Foresight Process and Fundamentals

Dr. Rafael Popper
Principal Scientist in Business, Innovation and Foresight
VTT Technical Research Centre of Finland
Rafael.Popper@vtt.fi

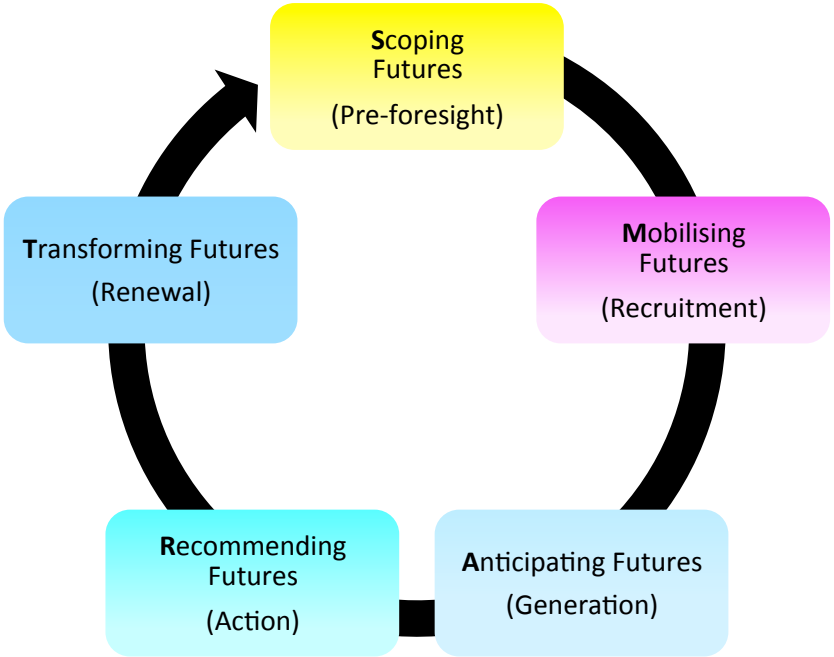
Contents

- To understand the Foresight Process
  - Describing key phases and elements of the process
- To understand the Fundamentals of Foresight
  - Discussing fundamental principles
  - Discussing fundamental meta-principles
- To link Foresight to the policy/strategy cycle
  - Through exploring (policy/strategy formulation)
  - Through shaping (policy/strategy implementation)
  - Through learning (policy/strategy evaluation)

Foresight is a SMART process

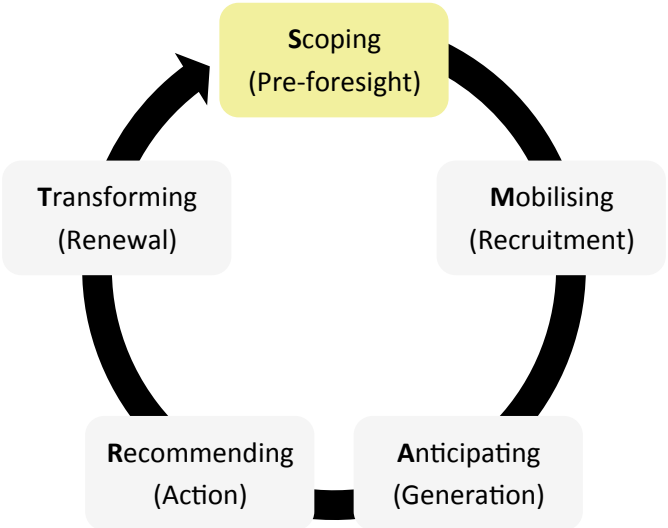
Foresight is a SMART process

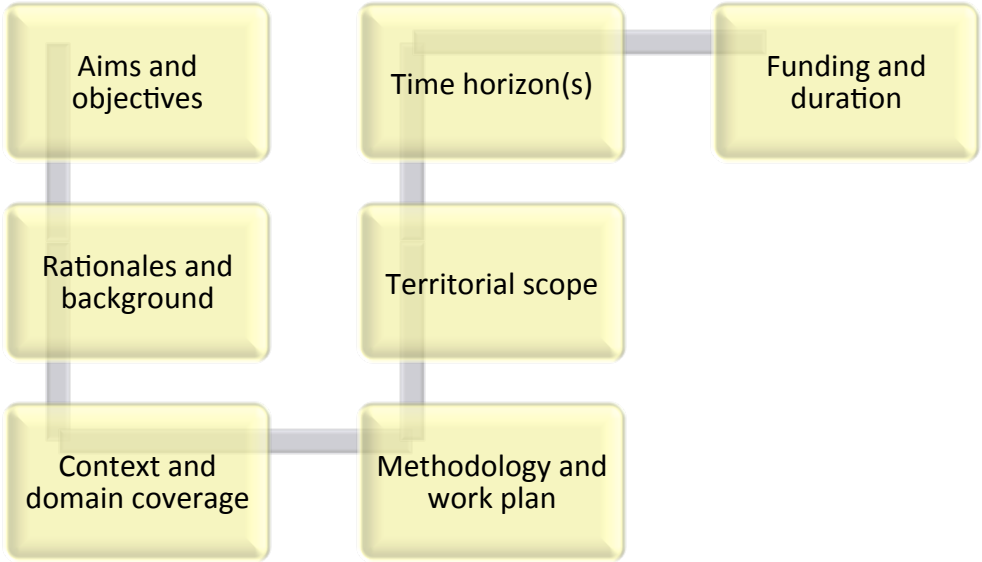
Foresight is a systematic, **participatory**, **prospective** and **policy-oriented** process which, with the support of environmental/horizon scanning approaches, is aimed to actively engage key stakeholders into a wide range of activities ***anticipating***, ***recommending*** and ***transforming*** (**ART**) technological, economic, environmental, political, social and ethical (**TEEPSE**) futures.



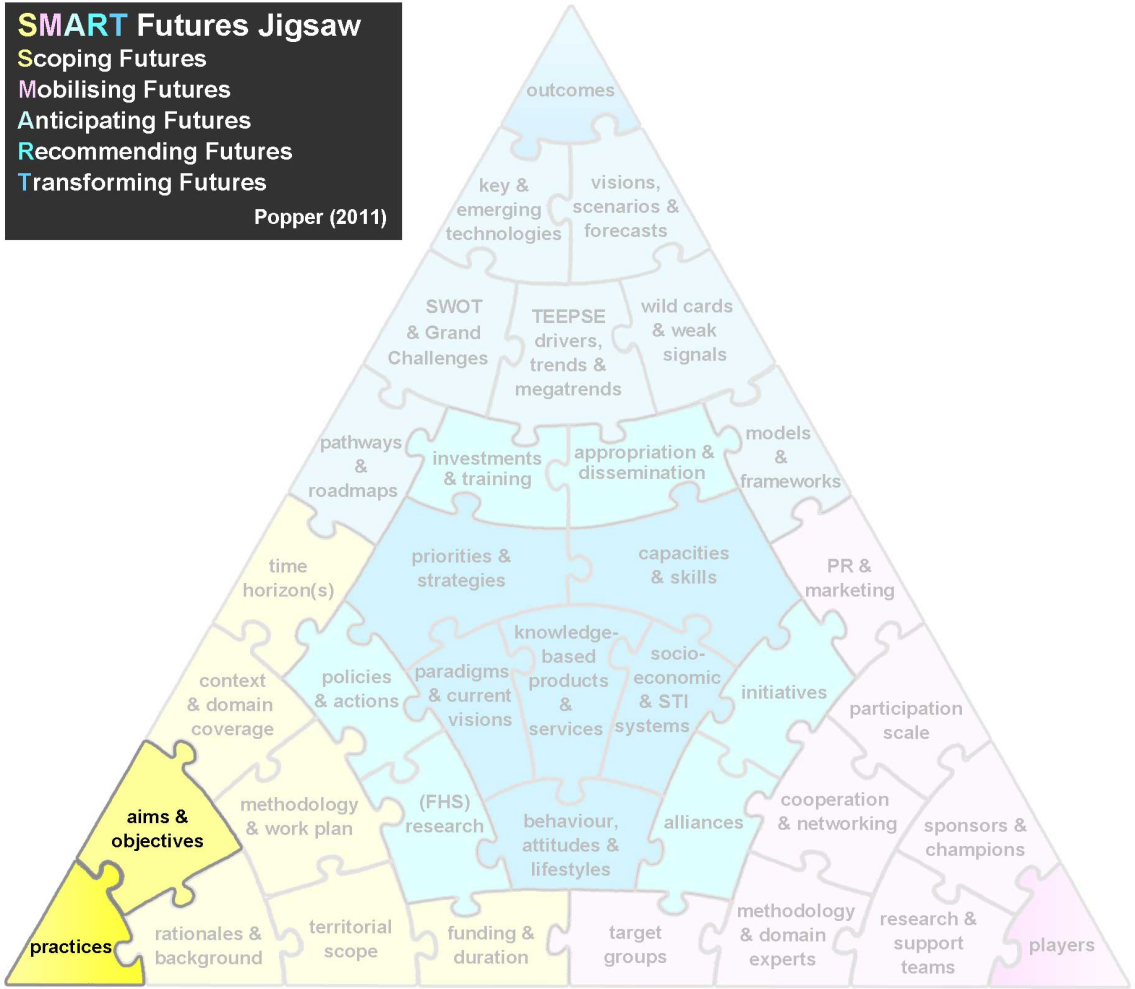
Phase 1: Scoping

Scoping is the starting point of the process, where practitioners, together with the sponsor: define the general and specific objectives; assemble the project team; and design the methodology.





SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)

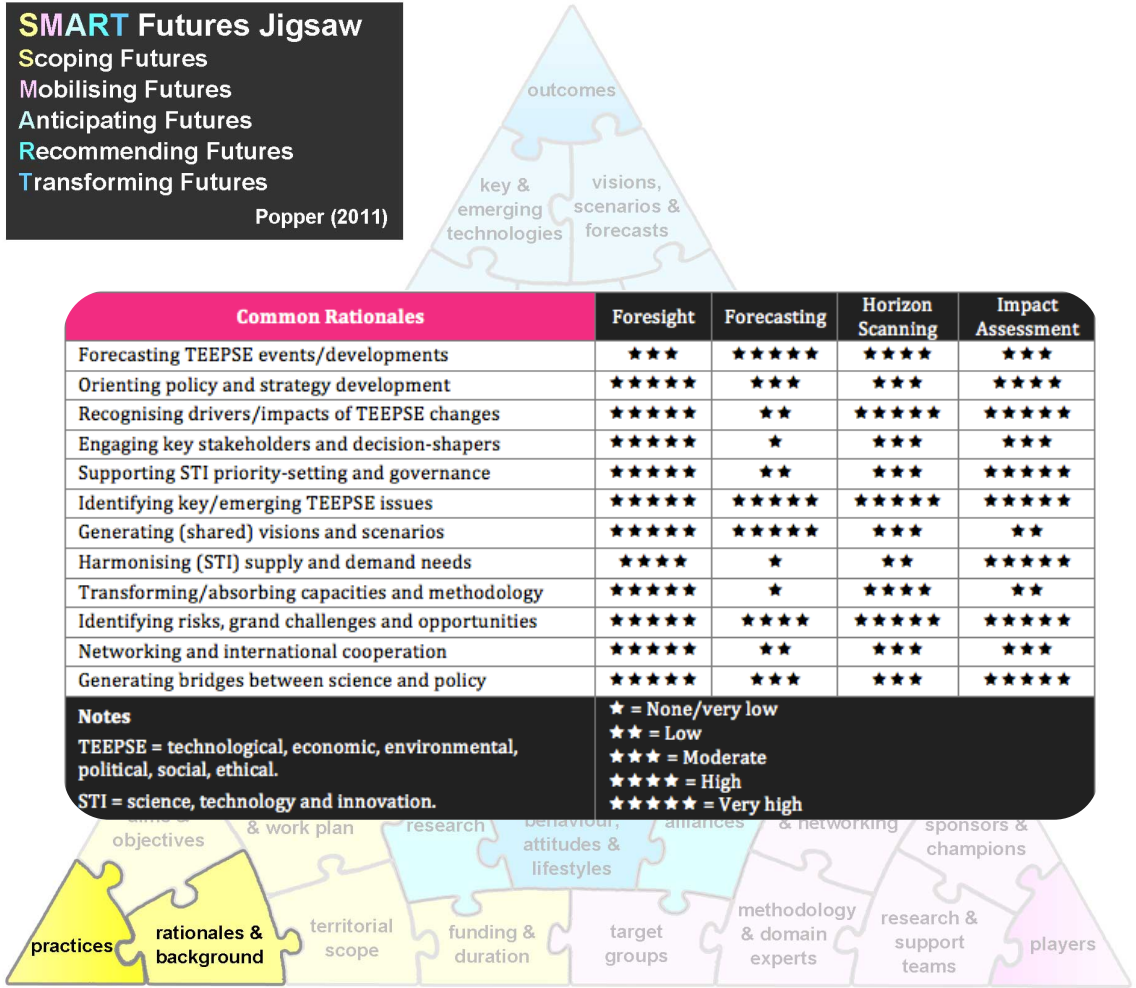


Phase 1: Scoping
aims & objectives

Common aims
- shaping capacities and skills
- shaping strategies and priorities
- shaping paradigms and current visions
- shaping socio-economic and STI systems
- shaping behaviour, attitudes and lifestyles
- shaping knowledge-based products & services

Common features of objectives
- specific (clear)
- measurable (quantifiable outputs)
- achievable (attainable by the study)
- relevant (related to the aim)
- time-bounded (related to a deadline)

SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)



Common Rationales	Foresight	Forecasting	Horizon Scanning	Impact Assessment
Forecasting TEEPSE events/developments	★★★	★★★★★	★★★★	★★★
Orienting policy and strategy development	★★★★★	★★★	★★★	★★★★
Recognising drivers/impacts of TEEPSE changes	★★★★★	★★	★★★★★	★★★★★
Engaging key stakeholders and decision-shapers	★★★★★	★	★★★	★★★
Supporting STI priority-setting and governance	★★★★★	★★	★★★	★★★★★
Identifying key/emerging TEEPSE issues	★★★★★	★★★★★	★★★★★	★★★★★
Generating (shared) visions and scenarios	★★★★★	★★★★★	★★★	★★
Harmonising (STI) supply and demand needs	★★★★	★	★★	★★★★★
Transforming/absorbing capacities and methodology	★★★★★	★	★★★★	★★
Identifying risks, grand challenges and opportunities	★★★★★	★★★★	★★★★★	★★★★★
Networking and international cooperation	★★★★★	★★	★★★	★★★
Generating bridges between science and policy	★★★★★	★★★	★★★	★★★★★
Notes TEEPSE = technological, economic, environmental, political, social, ethical. STI = science, technology and innovation.	★ = None/very low ★★ = Low ★★★ = Moderate ★★★★ = High ★★★★★ = Very high			

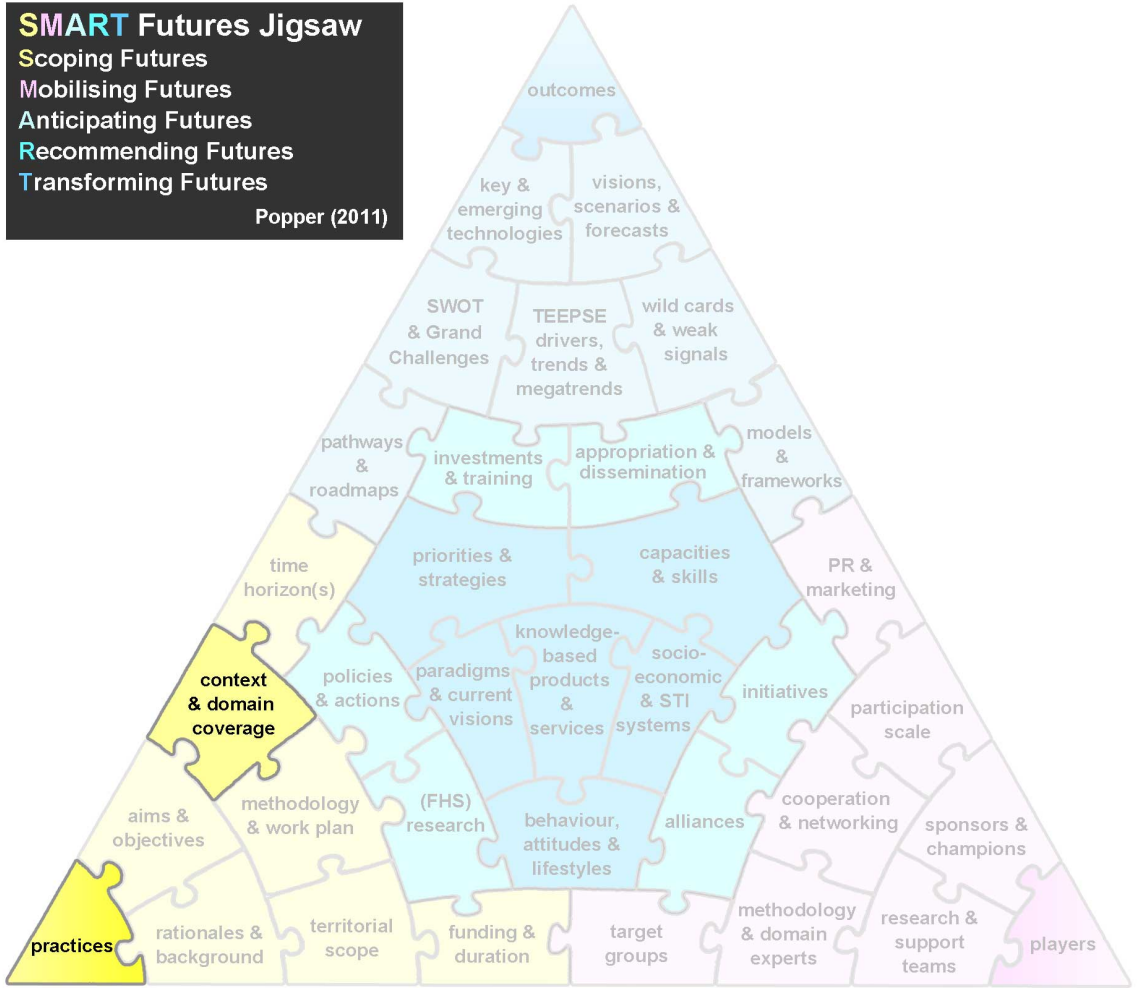
Phase 1: Scoping

rationales & background

Understanding the background requires:

- recognising key events, i.e. technological, economic, environmental, political, social, ethical issues; and
- mapping ‘state-of-the-art’ knowledge from academic/grey literature, databases, etc.) and relevant initiatives (e.g. research programmes, agendas, networks, expert groups, etc.)

SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)



Phase 1: Scoping
context & domain coverage

Common contexts:

- International foresight
- National foresight attached to a programme
- National foresight detached from a programme
- Sub-national foresight
- Corporate foresight
- Structural foresight

Common domain coverage:

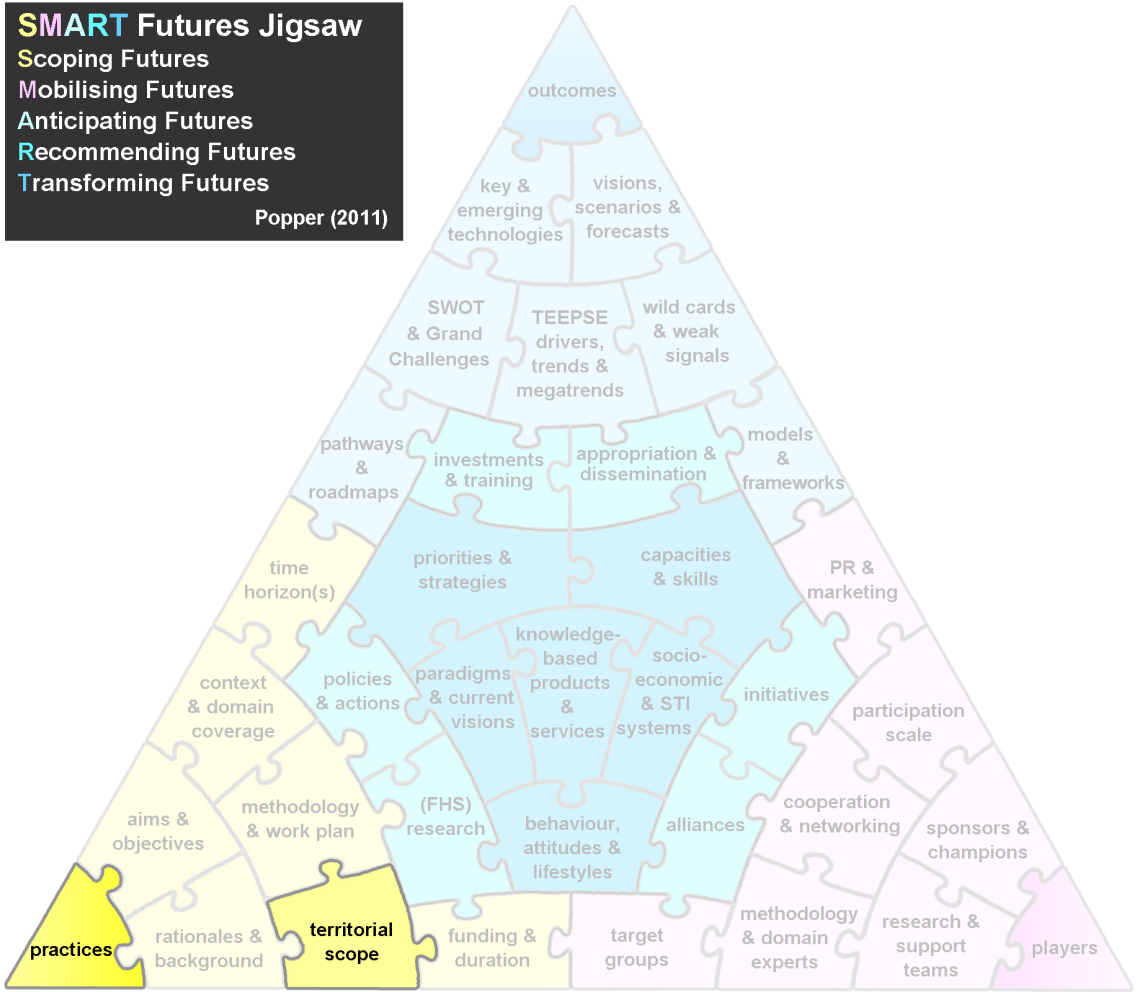
Research Areas		A	B	C	D	E	F
A	Natural Sciences	370	79%	26%	27%	34%	6%
B	Engineering & Technology	58%	335	21%	20%	32%	5%
C	Medical Sciences	50%	56%	270	27%	54%	8%
D	Agricultural Sciences	55%	56%	29%	140	47%	10%
E	Social Sciences	27%	35%	22%	19%	132	7%
F	Humanities	65%	65%	42%	50%	96%	26

SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)

Phase 1: Scoping
methodology & work plan

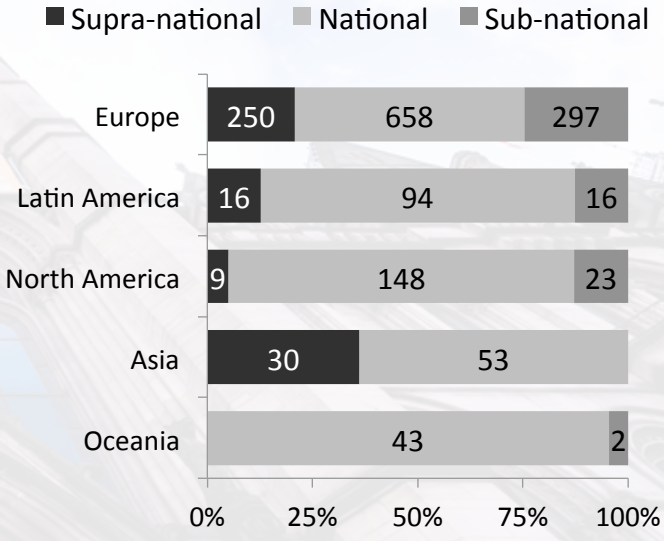
Key methodology features
- Creativity – Exploratory methods
- Interaction – Participatory methods
- Evidence – Explanatory methods
- Expertise – Advisory methods

SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)

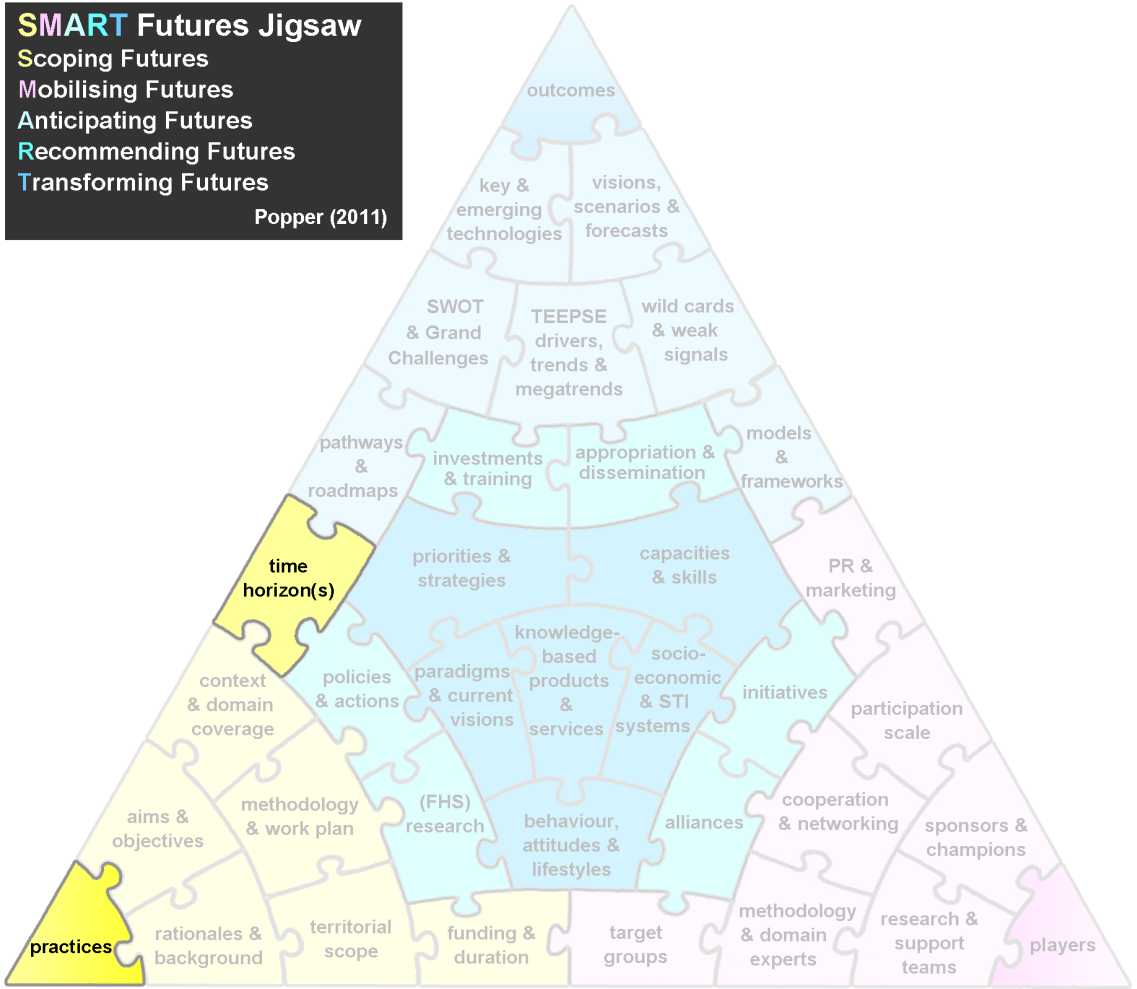


Phase 1: Scoping
territorial scope

Most common territorial scopes
- National
- Supra-national
- Sub-national



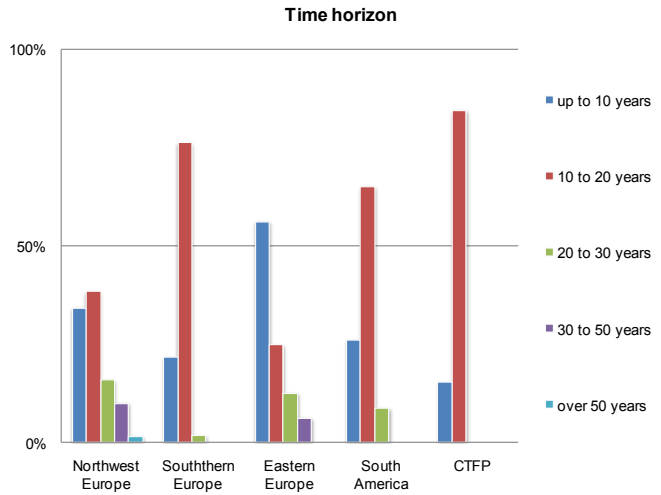
SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)



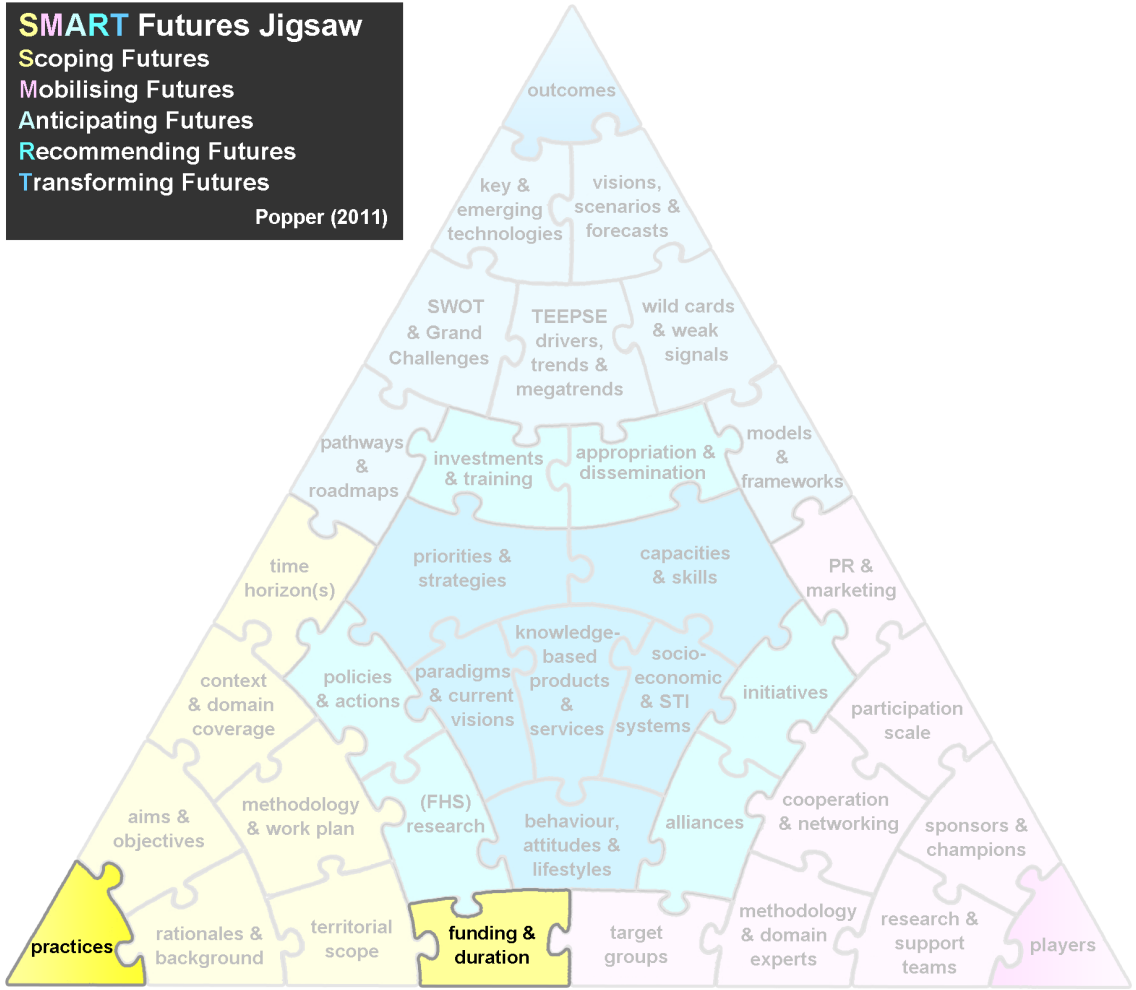
Phase 1: Scoping
time horizon(s)

Common time horizon(s)

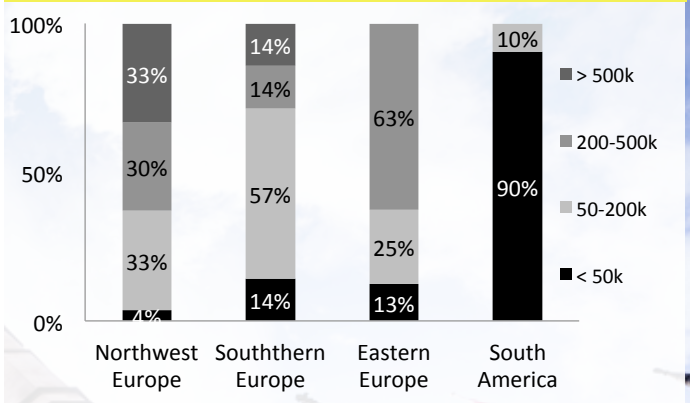
- Up to 10 years
- 10-20years
- 20-30 years
- 30-50 years
- 50+ years

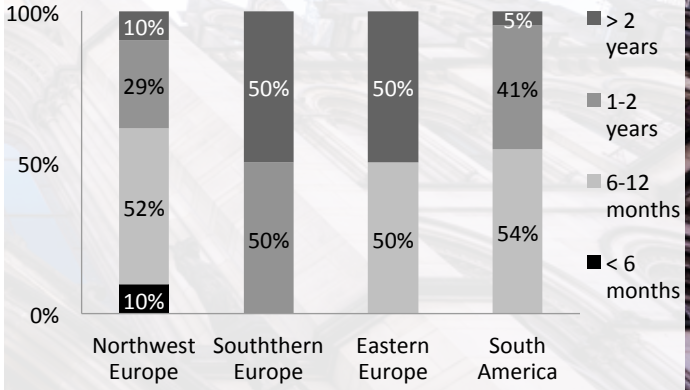


SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)



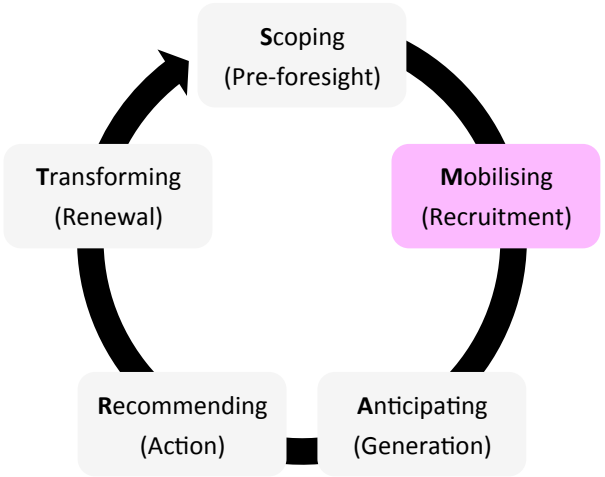
Phase 1: Scoping
funding & duration

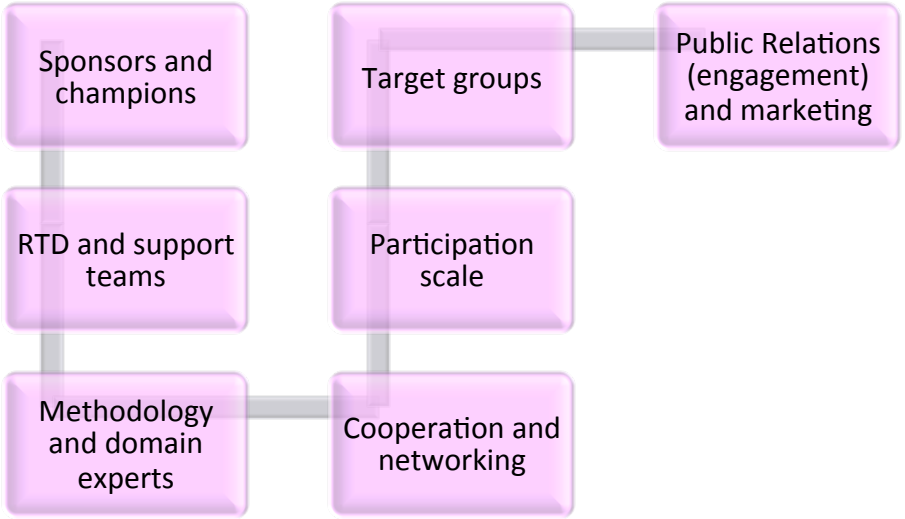




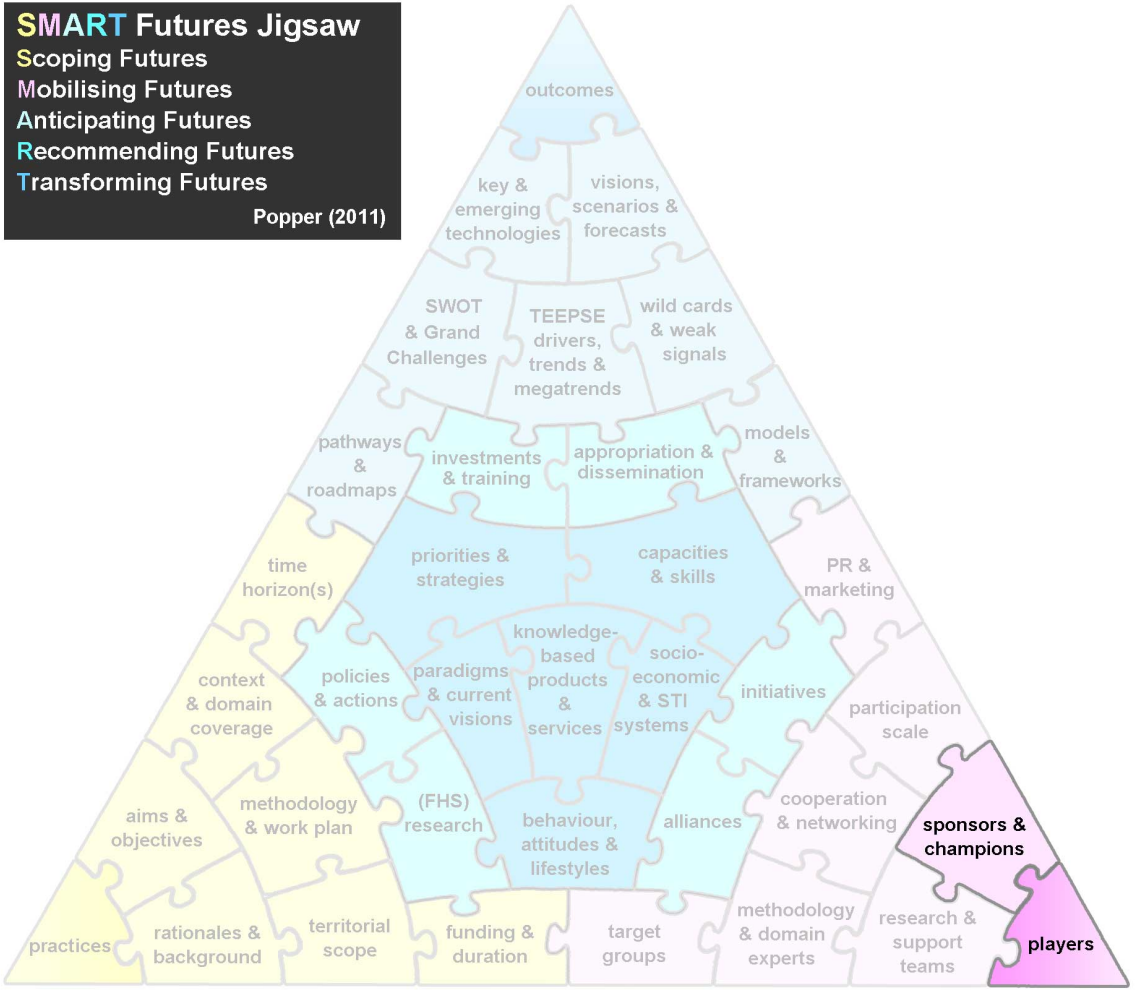
Phase 2: Mobilising

Mobilising *is represented as the second phase of Foresight. However, some activities are simultaneously initiated with the scoping phase, such as contract negotiations with the sponsor or definition of the project team; while others run throughout the life of the project (e.g. engaging target groups).*





SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)

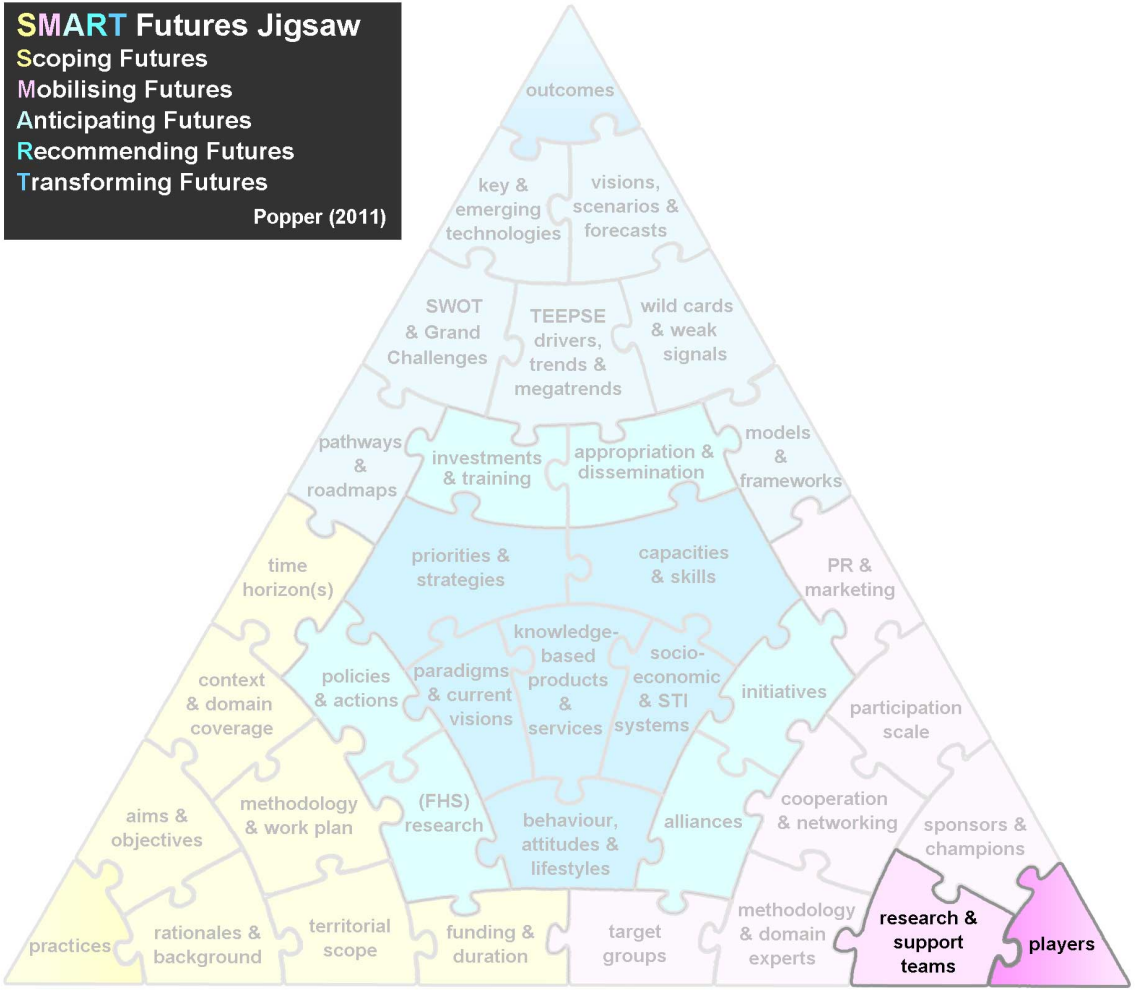


Phase 2: Mobilising
sponsors & champions

Common sponsors
- Government
- Research
- Business
- IGOs (e.g. EU, UN bodies, OECD)

Common champions
- Government official
- Renown professor
- Influential entrepreneur
- Head of unit in an IGO

SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)

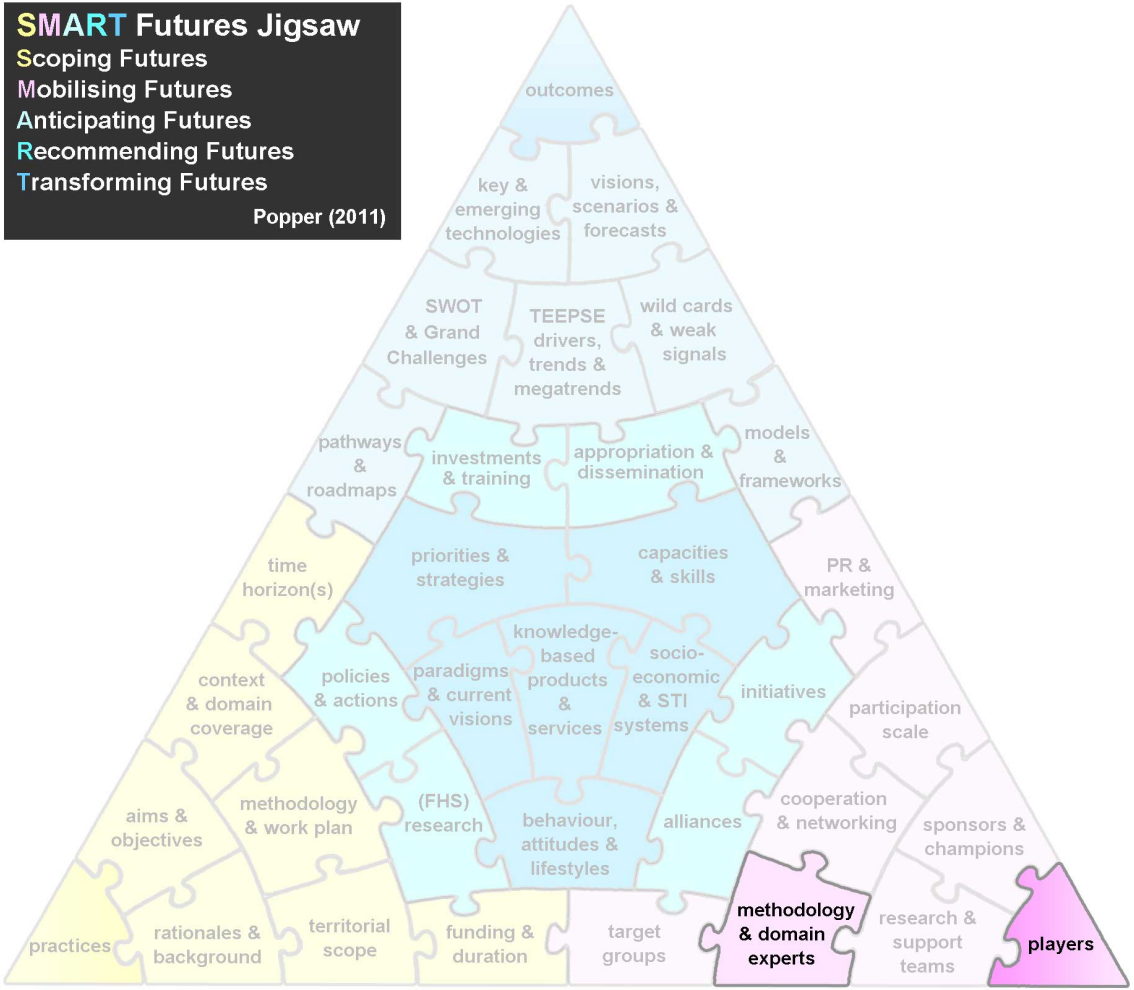


Phase 2: Mobilising
research & support team

Common activities of the team

- Research
  - Principal investigator
  - Senior researchers
  - Research scientists
- Technology development
  - Web tools managers
- Management and other support
  - Project administration
  - Travel support
  - Events organisation
  - Logistics

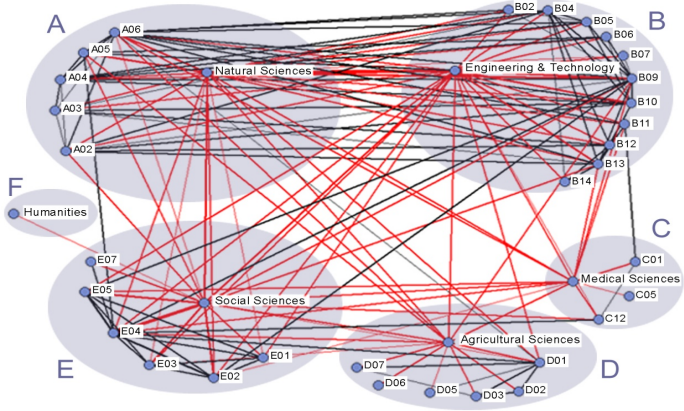
SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)



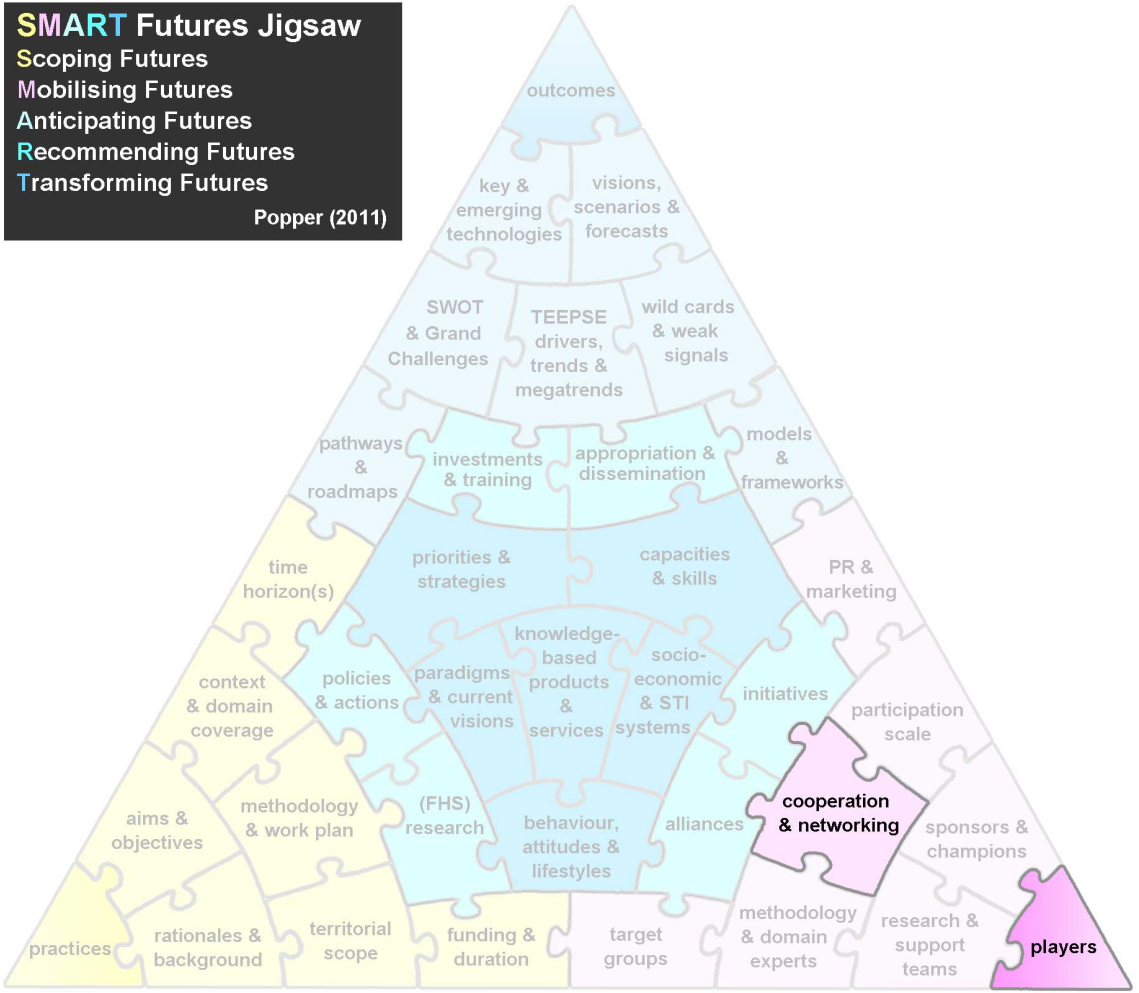
Phase 2: Mobilising
methodology & domain experts

Key roles of methodology experts
- Capacity building & coaching
- Process design & validation
- Methodology implementation & supervision

Common domain experts
A. Natural sciences
B. Engineering and technology
C. Medical sciences
D. Agricultural sciences
E. Social sciences
F. Humanities



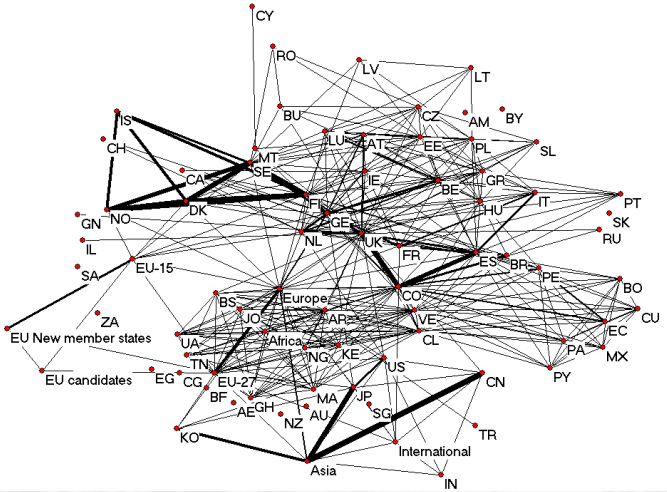
SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)



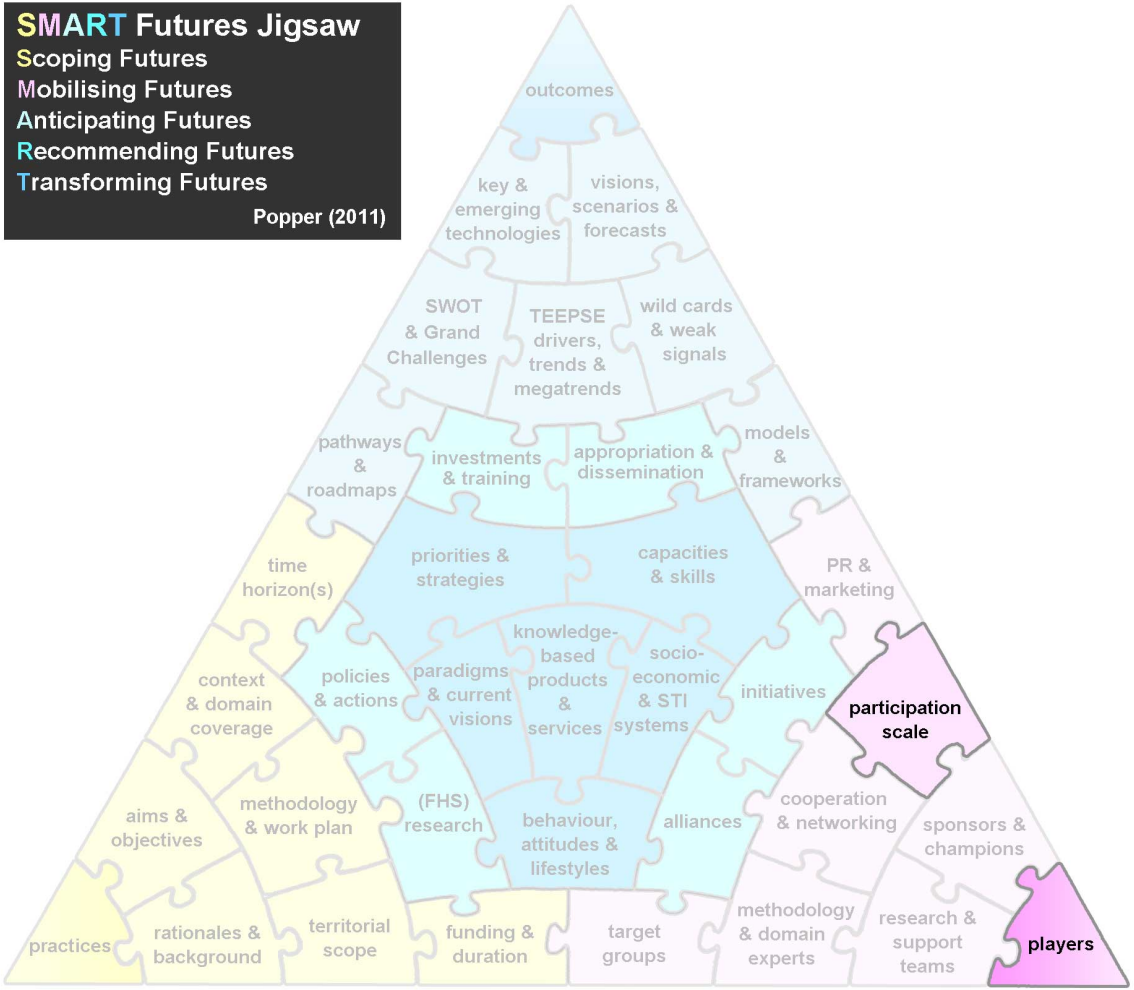
Phase 2: Mobilising
cooperation & networking

Common types of cooperation & networking
- between regions
- between countries
- between organisations

Analysis of foresight cooperation and networking between countries in 1000+ cases:



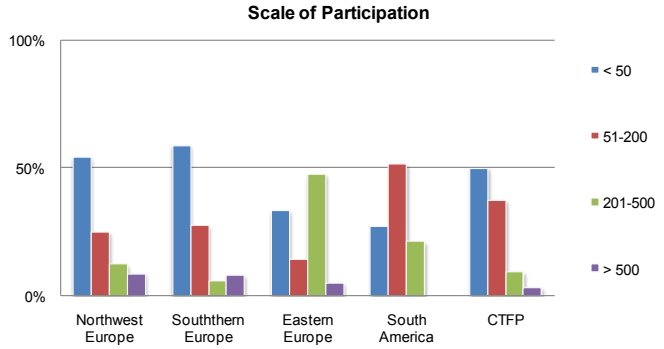
SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)



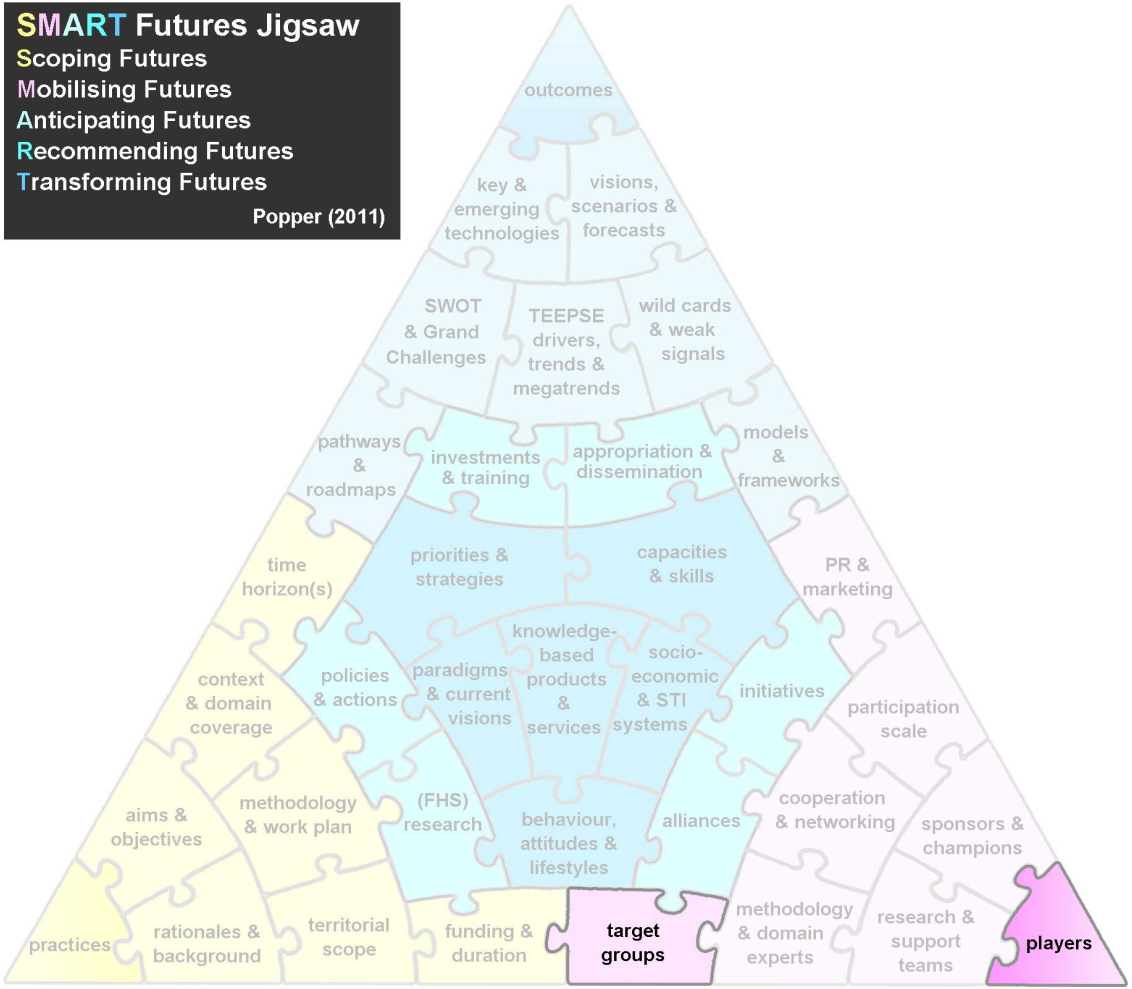
Phase 2: Mobilising
participation scale

A broad participation could facilitate:

- access to a broader knowledge base;
- better understanding of different perspectives;
- greater awareness of knowledge sources;
- increased understanding of the scope and limitations of Foresight activities;
- greater legitimacy of the work and results;
- improved capabilities to use and take forward shared visions on possible and desired futures.



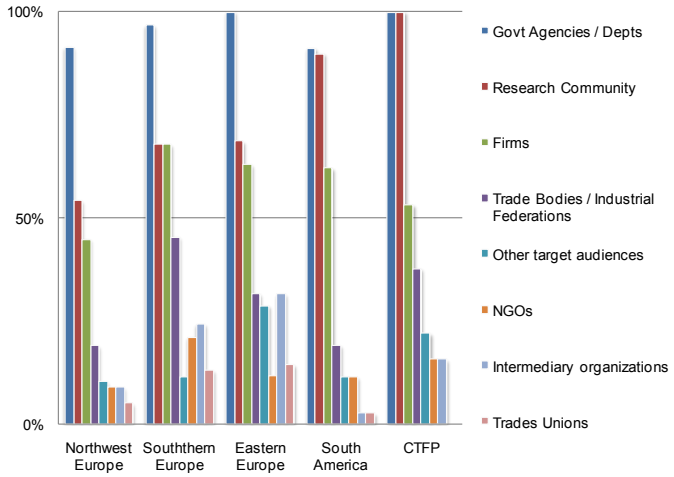
SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)



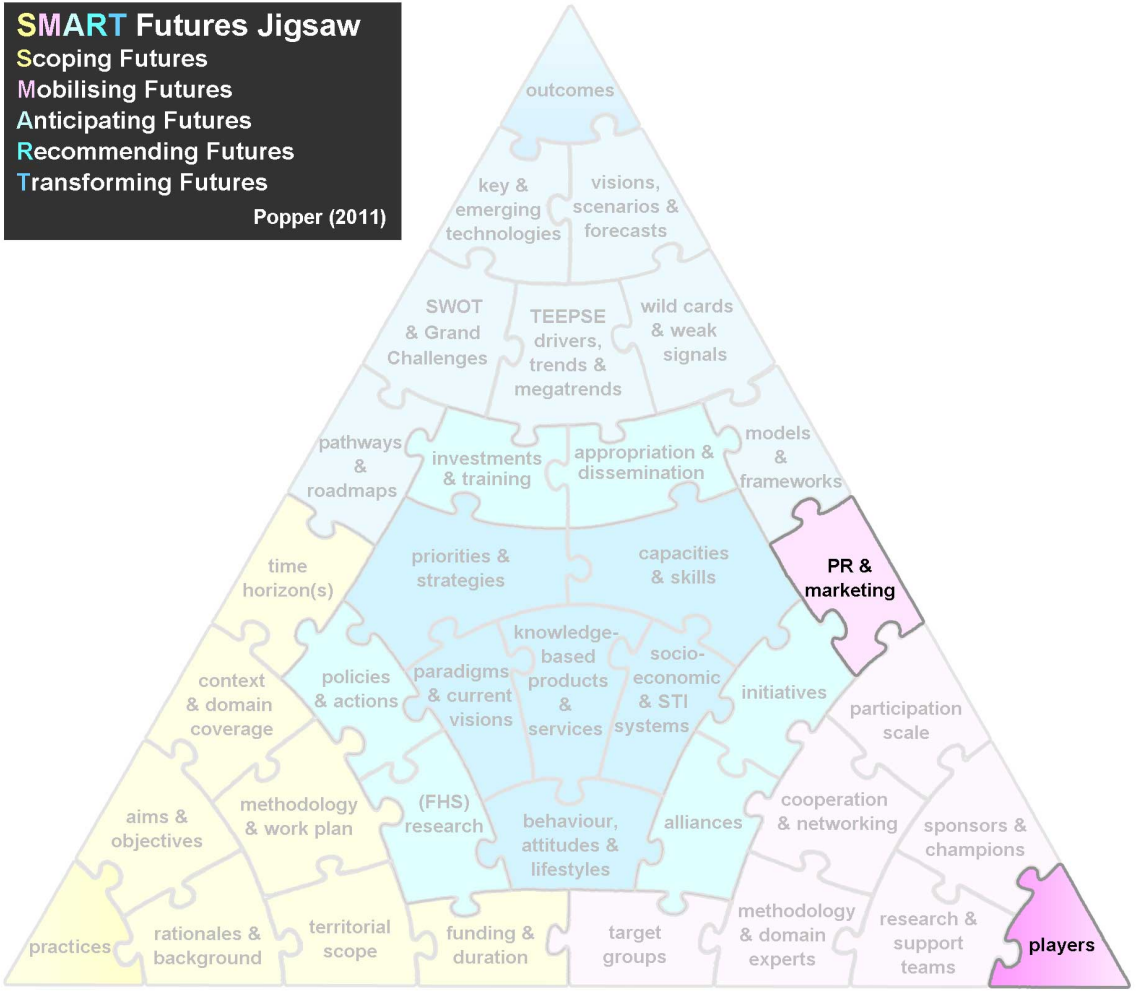
Phase 2: Mobilising
target groups

Common target groups

- Government agencies & departments
- Research and education organisations
- Firms and Private organisations
- Non-State Actors, e.g. EU, UNIDO, UNESCO
- Non-governmental organisations (NGO)
- Media
- Civil society
- Trade unions



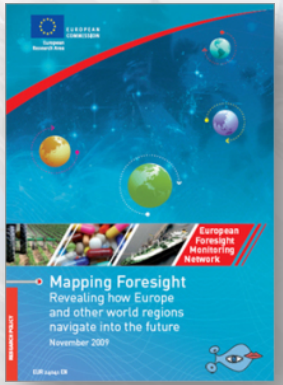
SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)

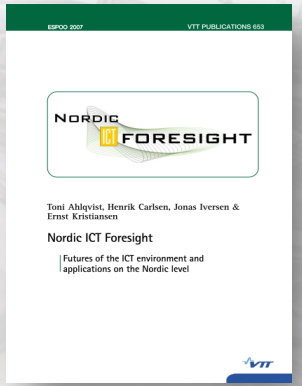


Phase 2: Mobilising
public relations & marketing

Communication & dissemination tools

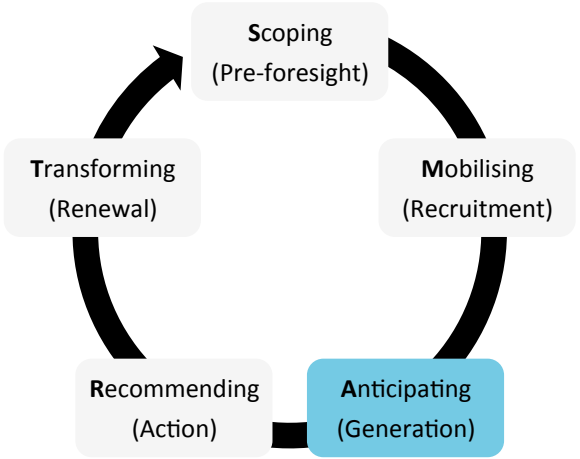
- online
  - websites / blogs / web-discussions
  - emails / electronic newsletters
  - web-videos / podcasts
  - tutorials / apps
- offline
  - policy / research briefs
  - television / radio / press promotion
  - conferences / seminars / symposia
  - newsletters / flyers / leaflets / brochures

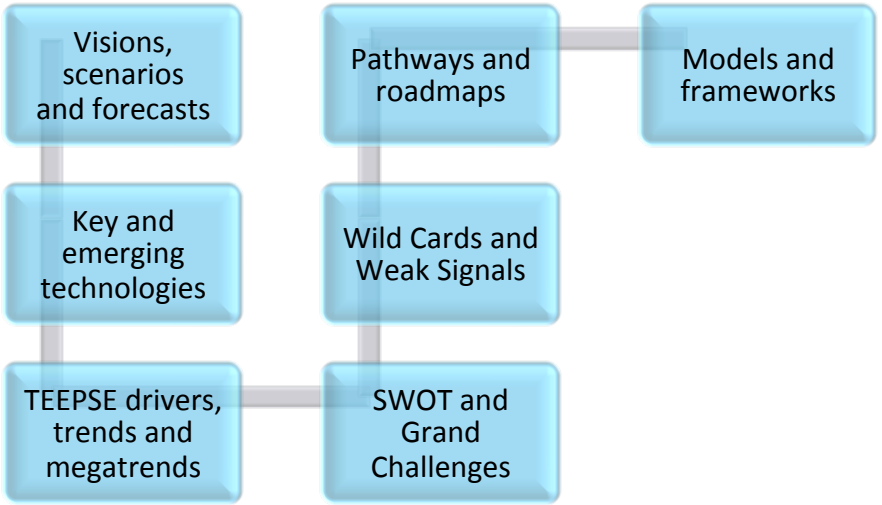




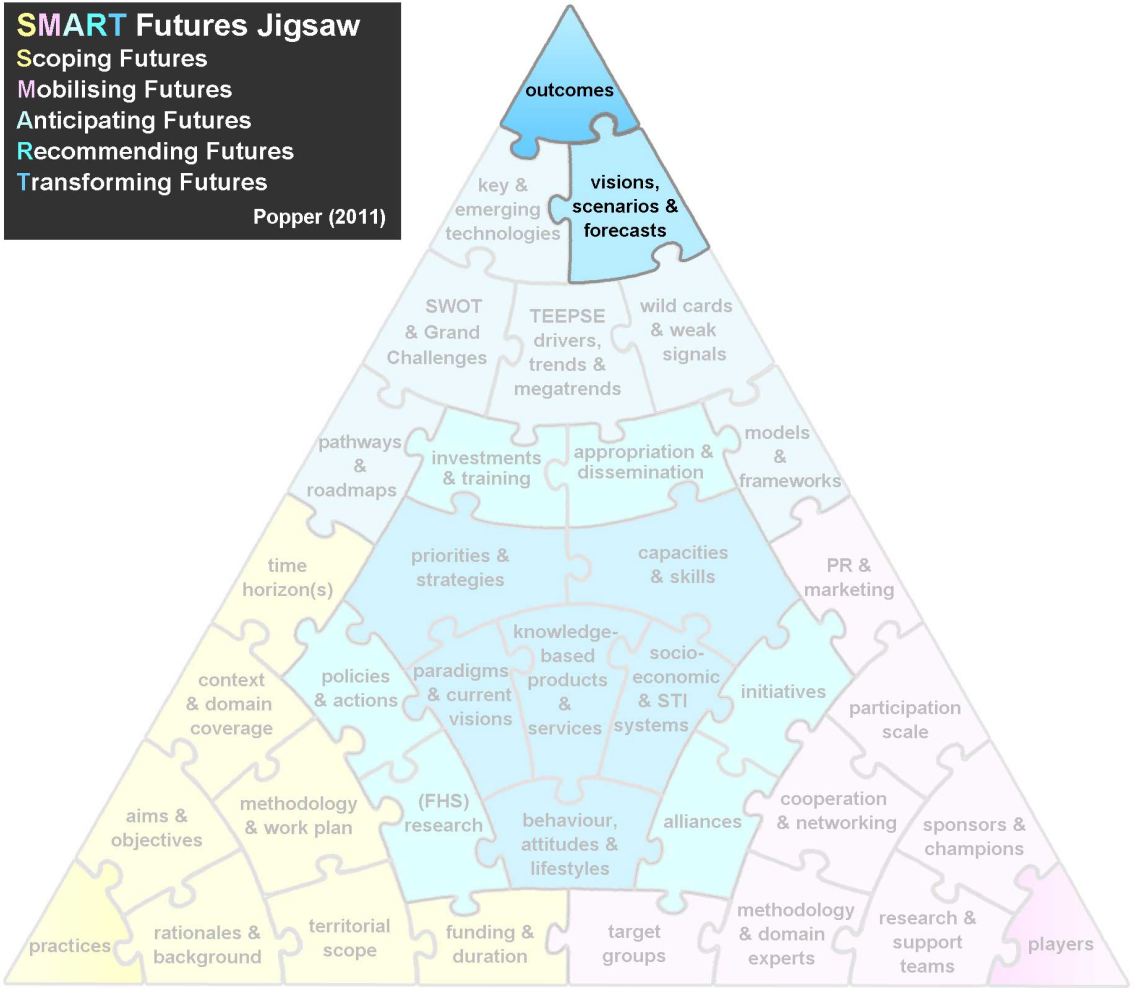
Phase 3: Anticipating

Anticipating *involves generating the 'formal outputs' of the process. The anticipatory intelligence developed in this phase often reflects different elements of the present situation and future contingencies by combining* ***Outward-looking***, ***Inward-looking*** *and* ***Forward-looking*** *approaches.*





SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)

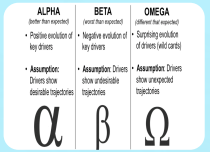


Phase 3: Anticipating

visions, scenarios & forecasts

Key features visions and scenarios
- exploratory
- normative

Key features of forecasts
- Qualitative
- Quantitative
- Semi-quantitative

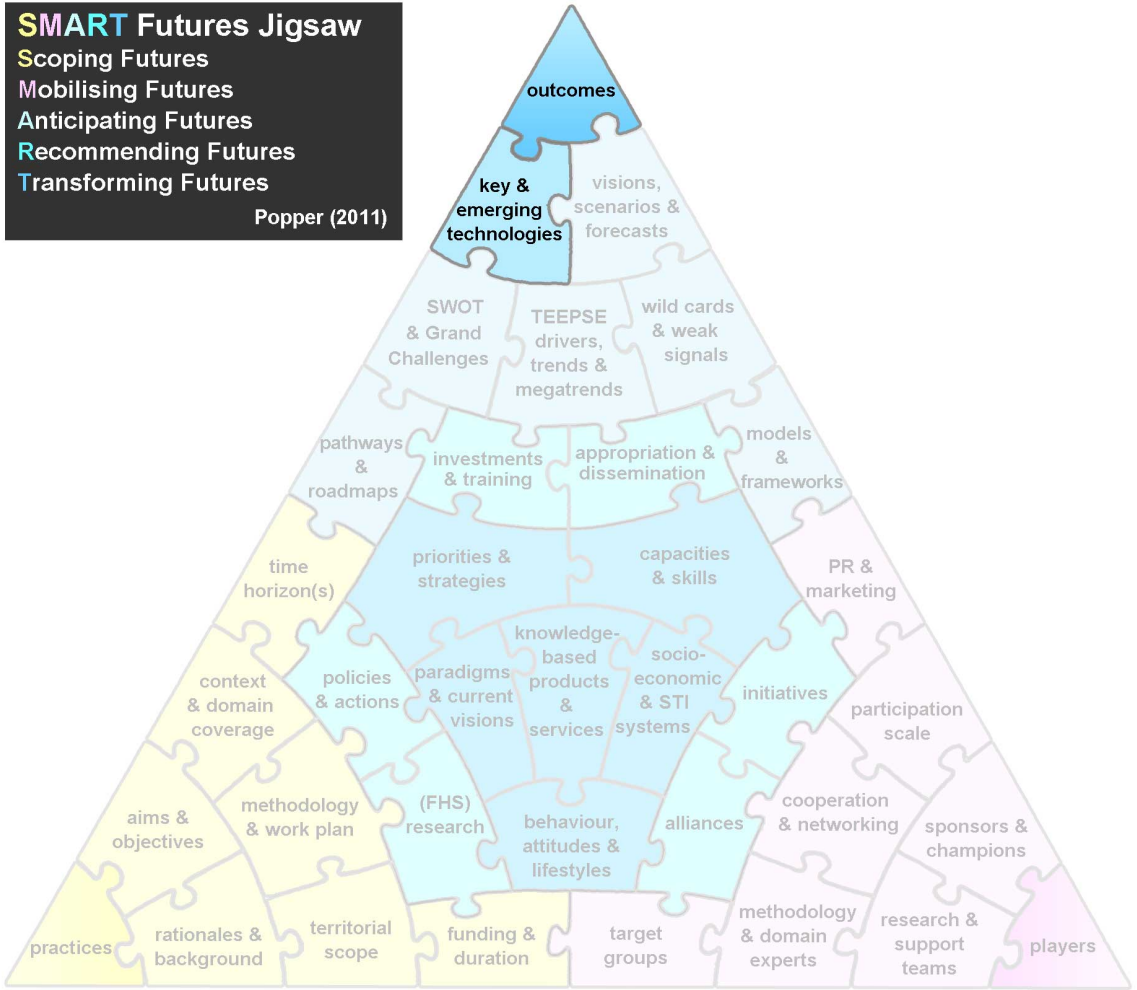


2 x 2

Archetype

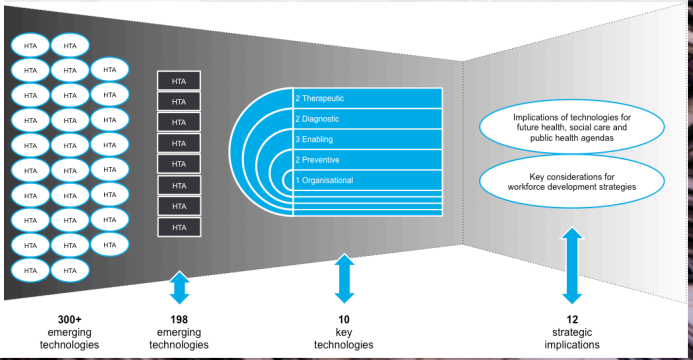
Success

SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)



Phase 3: Anticipating
key & emerging technologies

Features of key / emerging technologies
- regional / national / sectoral relevance
- key / emerging due to contribution to:
  - quality of life
  - competitiveness
  - wealth creation
  - influence on other technologies

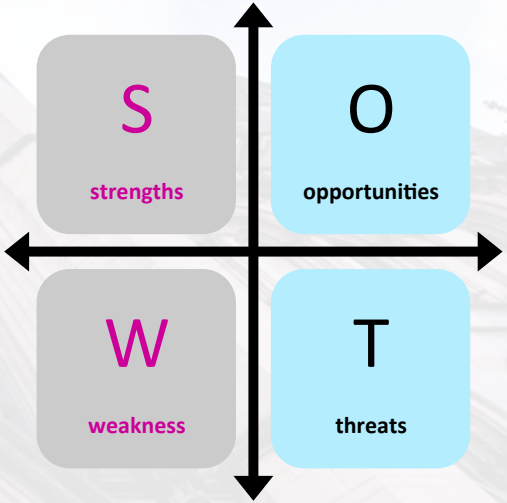


SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)

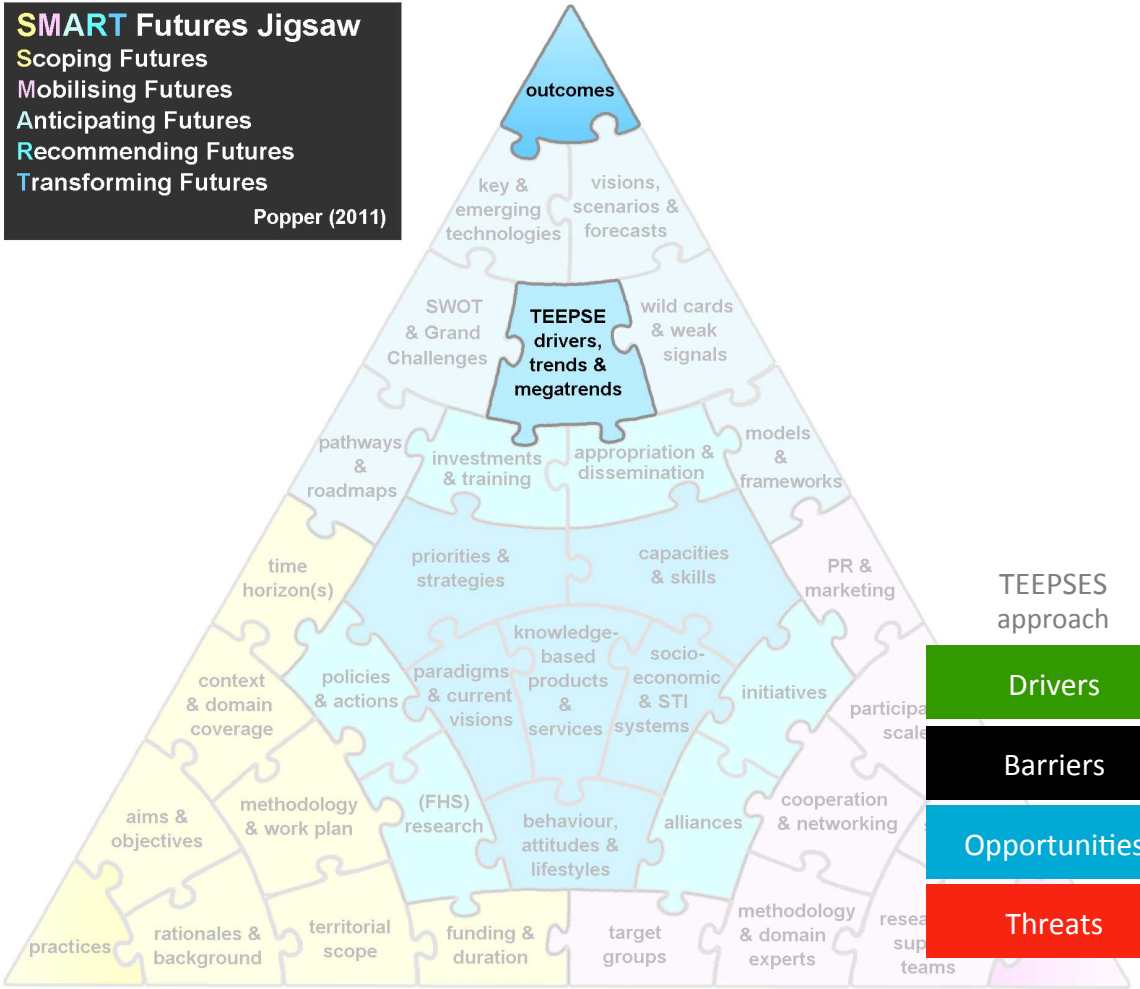
Phase 3: Anticipating
SWOT & Grand Challenges

Key features SWOT analysis
- Inward-looking
- Outward-looking
- Forward-looking

Key features of grand challenges
- Top-down
- Bottom-up



SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)



TEEPSES approach

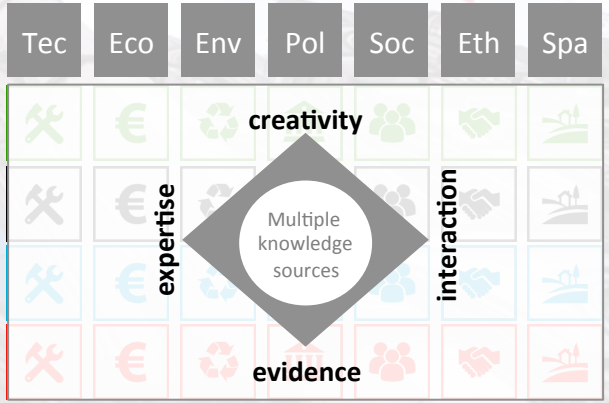
- Drivers
- Barriers
- Opportunities
- Threats

Phase 3: Anticipating

TEEPSE drivers & mega/trends

Key dimensions of TEEPSE analysis

- Technological
- Economic
- Environmental
- Political
- Social
- Ethical
- Spatial

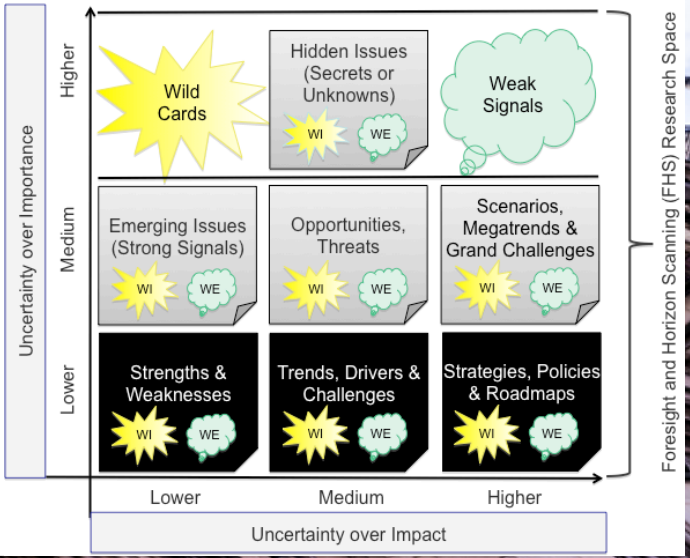


SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)

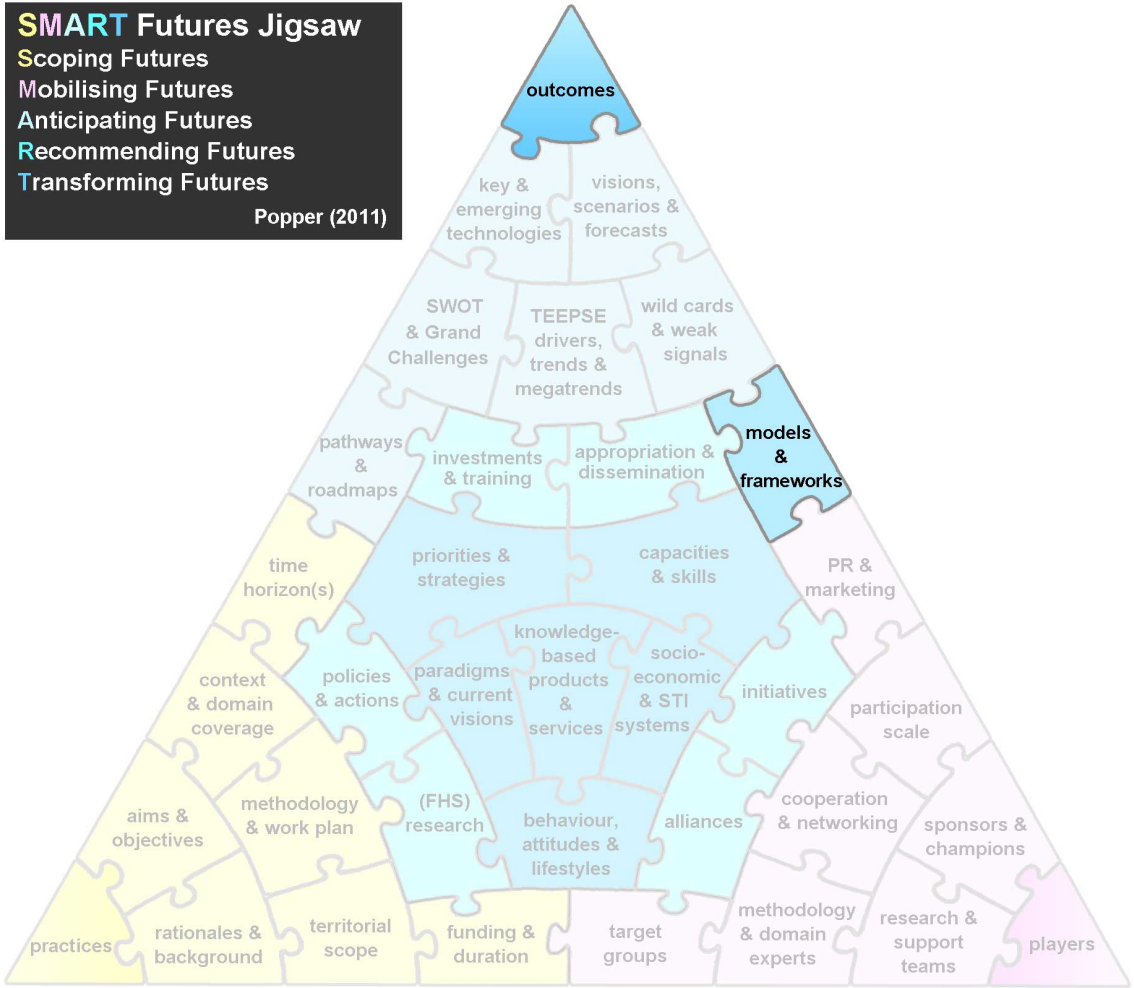
Phase 3: Anticipating
wild cards & weak signals

Key features of wild cards
- Nature-related
- Unplanned
- Planned

Key features of weak signals
- Interpretation uncertainty
- Importance uncertainty
- Implication uncertainty



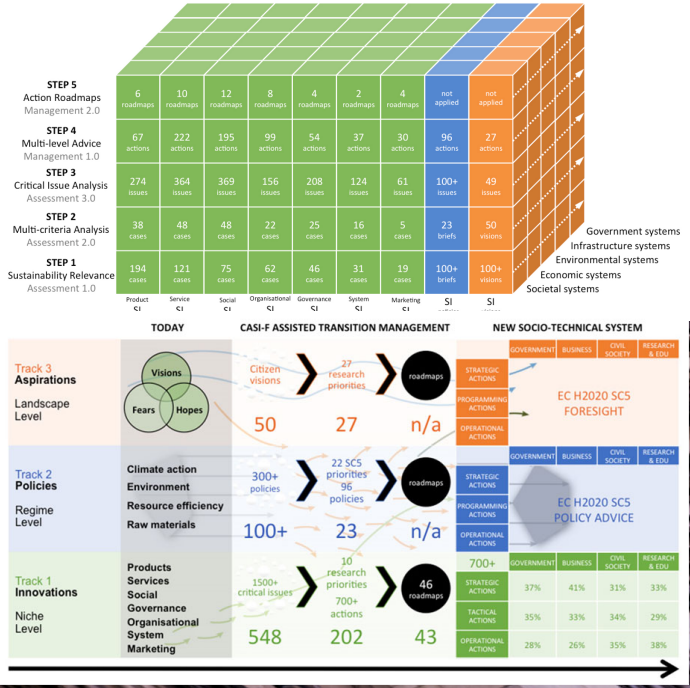
SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)



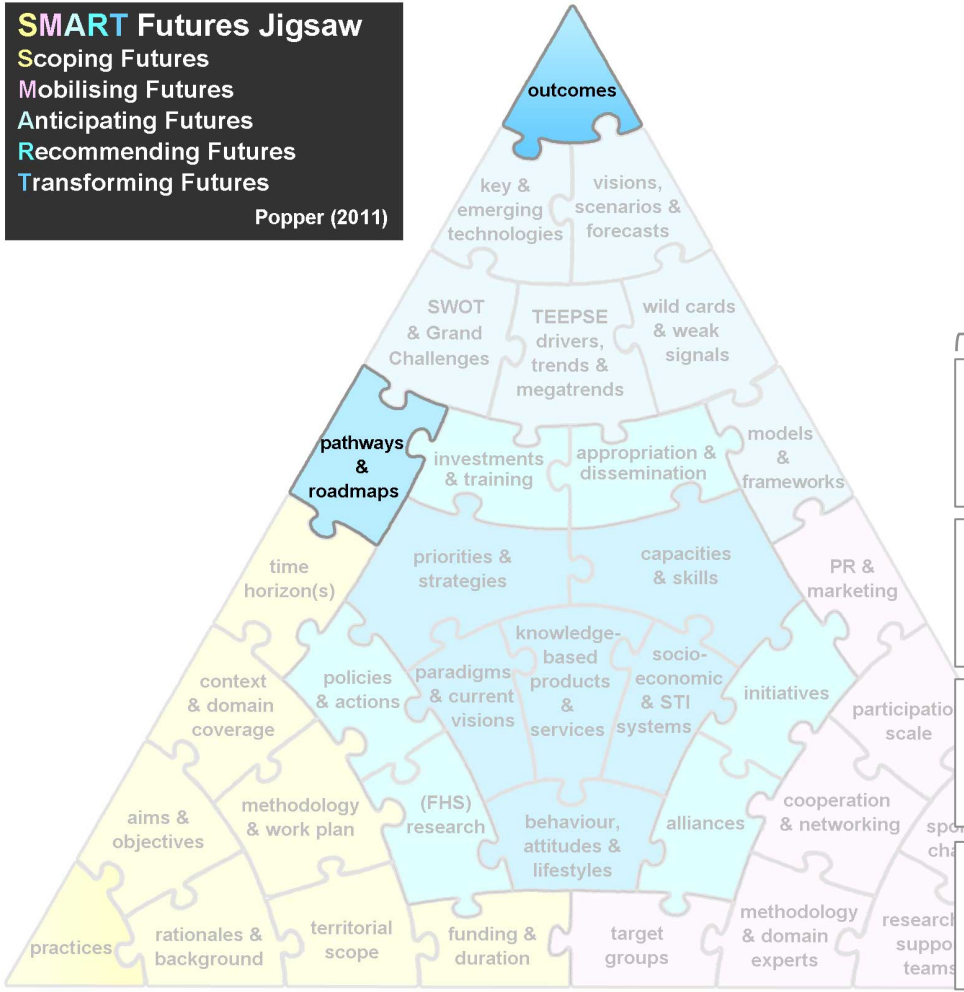
Phase 3: Anticipating
models & frameworks

Common types of models / frameworks
- Qualitative vs. quantitative

Key features of models / frameworks
- Conceptual / methodological / analytical



SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)



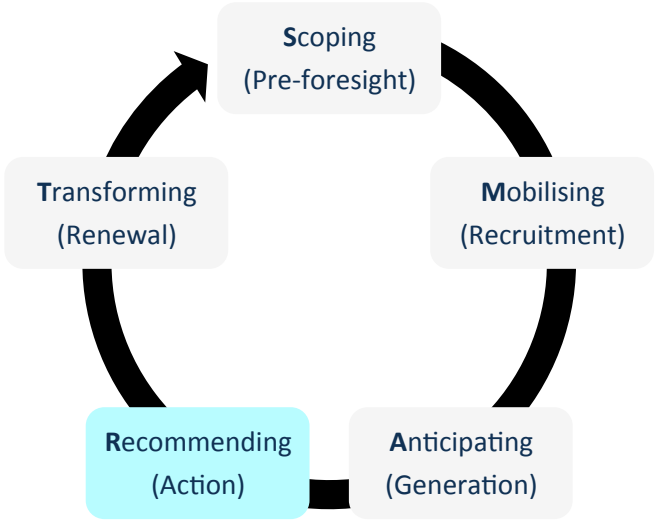
Phase 3: Anticipating
pathways & roadmaps

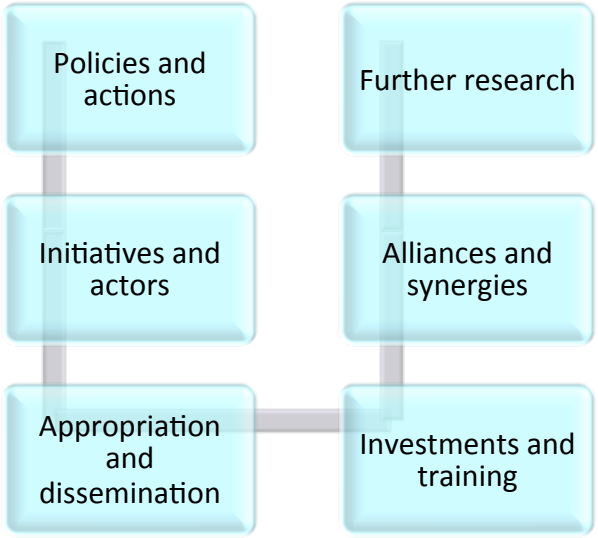
Common types of pathways / roadmaps
- multi-layer & multi-aspect
- linked to critical issues

Layers & Dimensions	Key Aspects			
CONTEXT dimension	Momentum	Foresight	Resources	Mobilisation
PEOPLE dimension	Aptitude		Attitude	
PROCESS dimension	Catalysts		Fosterers	
IMPACT dimension	Transformation		Sustainability	

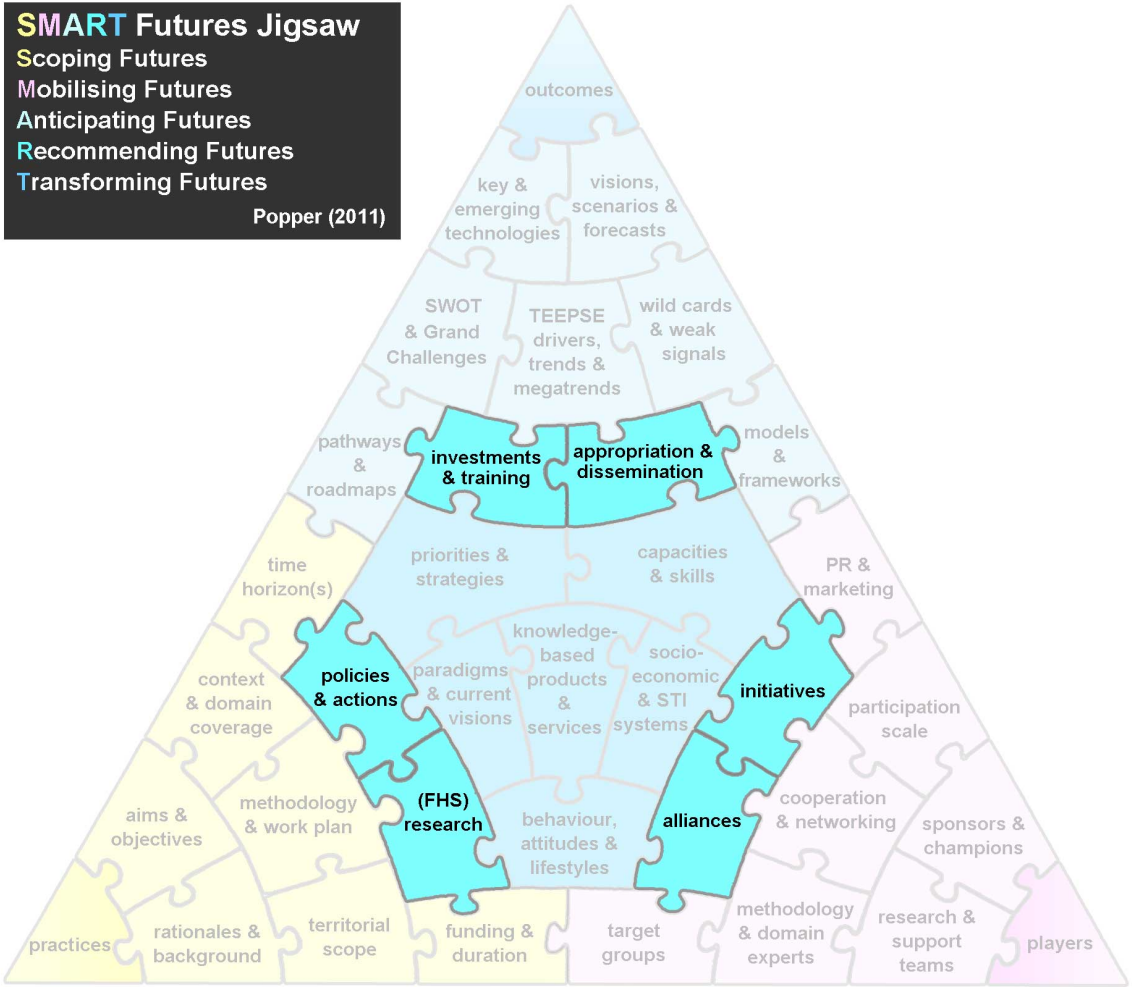
Phase 4: Recommending

Recommending *should be considered a critical phase of the process. Even where recommendations are not explicitly stated in 'formal outputs' (e.g. reports), often they can be detected implicitly in the form of, for example, success or normative scenarios.*





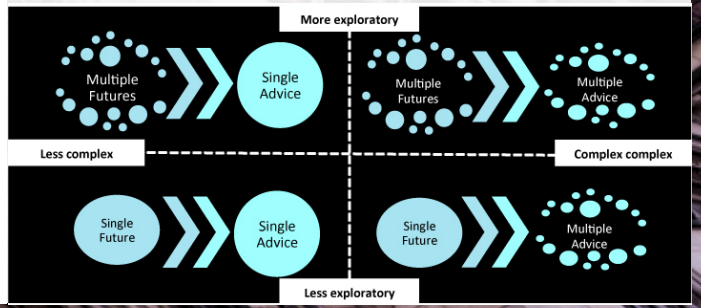
SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)



Phase 4: Recommending

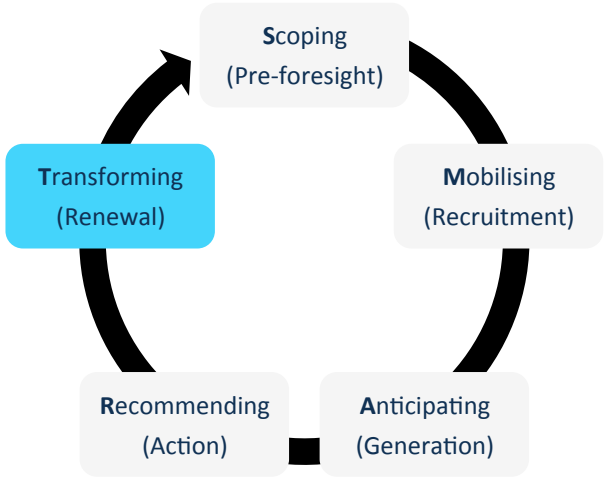
Common types of recommendations
- policies and actions
- initiatives and actors
- appropriation and dissemination
- investments and training
- alliances and synergies
- (Foresight & Horizon Scanning) research

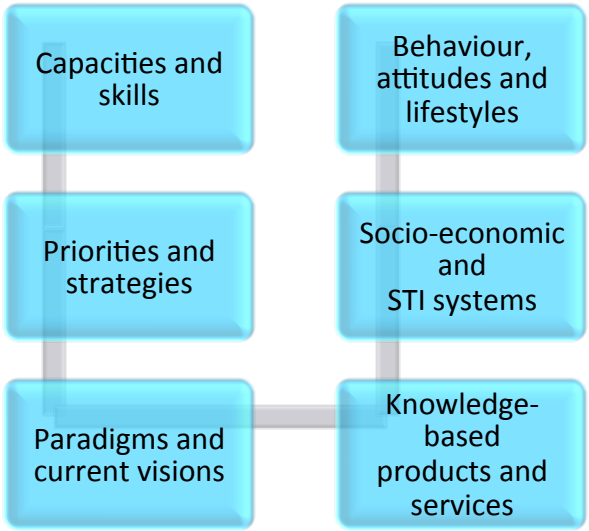
Nature of the recommending phase
- More or less exploratory
- More or less complex



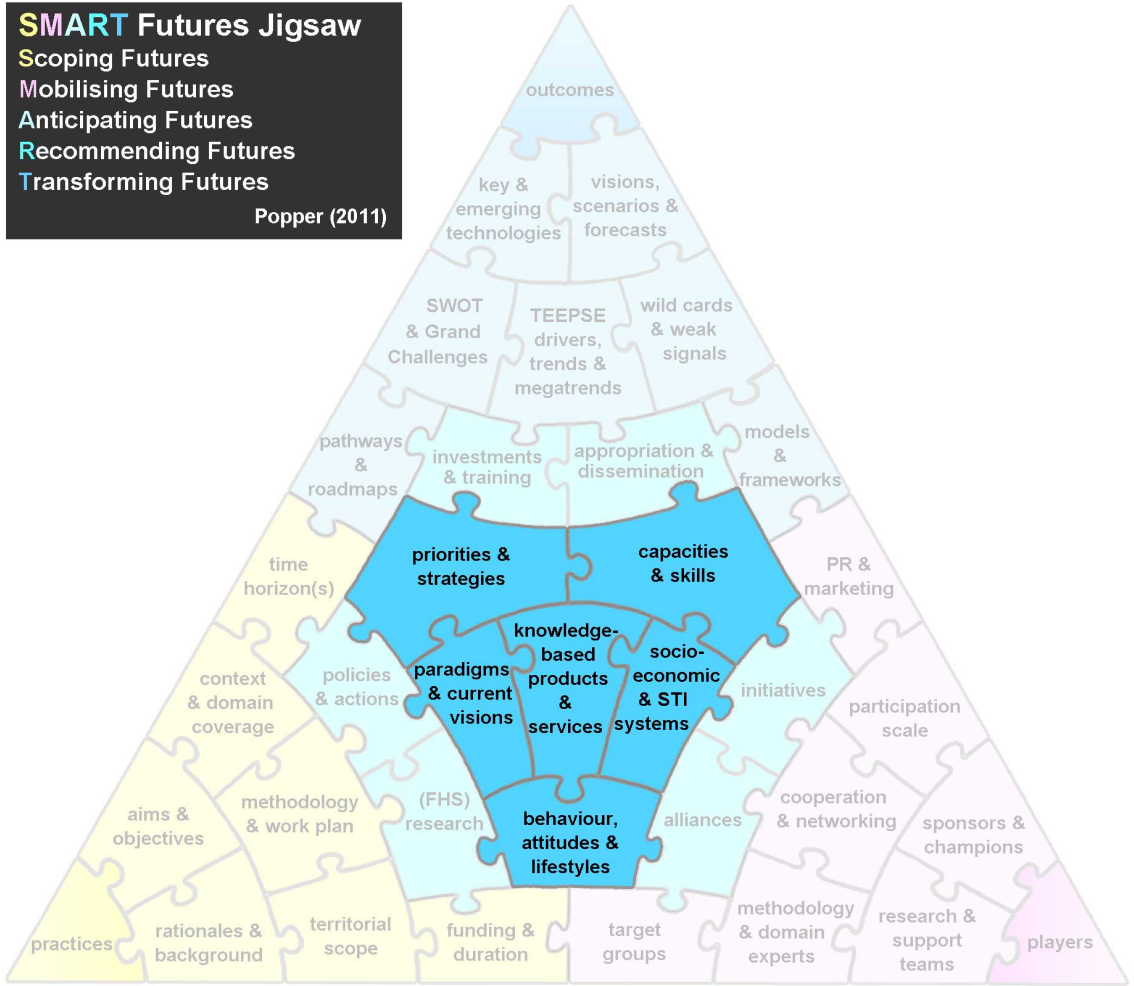
Phase 5: Transforming

Transforming *involves constant monitoring and evaluation in order to assess whether the foresight process has helped to achieve its original objectives and how far results are being acted on. One main challenge here is the development of success indicators to assess foresight related impacts and transformations.*





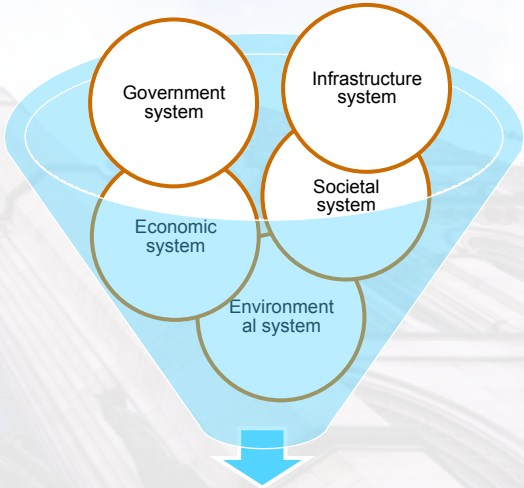
SMART Futures Jigsaw
Scoping Futures
Mobilising Futures
Anticipating Futures
Recommending Futures
Transforming Futures
Popper (2011)



Phase 5: Transforming

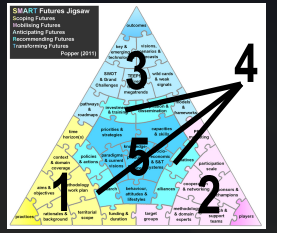
Key areas of transformations

- capacities and skills
- priorities and strategies
- paradigms and current visions
- socio-economic and STI systems
- behaviour, attitudes and lifestyles
- knowledge-based products and services



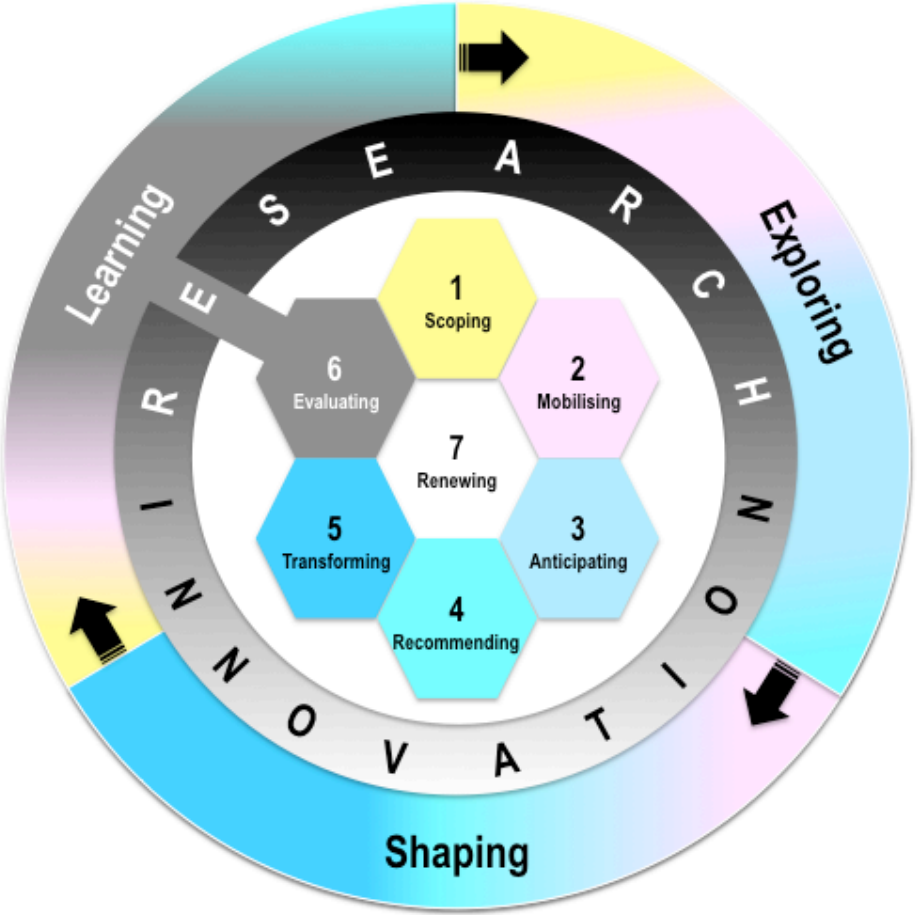
Multi-systemic transformations

From SMART Futures



To SMARTER Futures

- Scoping
- Mobilising
- Anticipating
- Recommending
- Transforming
- Evaluating
- Renewing



Conclusions

- Principle of future-orientation
- Principle of participation
- Principle of evidence
- Principle of multidisciplinarity
- Principle of coordination
- Principle of action orientation

Source: Keenan, M. and Popper, R. (2007)

References

- Popper, R. and Teichler, T. (2011), Practical Guide to Mapping Forward-Looking Practices, Players and Outcomes, 1st Report prepared for the European Foresight Platform (EFP), University of Manchester.
- Georghiou, L., Cassingena H., J., Keenan, M., Miles, I., and Popper, R., editors, (2011), Manual de Prospectiva Tecnológica: Conceptos y Práctica, Mexico: Latin American Faculty of Social Science (FLACSO). [This is a Spanish version of The Handbook of Technology Foresight, and I played a major role as technical editor of this version]
- Georghiou, L., Cassingena H., J., Keenan, M., Miles, I., and Popper, R. (2008), editors, The Handbook of Technology Foresight: Concepts and Practice, Edward Elgar, Cheltenham.
- Keenan, M. and Popper, R. (2007), Research Infrastructures Foresight. A practical guide for policy makers and managers of existing (and future) research infrastructures (RIs), ForeIntegra, Brussels: European Commission, 35pp.

Thank you

rafael.popper@vtt.fi
rafael.popper@manchester.ac.uk