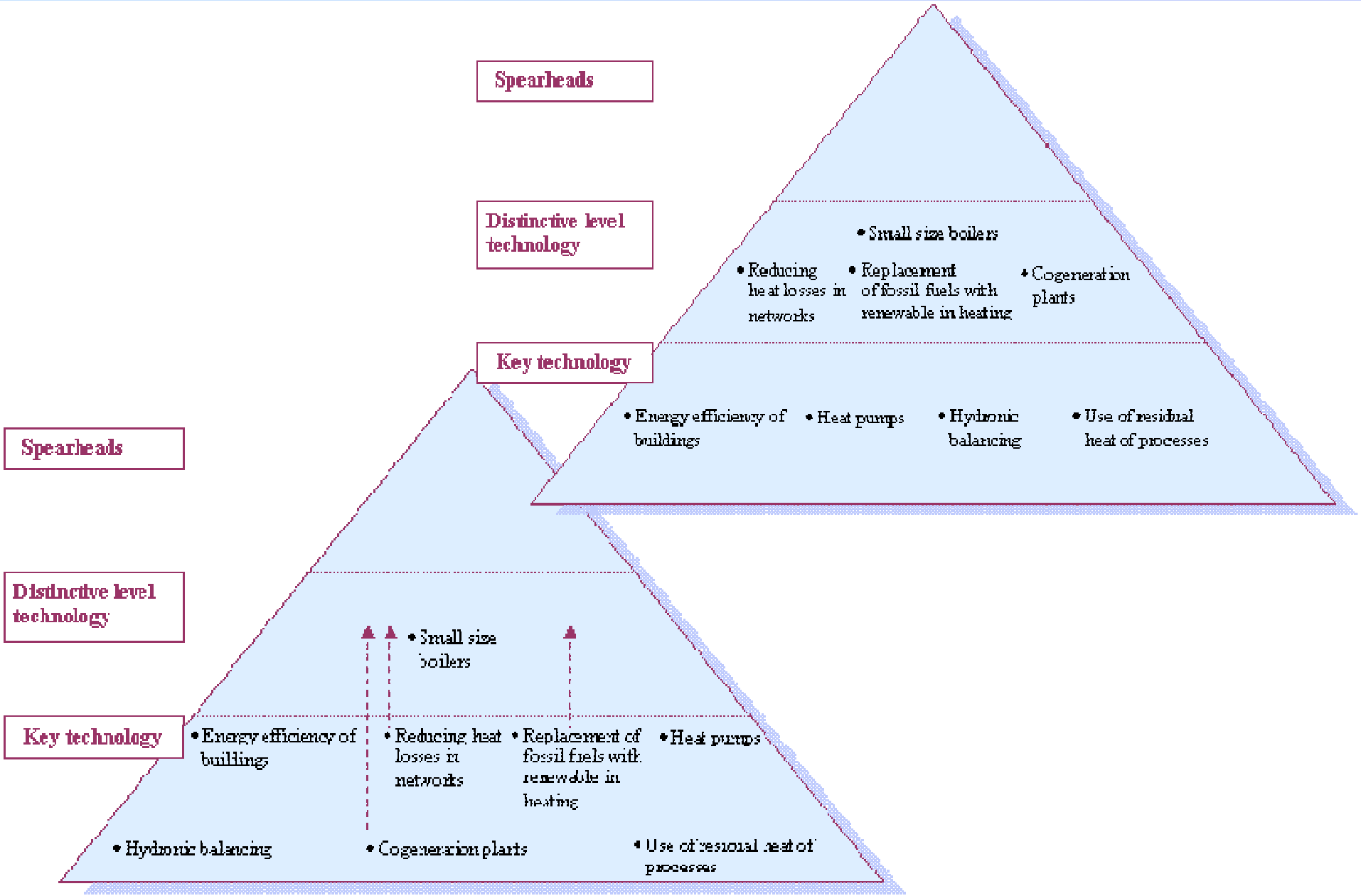
Ilmastonmuutoksen, energiamuotojen hyväksyttävyyden ja hinnan sekä ympäristön haasteet luovat mahdollisuuksia ja nostavat uusiutuvia ja puhtaita energiamuotoja sekä energiankäytön ratkaisuja



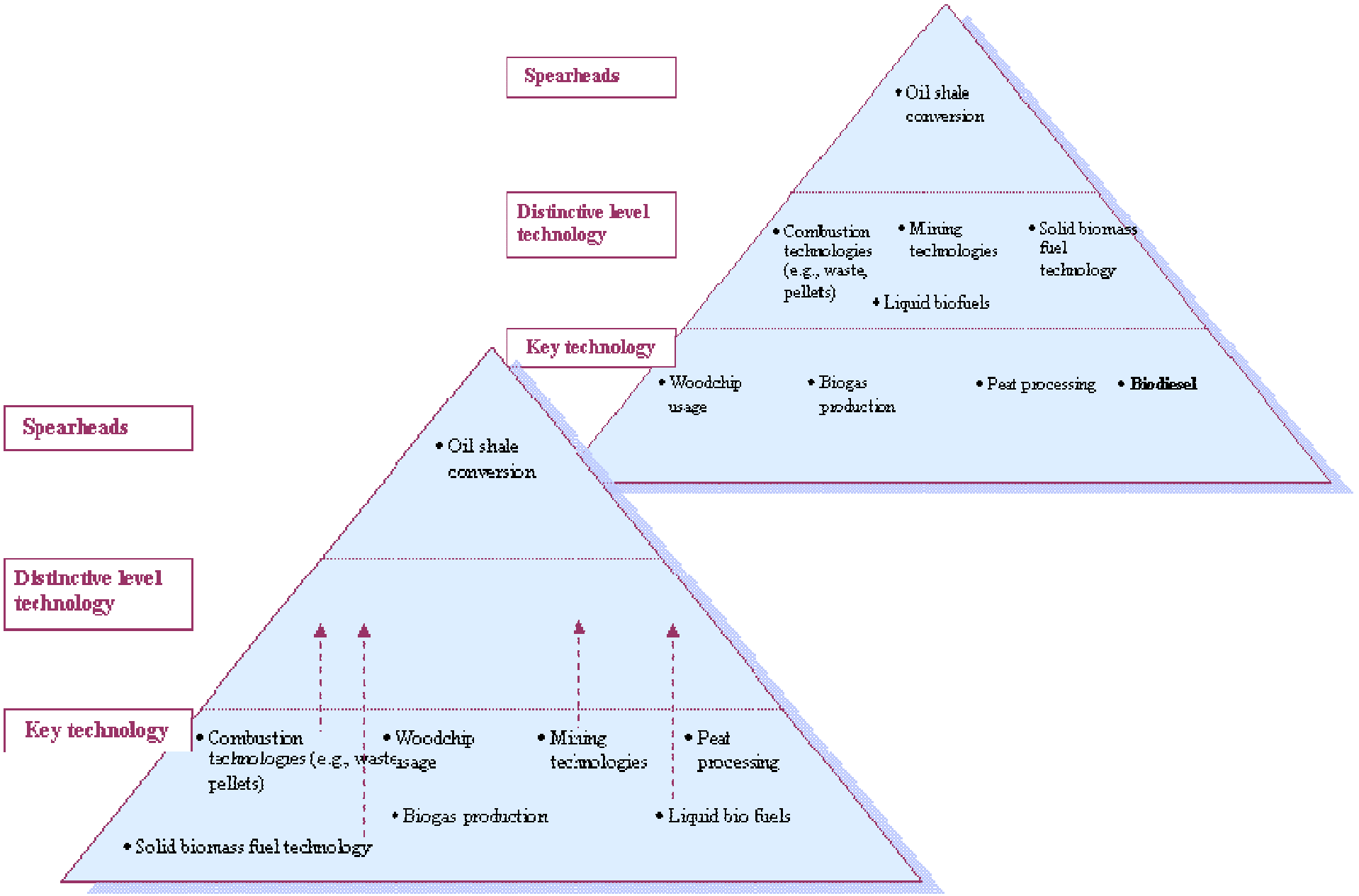
Production, Transmission, and Distribution of Electricity - kompetentsipüramiidid



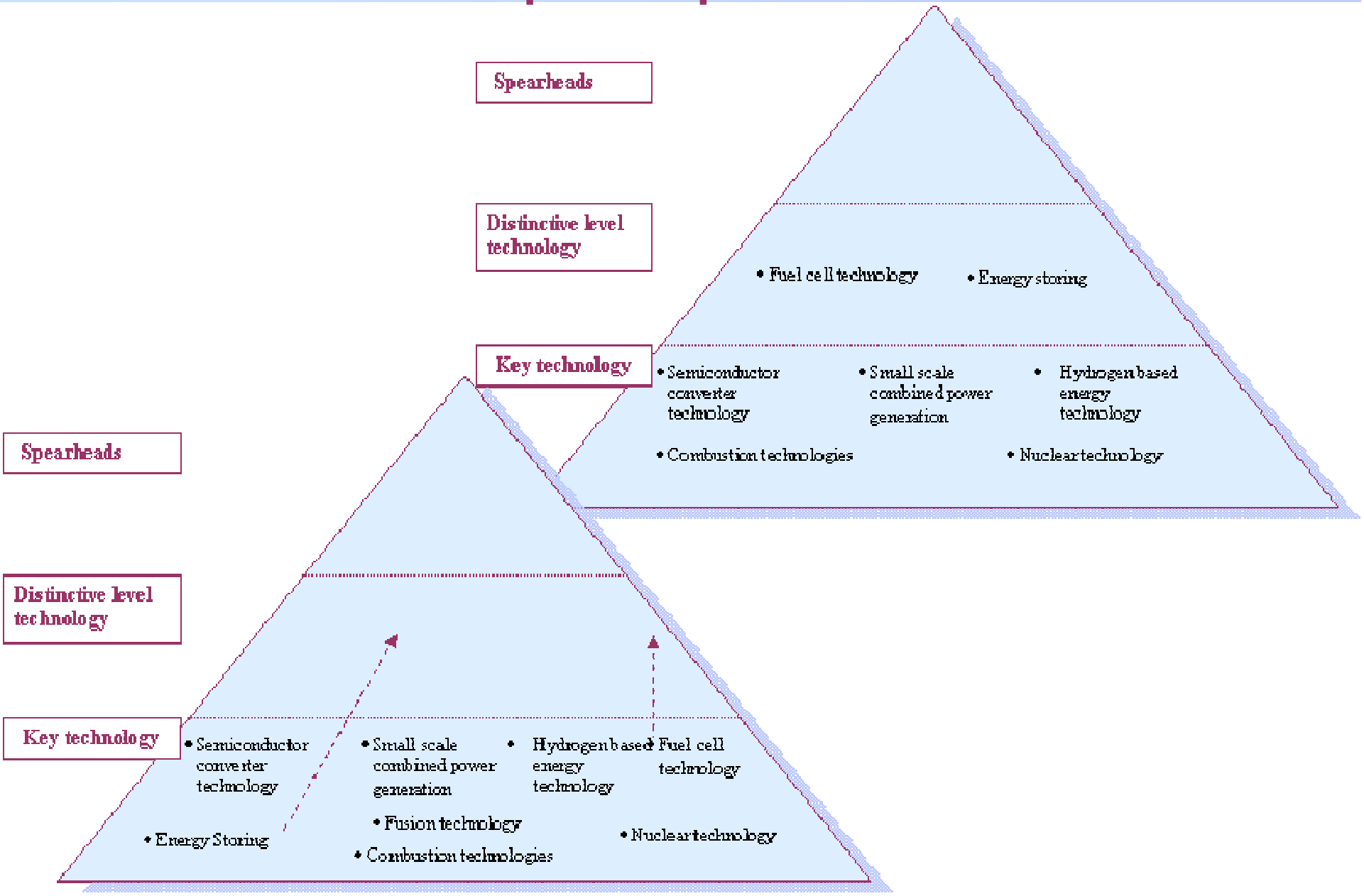
Heat Generation and Distribution- kompetentsipüramiidid



Production of Fuels- kompetentsipüramiidid



Production of Energy Producing Technologies- kompetentsipüramiidid



Oil Shale Process Development Programme

Vision: ***Estonia is one of the worlds leading developers of technologies for oil shale processing and low grade oil resource utilisation.***

- Considering the available resources and foreseen utilization of development results, **the scope of the Oil Shale Process Development Programme** could be roughly 10M€ during 3 years, consisting of 30-40 R&D projects. Substantial contribution from the enterprises is foreseen. Enterprise projects funded within the programme will be coordinated to avoid overlapping efforts.

- **Target of the programme** is to support the redesign and coordination of total oil shale process (from mining to end users) so that the existing resources can be utilised in an efficient and sustainable way. It will bring together all players in the value chain of oil shale. Trimming the Estonian total oil shale process to excellent shape will also produce world class know-how about low grade oil resource utilisation, which will be commercialised and offered in international market in form of products and services.

- **Place in the innovation chain**: applied research, product and process development.

- **Expected time to utilisation of results**: Immediate … 5 years.

- **Risk level**: > 50% of projects will be successful.

Renewable Sources Development Programme

Vision: ***Estonia has high competence level of utilising other sources of energy and maximising the use of local renewable energy sources in innovative, environment friendly and effective manner.***

- **The tentative scope** of the Renewable Sources Development Programme could be roughly 7 M€ during 5 years, consisting of ca 20 R&D projects with a relatively large contribution from the enterprises.

- **Target of the programme** is to increase the share of renewable sources in energy production by introducing new innovative ways to utilise domestic renewable energy sources and supporting investment in related new energy production capacity. Facilitate structural change.

- **Place in the innovation chain**: applied research, product and process development.

- **Expected time to utilisation of results**: Immediate … 10 years.

- **Risk level**: ca. 30% of projects will be successful leading to implementation and continuous use.

Emerging Energy Sources Development Programme

Vision: ***Estonia will develop new technologies for emerging sources of energy***

- **The tentative scope** of the Emerging Energy Sources Development Programme could be roughly 5M€ during 5 years, consisting of 10-15 R&D projects. The share of public funding will be bigger than in the other proposed programmes, including both national and EU contribution.

- **Target of the programme** is to support research and development in the field of new, emerging energy technologies like e.g., solar, fuel cells, fusion, hydrogen, and others in order to maintain the capabilities for fast implementation of innovations and to contribute in the international research work in the branch. Licence revenue of patented innovations is targeted.

- **Place in the innovation chain**: basic and applied research.

- **Expected time to utilisation of results**: 5 years … 50 years.

- **Risk level**: ca. 5% of projects will lead to the patented innovation and licence, otherwise the work will contribute to science and education.

Järgmised sammud

- Tutvuda TEKESI programmijuhtimisega kohapeal
- Määratleda 3 programmi ja üldrahastamise maht, aeg
- Leida tehnoloogiaprogrammide 3 juhti ja määrata 3 nõukogu
- 1-2 kuud aega ettepanekute tegemiseks rahastamise detailsete mahtude, tingimuste ja visiooni elluviimiseks vajalike tegevuste osas (Tekesi coach mitmed päevad kohal) sh koostada Roadmapid ja mõtestada enda jaoks püramiididel kujutatud tehnoloogiad ja nendega seotud arendusvajadused/võimalused
- Tehnoloogiaprogrammide juhid koos rahastaja esindajaga teevad nõukogudele ettepaneku programmi käivitamise osas
- Algab programmide tutvustamine, turundus, taotluste esitamine, hindamine ja rahastamine
- Pool aastat hiljem - tulemuste valikuline avaldamine, enesehindamine, programmi strateegia muutmine enne programmi lõppu

- Aasta jooksul - tehnoloogiaprogrammide pidevalt toimiva süsteemi käivitamine