Stakeholder and user involvement in backcasting and how this influences follow-up and spin-off

Jaco Quist

Technology Dynamics & Sustainable Development Group,
Delft University of Technology, NL
Faculty of Technology, Policy, Management
j.n.quist@tudelft.nl

JAOCC, 8-10 June 2009, Aalborg, Denmark

Todays presentation

1. *Backcasting approach*	
2. *Theoretical framework*	
3. *NPF case* - ***NPF backcasting experiment*** - ***The impact after 10 years!***	
4. *Conclusions & implications for governance*	

TU Delft

0. Users versus Stakeholders

- Different participatory traditions can be distinguished
  - User involvement in (sustainable) innovation & design
  - Stakeholder sustainability dialogues & visioning
- What can these learn from each other?
  - Systematic user involvement (citizens / public)
  - Visioning/debate with heterogeneous stakeholders
- Level of influence? Variety & debate? Consensus?

Why Public & Stakeholder participation:

- Reasons from ‘Plicy Analysis’::
  - Qualitatively better solutions
  - Support and fewer hold-ups
- From viewpoint of sustainability:
  - Stakeholder contributions necessary
- From viewpoint of public participation:
  - Viewpoint of democracy
  - Contributions from citizens & consumers important

1. Backcasting: *introduction*

Backcasting: Create a desirable *sustainable future* **first** before *looking back* from that *future* how it could have been achieved and planning initial steps how to move towards that future.

Backcasting: Particularly useful in case of complex 'wicked' problems that include dominant trends; when market-based solutions are insufficient; a need for a major change; long time horizons allow strong alternatives (Dreborg '96)

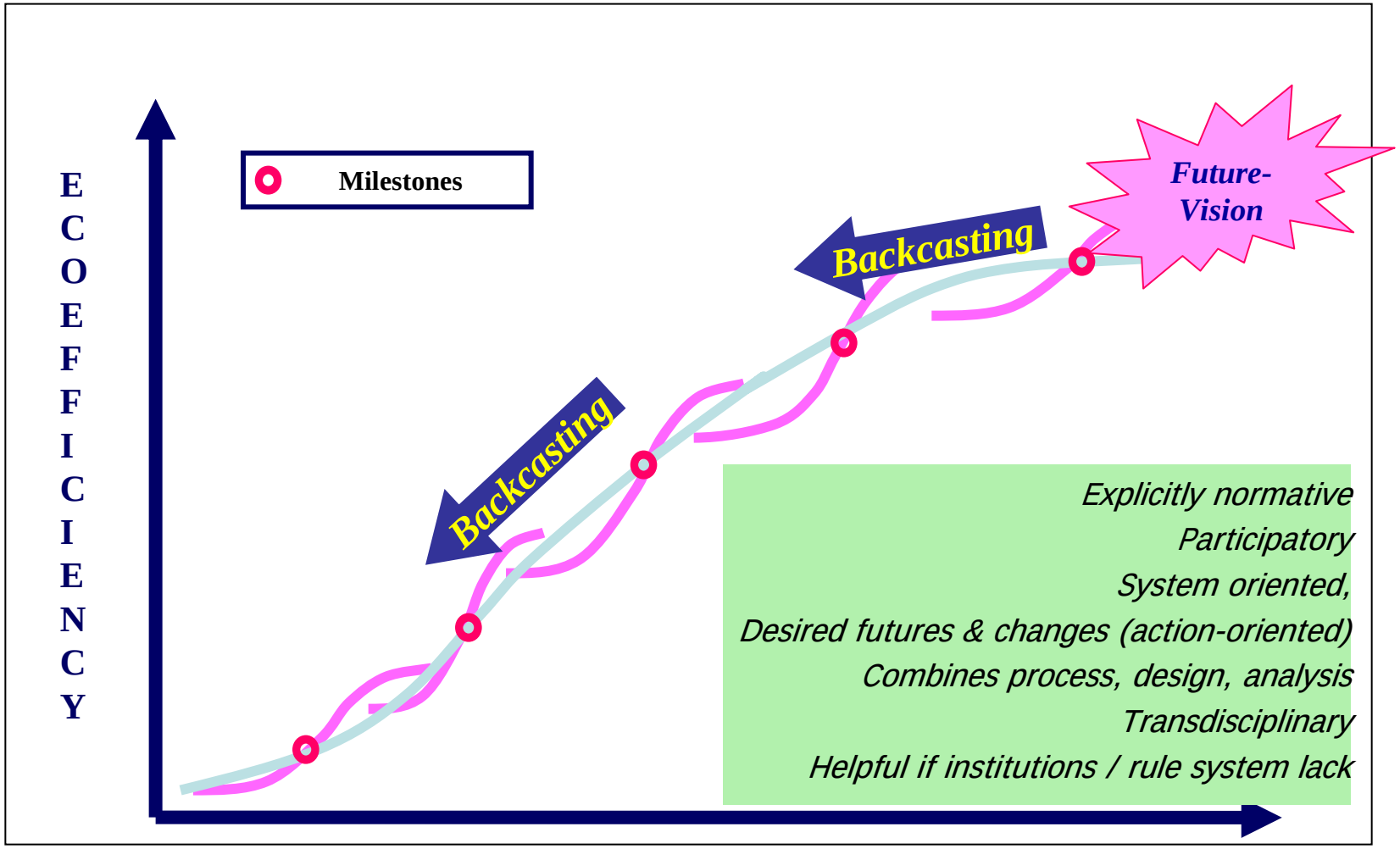
Backcasting: Intervention approach related to Constructive TA (Quist and Vergragt 2007), aiming at anticipation, reflexivity and learning (Schot 2001) and follow-up/spin-off/implementation and impacts/effects

Participatory Backcasting

- ***Participatory*** processes & ***visioning*** leading to higher order learning
- Social Shaping paradigm & network theories: ***CTA-like broadening*** of design process
- ***Normative Scenarios*** and ***future visions*** as multi-actor constructions & solutions, reflecting values, opinions attitudes
- ***Enhancement of creativity*** "outside existing actor mental frameworks"
- Process and actor-network aspects
- '***Context'*** can fight back: complex dynamics and social interactions

TU Delft

Backcasting: *from vision to action*



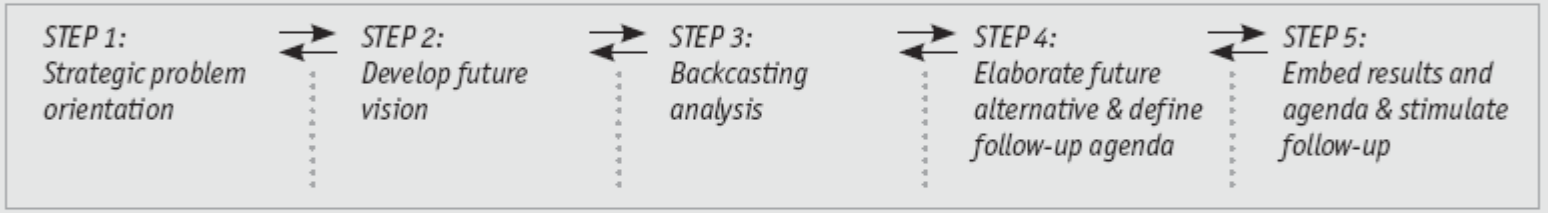
TU Delft

Backcasting: *methodological framework*

Three types of demands:
(1) Normative demands
(2) Process demands
(3) Knowledge demands

Different goals:
> Involvement of a wide range of stakeholders
> Future visions and follow-up agendas
> Awareness and learning among stakeholders
> Commitment and follow-up by stakeholders
> ...

Five steps:



Four groups of tools and methods:
(1) Participatory/ interactive tools and methods
(2) Design tools and methods
(3) Analytical tools and methods
(4) Tools and methods for management, coordination and communication

TU Delft

Stakeholders

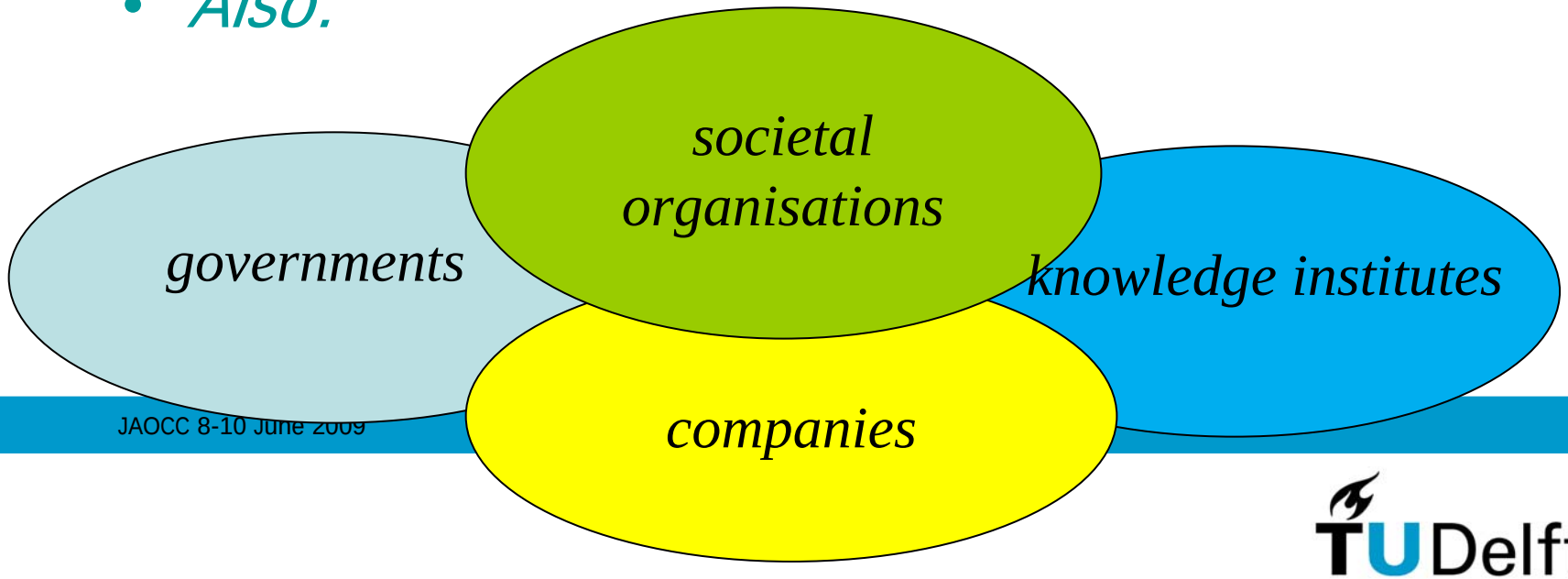
Individuals and organisations,

that can influence developments

of that can be influenced by developments

- Not only:

- *Also:*



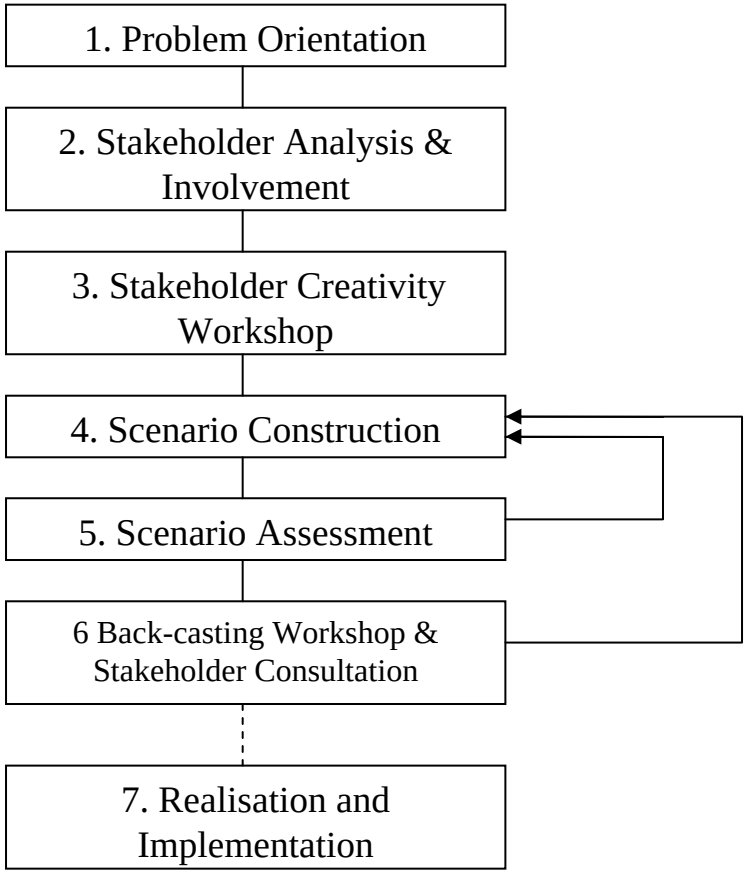
TU Delft

Different degrees of participation

Degree of participation (Vd Kerkhof 2004)	In policy-making (Arnstein 1969)	In science (Mayer 1997)
High	*Stakeholder control* *Delegated power* *Partnership*	*Mutual learning* *Co-production of knowledge* *Coordination*
Moderate	*Placation* *Consultation*	*Mediation* *Anticipation* *Consultation*
Low	*Information* *Therapy* *Manipulation*	*Information*

TU Delft

2. Backcasting in SusHouse project



- 1998-2000
- 5 countries, 6 groups
- 10 fte capacity
- (1) Shelter, (2) Clothing Care, (3) Shopping, Cooking & Eating

TU Delft

SusHouse stakeholder workshops

WORKSHOP 1 (1 day, 20 pers)

- Plenary brainstorm “How can we eat sustainably in 2050?”
- Individual clustering
- 5 proto scenarios in 5 groups
- Final discussion & social event

WORKSHOP 2 (1 day, 25 persons)

- Plenary presentation & evaluation of three scenarios (I/P/N/M/Int)
- Three groups: elaboration & backcasting of each scenario and particular proposals
- Final discussion & social event

TU Delft

SusHouse project: *Sustainable SCE*

1 **Local & Green**
autarkic, local, natural, organic, seasonal

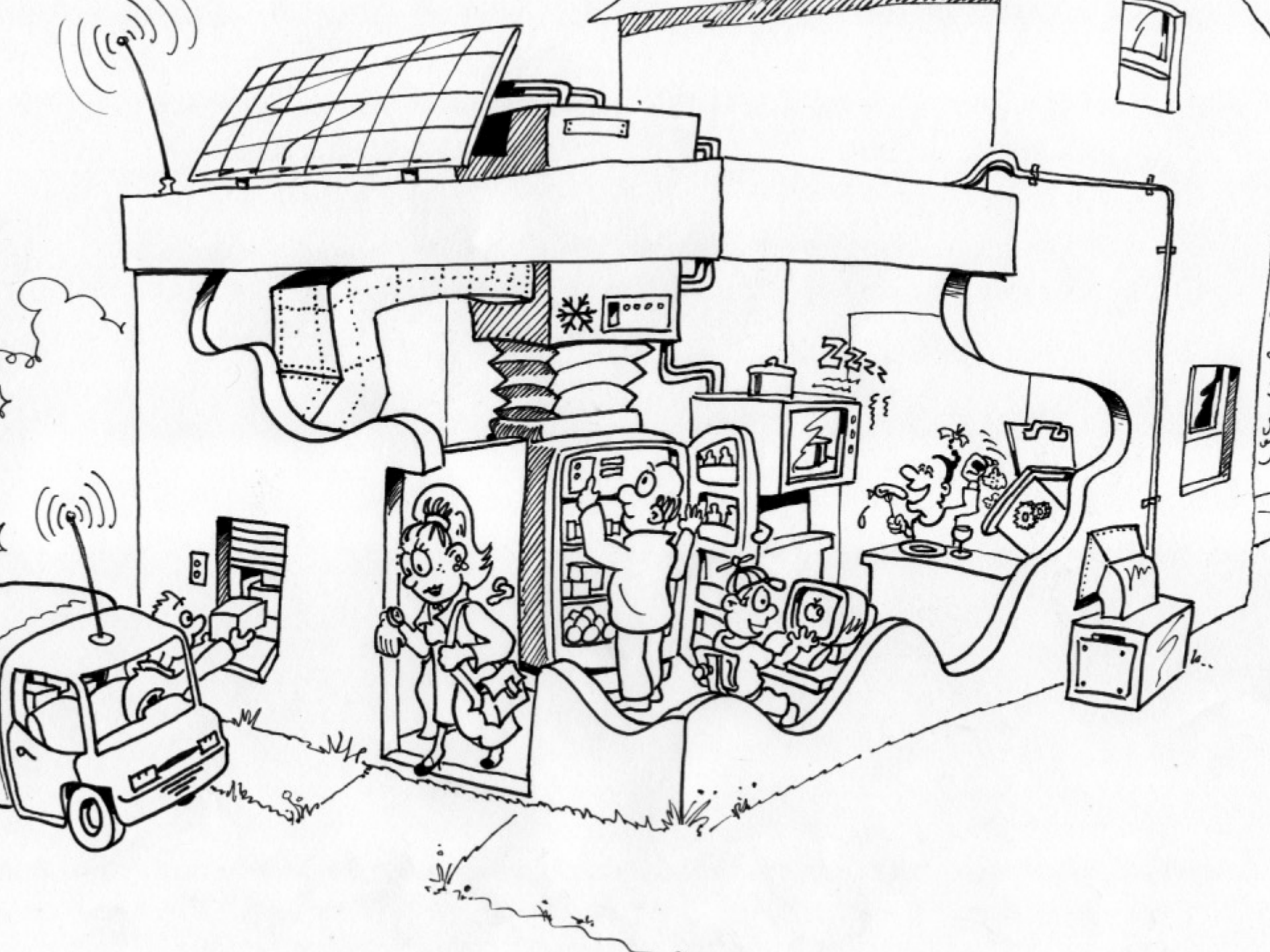
2. **Hich-tech eating (ICS in NL)**
high-tech, IT, fast, convenience, eco-efficient

3. **Super-Rant (neighbourhood food centre)**
eating out together, city, no kitchen

N.B. Design Orienting Scenarios consist of:

- Vision, story board, proposals
- Optional: images, backcast, preliminary asessments

TU Delft


Zzzz

Backcasting: *ICS scenario I*

Necessary changes (preliminary backcasting analysis)

> Technological: novel kitchen technology and appliances (including a huge efficiency increase), new ICT for kitchen systems and production chain management, plastic chips, biodegradable packaging, cascade usage for water and energy, sustainable transportation, distribution and delivery systems.

> Cultural/ behavioural: sustainability is taken for granted, further shift towards ready-mades and convenience, acceptance of new technologies, shift towards more sustainable substitutes (e.g. vegetable based Novel Protein Foods in stead of meat), shift towards services.

> Structural/ Organisational: the role of supermarkets will change due to large-scale delivery and a shift towards food management services, kitchen manufacturers deliver complete automated systems that communicate in stead of single kitchens and single appliances, close co-operation and joint management throughout the complete production chain plus making information available to consumers; sustainable food production (regional or efficient large scale production where this can most environmentally efficient).

Backcasting: *ICS scenario II*

Stakeholder panorama

Key stakeholders in this scenario are consumers, retailers, food processors, packaging producers, kitchen equipment and appliances producers and government.

Environmental profit stems from:

> Sustainably grown ingredients (inclusive new ingredients take over the function of unsustainable ingredients like novel protein foods);
> System optimisation (through integrated approach to the kitchen, waste reduction);
> Re-use of heat and water (cascade usage) in the household;
> Waste composting and biodegradable packaging.

Scenario Assessments

	SCE-NL **Assessment Results**		
	Consumer	***Econ.Change***	***Env.Reduction***
DOS 1 ***ICS***	+-	Moderate	High
DOS 2 ***SR***	-	Moderate	Low
DOS 3 ***L&G***	++	High	High

(1) Consumer focus groups; (2) Economic aspects questionnaire;

(3) Environmental system analysis

Public Participation:

Consumer Acceptance SCE-NL & UK

1. Consumer Focus Groups

   Dynamic --> Designers (NL)

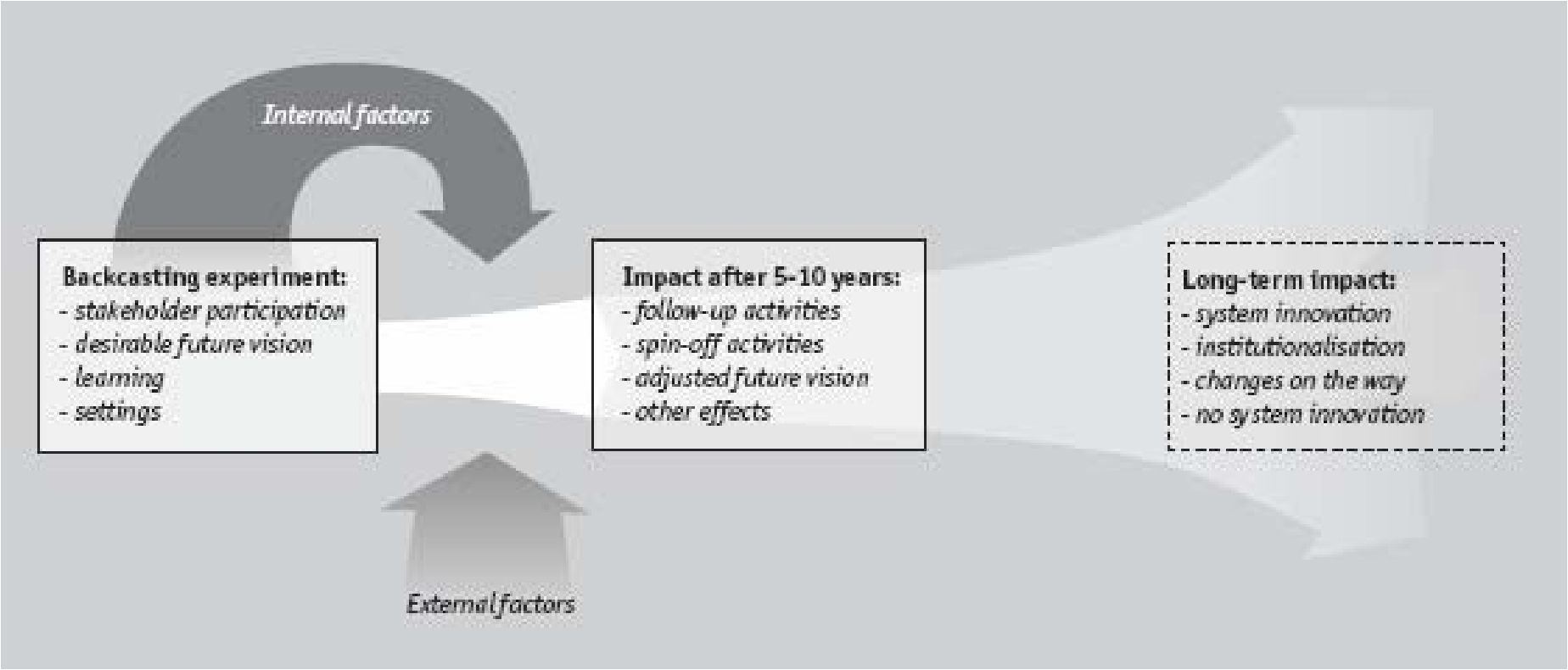
   Green --> Ecoteam (NL)

   Mainstream --> Country Woman (NL)

2. Questionnaires
3. Support of story boards & visualisations

TU Delft

3: backcasting and impact



TU Delft

Key concepts in backcasting & impact

Backcasting experiment

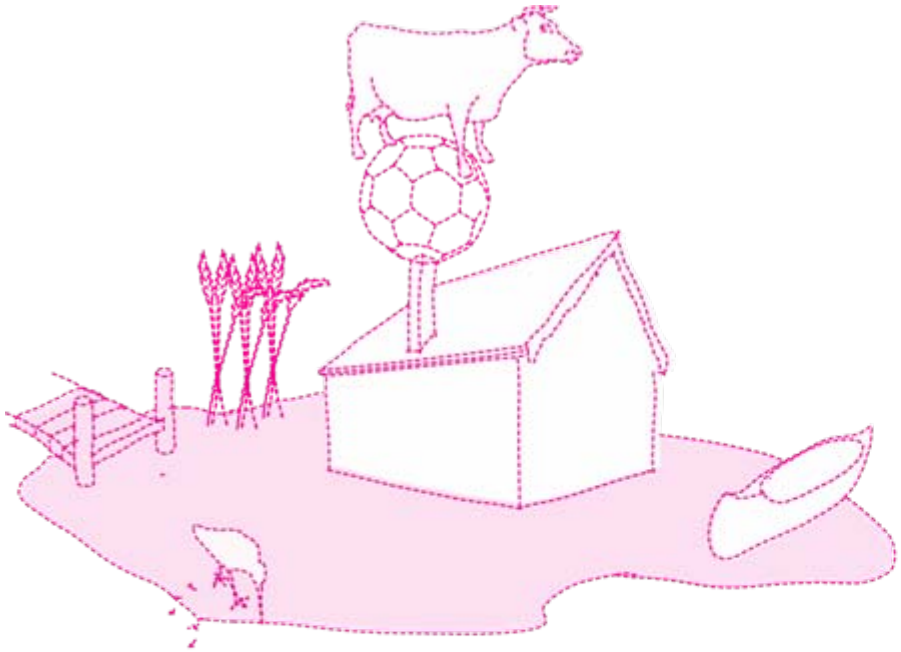
- Visions
  (Leitbild: guidance/orientation)
- Stakeholders
  (influence, variety, involvement)
- Learning
  (1st + higher order, actor & group level)

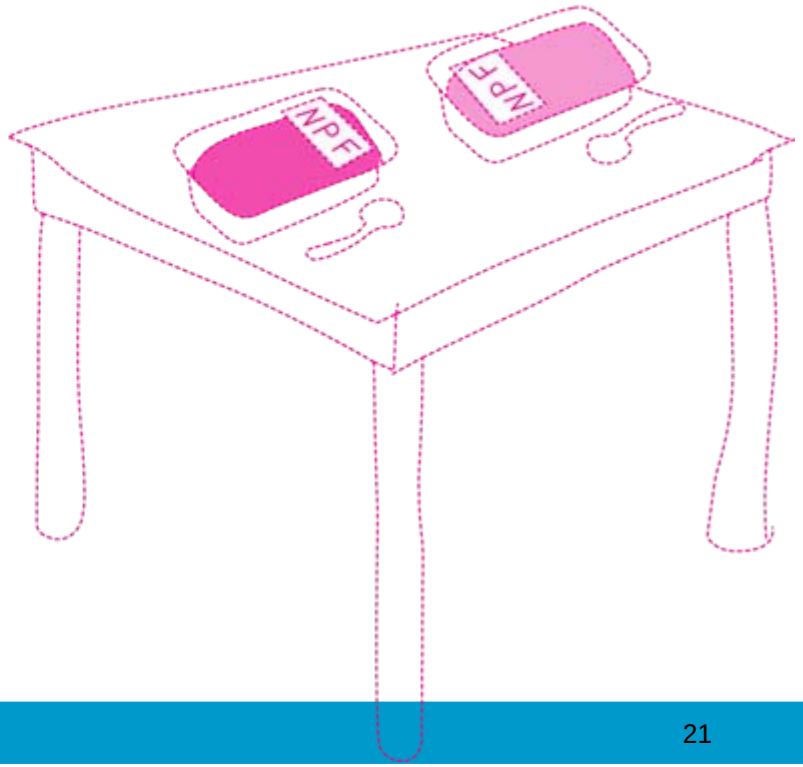
Spin-off & follow-up

- Vision
  (Leitbild: guidance/orientation)
- Networks
  (industrial network theory)
- Institutionalisation
  (institutional theory)

TU Delft

Backcasting: *evaluation 3x nutrition*





TU Delft

Backcasting cases: *3x nutrition & food*

Case and origin	*When*	*Type of system*
1. Novel Protein Foods (NPF) case (STD programme)	**1993 - 1996**	**Production and consumption system involving companies and consumers**
2. Household nutrition (SHN) case (SusHouse project)	**1998 - 2000**	**Household consumption system**
3. Multiple Sustainable Land-use (MSL) case (STD programme)	**1994 - 1997**	**Spatial rural system involving agriculture and other functions like water, nature, leisure**

TU Delft

Spin-off analyzed: *3x nutrition & food*

	NPF	*SHN*	*MSL*
1. Networks: activities, actors, resources	Clusters in all four domains	Very limited, attempts not granted	MSL program, replication in other areas, no NL network
2. Vision: guidance, orientation, competition	Core guides, but decentralised adjustments	Visions faded away	Vision lives on in the area, new visions elsewh.
3. Institutionalisation	Is starting	No	Is starting
4. External factors (case specific)	Important	Not important	Important

Backcasting analyzed: *3x nutrition & food*

	NPF	*SHN*	*MSL*
1. Participation	Broad, also co-funding, large influence for small group	Broad, only participation, all had influence on content	Broad, also co-funding, large influence for small group
2. Vision: guidance, orientation, competition	1 vision, gradual development	3 visions	1 nested vision
3. Higher order learning	Single & group	Only single	Single & group
4A Method aspects	Good match	Good match	Good match
4B Project settings	2 vision champs Inst protect focus impact	No champ Focus on acad. meth. develop	Two vision ch. Inst protect Focus impact

4. Empirical conclusions I

- Al three backcasting experiments ***successful*** in broad participation, visions, higher order learning and follow-up agendas.
- This does ***not*** guarantee ***follow-up*** and ***spin-off***, the extent of follow-up and spin-off depends on various internal and external factors.
- Follow-up and spin-off materializes in ***networks*** consisting of ***activities***, ***actors***, and ***resources***; it involves old and new actors.
- Future visions are important in follow-up and spin-off; they provide ***guidance*** (where to go) and ***orientation*** (what to do)
- Future visions show both ***stability*** and ***flexibility***, which relates to entries, clusters, domains. **(visions <--> network)**
- Some ***institutionalization***, but also institutional resistance
- Follow-up and spin-off is on a niche level: ***seeds for change.***

Empirical conclusions I I

Enabling internal factors	***Constraining internal factors***
High degree of stakeholder involvement & *****small groups much influence***	-
Diversity in types of stakeholder involvement	-
Single vision backcasting experiment	Multiple visions backcasting experiment
High degrees of guidance and orientation of the future vision	-
Institutional protection	-
Presence of vision champions	-
Strong focus on follow-up and implementation	Strong focus on academic achievements
Joint and congruent learning	-

TU Delft

Do's & Don'ts for organisers of BCE

> Give influence to committed key stakeholders
> Stimulate other types of stakeholder involvement besides 'workshop attendance', such as co-funding, substantial capacity and expertise
> Focus on a single future vision with its 'own' group of stakeholders involved
> Stimulate institutional protection at top management levels of involved stakeholders
> Stimulate high degrees of stakeholder involvement
> Involve or stimulate the emergence of (potential) vision champions that can become 'brokers' in relevant networks
> Focus strongly on follow-up of the backcasting experiment, as well as implementation and usability of its outcomes
> Do not keep several visions within a single backcasting experiment

Policy relevance: *some suggestions*

- Comparison with ***transition management*** possible
- ***Institutional protection*** important
- ***Experimentation in niches*** with visions and new rule systems useful and helpful (learning)
- ***Process facilitation*** of backcasting important
- Stakeholder enthusiasm and ***opportunities*** crucial
- 'Related' policies are important for follow-up
- ***Long-term process***: after 10 years still niches
- External developments sometimes ***crucial***

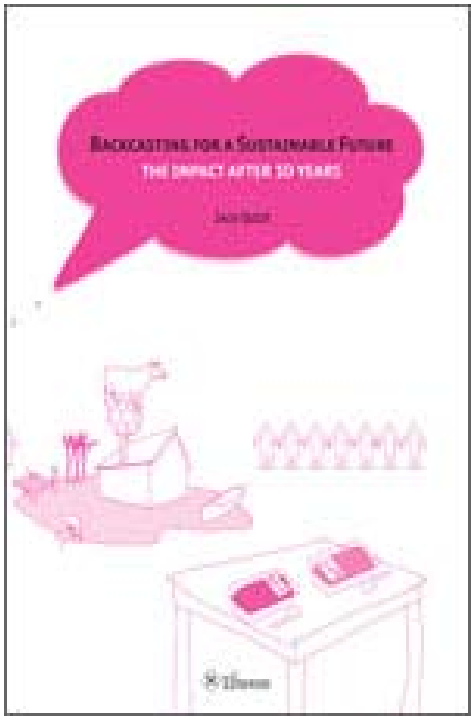
TU Delft

Closing remark

Based on dissertation:

- Repository.tudelft.nl
- www.eburon.nl

- ERSCP 2010, 25-29 October in Delft
- European Roundtable on Sustainable Consumption & Prod
- Focus: knowledge cooperation & learning for sustainable innovation



TU Delft

Methodological conclusions / reflections

- Cases match well with methodological framework.
- Iteration of steps 1-3 takes place.
- Broader applicability (complex problems).
- Backcasting step less well elaborated in terms of methods.
- Stakeholder communication throughout all steps.

Further comparison

- 3 visions (SHN) vs 1 vision (NPF & MSL)
- Explicit overall approach (SHN & MSL) vs not (NPF)
- Explicit backcasting (SHN) vs implicit (NPF & MSL)
- Higher-Order learning at individual level (All three)
- HO' learning group level: **no** (SHN) vs **yes** (NPF & MSL)
- High degree involvement: **no** (SHN) vs **yes** (NPF & MSL)
- Co-funding & capacity: **no** (SHN) vs **yes** (NPF & MSL)

Comparing methodological aspects

	NPF case	SHN case	MSL case
Backcasting framework:			
> Inter-disciplinarity	*Yes*	*Yes*	*Yes*
> Framework steps	*Yes, but iteration*	*Yes, but iteration*	*Yes, but iteration*
> Four types of methods	*Yes*	*Yes*	*Yes*
> Three types of demands	*Yes*	*Yes*	*Yes*
Settings:			
> Mobilised budget	*€ 2 Million*	*€ 200,000*	*€ 2 Million*
> Institutional protection	*Yes*	*No*	*Yes*
> Vision champion	*Yes (2)*	*No*	*Yes (2)*
> Main focus	*Implementation & follow-up*	*Academic achievements, methodology development*	*Implementation & follow-up*
> Type of management	*Project management*	*Process management*	*Project management & process management*

TU Delft

Backcasting: *methodological framework*

Step 1 Strategic Problem orientation *Analysis*

Step 2 Normative future image *Vision*

Step 3 Backcasting *Wat is necessary?*

Step 4 Elaboration, analysis *Action agenda*

Step 5 Embedding, 'implementation' *Follow-up*

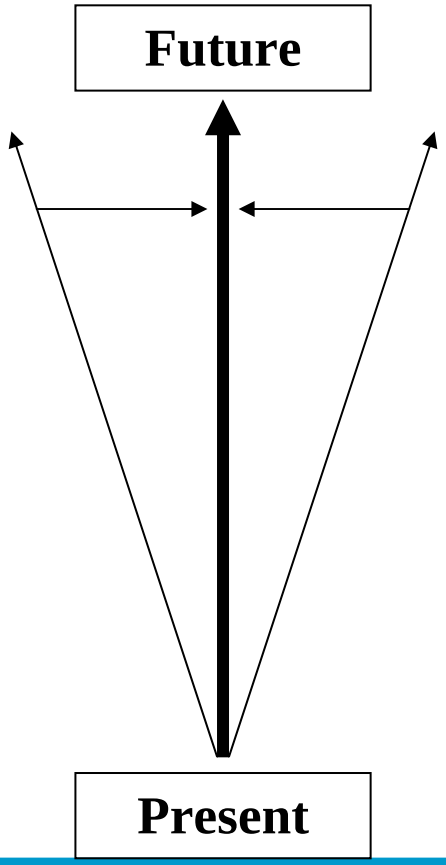
Methods: *I Analysis, II Design, III Interaction, IV Management*

Demands: *i Normative, ii Process, iii Knowledge*

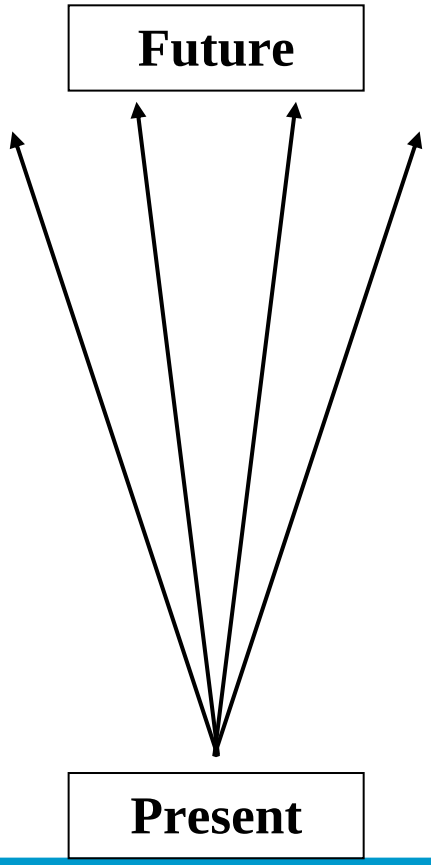
TU Delft

Forecasting Scenarios Backcasting

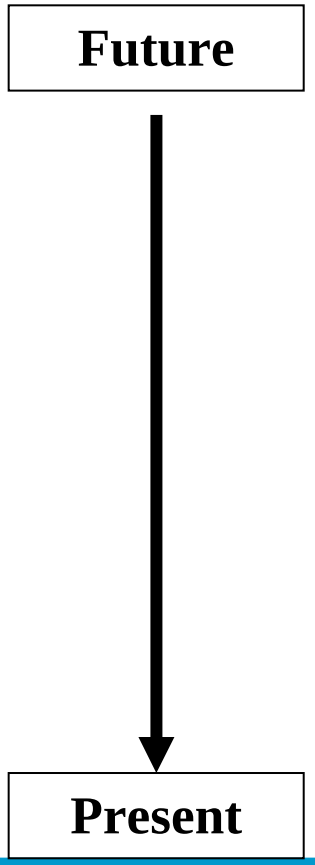
Predict most likely future



Explore alternative alternative futures



Assess feasibility of of desirable future



TU Delft

Review backcasting: *findings*

- Considerable variety in elaboration, participation, methods, number of steps, goals, types of problems addressed
- Core feature is normative / desirable future vision; part of family of related approaches (like TM & roadmapping)
- An overall methodological framework can be determined, using Robinson (1990), TNS (Holmberg '98), STD, SusHouse
- Framework combines orientation, analysis, design, process. It is multi- / trans-disciplinary.

Tools & methods: *SusHouse backcasting*

- Problem and Actor ***analysis***
- ***Stakeholder*** creativity ***workshops*** and creativity tools (concepting, reversing, images, etc)
- ***Design*** tools:
  - proto-scenarios (by stakeholders from different social groups)
  - morphological methods
  - design orienting scenarios (creating variety, contrasting)
- ***Analytical*** tools: backcasting, env, econ, consumer
- Design Orienting Scenarios enables study of ***rebounds*** *+ interactions of technology & behaviour*
- Regular tools for designing products & services

TU Delft