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The OCOPOMO Approach: Conceptualising Stakeholder Participation in Public Policy Development

Prof. Dr. Maria A. Wimmer wimmer@uni-koblenz.de



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Setting the scope: Challenges ahead

- OCOPOMO and its method to engage stakeholders in policy development
- Scenario building, analysis and modelling of policy
- Innovation and impact



Setting the scope: Challenges ahead



- Significant societal transitions and drastic changes in economy, climate and demography
- Longer-term transformations to be mastered and steered





Demands for Open Government and Good Governance Principles



Transparency, accountability, coherence, openness, participation ...





- Appropriate ICT support in policy planning not deployed widely
- Management of complexity in strategy and policy formation
- Development, visualisation and simulation of appropriate policy models usually done by experts
 - black-box approach
- Lack of open collaboration and therewith transparency in identifying the crucial features of complex social environments to inform policy models
- Online participation means not yet deployed widely in strategic decision making







Setting the scope: Challenges ahead

OCOPOMO and its method to engage stakeholders in policy development

Scenario building, analysis and modelling of policy

Innovation and impact



Aims of OCOPOMO Project



 Support key stakeholders to participate in the processes of policy formulation

- Policy analysts, policy operators, wider stakeholder groups of specific policy domains
- Integrate methods and tools of scenario-based policy formation with formal policy modelling
- Develop an integrated ICT platform for efficient policy making
 - Mechanisms of open collaboration along the policy process
 - > Supporting engagement of wide stakeholder groups





OCOPOMO's Integrated Policy Process and Involved Actors





Artefacts along the Process Phases





ICT Toolbox









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What is scenario building in OCOPOMO



Method for foresight according to Geschka (1978):

"systematic, participatory, future intelligence gathering and medium-to-long-term vision building process aimed at present-day decisions and mobilising joint actions"



Collaborative Scenario Building in OCOPOMO



Scenarios

- Are textual descriptions of a perceived view or understanding of a topic under discussion
- Cover existing world status or mental model of stakeholders
- Alternative scenarios may exist or are developed to describe different aspects and /or alternatives
- Different stakeholder groups may develop different sets of scenarios independently
- Some scenarios may also be conflicting among different stakeholder groups
- Scenarios may be extended and therewith advance an existing scenario (nesting scenarios)





Scenarios as instrument for stakeholder engagement



- Scenarios can be developed in a transparent and inter-subjective manner
- Scenarios used as common reference point for formal policy modelling and as communication instrument
- Relevant information and data can be included in scenarios in an unbiased manner by stakeholders
- Assumptions on developments expressed through the scenarios are shared
- Scenarios must be consistent but no common agreement and viewpoint has to be developed
 - Elicitation of critical features
- Scenarios developed by others help to understand their viewpoints and therefore supports acceptability



A detail of a scenario developed for the Kosice Self-Governing Region



I am living with my wife and two children in a three room flat below the top of the house. The house, in which my flat is in, is not well insulated and, hence, has high consumption of energy for both electricity and heating. Since energy prices are increasing and the energy consumption in my house is very high, I am reflecting alternatives both to decrease consumption such as renovation and to switch the source of energy (if possible). Currently, I am recognising that energy consumption is too high and more and more becomes too expensive for me and my family. Hence, I want to reduce costs of energy consumption. For me who am living in a flat, the association of flat owners is responsible for energy issues, *i.e. they have to perform energy audits by law. Citizens need to provide certificates on how* efficient energy use is in the house (energy certificates and energy audits). I have to discuss with my family and neighbours. Together we can consult the association of flat owners for a plan to trigger renovation. The association of flat owners, then, calculates the impact of the renovation, the increased energy price and the reduced energy consumption for the future maintenance costs. Urban householders are obliged to create an association; rural houses are not. An association hires service company/building manager (on fee) who is responsible for dealing with heat and electricity providers. An association may refuse to cooperate with a service company and make arrangements with heat provider on its own. An association itself can be member of a higher association. An association of associations is a board of directors, which e.g. talks with regional or even national governments.



Analysing the scenario ..



I am living with my wife and two children in a three room flat below the top of the house. The house, in which my flat is in, is not well insulated and, hence, has high consumption of energy for both electricity and heating. Since energy prices are increasing and the energy consumption in my house is very high, I am reflecting alternatives both to decrease consumption such as renovation and to switch the source of energy (if possible). Currently, I am recognising that energy consumption is too high and more and more becomes too expensive for me and my family. Hence, I want to reduce costs of energy consumption. For me who am living in a flat, the association of flat owners is responsible for energy issues, i.e. they have to perform energy audits by law. Citizens need to provide certificates on how efficient energy use is in the house (energy certificates and energy audits). I have to discuss with my family and neighbours. Together we can consult the association of flat owners for a plan to trigger renovation. The association of flat owners, then, calculates the impact of the renovation, the increased energy price and the reduced energy consumption for the future maintenance costs. Urban householders are obliged to create an association; rural houses are not. An association hires service company/building manager (on fee) who is responsible for dealing with heat and electricity providers. An association may refuse to cooperate with a service company and make arrangements with heat provider on its own. An association itself can be member of a higher association. An association of associations is a board of directors, which e.g. talks with regional or even national governments.

16 Relations Sbjketsolders

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Class of	Class of objects	Characteristics		
Stakeholders				
\rightarrow Households	\rightarrow House (Flats)	\rightarrow House		
- Flat owner	\rightarrow Heating system	- Established in		
- Flat mates	\rightarrow Energy audits	- Renovated in		
- Neighbour	\rightarrow Message	- Insulation		
\rightarrow Association of flat	- Demand	- Electricity		
owners	- Provide energy	consumption		
\rightarrow Service company	certificate	- <i>Heating consumption</i>		
\rightarrow Government	- Perform energy audit			
- Regional				
- National				



Data derived from scenario (2/2)



SEVENTH FRAMEWORK

Actions:	Rules:	Relations:
\rightarrow Flat owner	\rightarrow IF energy prices are	\rightarrow being
- recognising	high AND energy	responsible for
- reflecting alternatives	consumption is very	\rightarrow living in
- decreasing consumption	high	\rightarrow sharing flat
- switching source of	THEN flat owners	with
energy	reflect alternatives to	\rightarrow providing
- reducing costs	decrease consumption	certificates to
- discussing with	AND/OR to switch the	\rightarrow belonging to
- consulting	source of energy.	
- creating an association	\rightarrow IF renovation is	
\rightarrow Association of flat owners	needed AND support	
- trigger renovation	is asked for	
- calculating impact	THEN energy audit	
- hiring service company	AND certificate are	
- perform energy audits	needed	

CCD Tool supporting data extraction – Annotation of Scenarios



_ac 🚺 Atomausstieg.ccd_dia 👔 Atomausstieg.ccd_act 👔 Atomausstieg.ccd_ins 👔 Kosice.ccd_actions 👔 Kosice.ccd_diagram 😰 Kosice.ccd 🛙 🥍	° 🗖	≥ CCD Annotation View 🛛 📴 Outline 🍸 🗖 🗖
	<u>~ </u>	□ 🔲 🔶 CCD
		🖃 🖳 🔶 Actors
citizen and I am retired director of a power plant in Kosice. I am not a decision maker any more, so I can express only		🖃 🔲 🔶 Actor: Heat Producer
now good energy policy could look like.		File Annotation heat producer
sumption in Kosice city in recent years decreased substantially. In 1987 the demand per year was about 7EOODEOOO GJ[maw1],		Relation: Heat Producer produces I
is 4F400E000 GJ[m2]. We can say that this is thanks to new technologies and better insulation of buildings.		Relation: Heat Producer uses Source
have in kosice one very strong and dominant near producer, TEKO, which uses gas from Russia and coal from Okraine. The		Relation: Heat Producer ISIN
sources is ca. I'l coar and gas. Inis power plantactor (name: Heat Producer, description: null) cy. The current cechnology is working were		
uncertos economic point ol view. The loca for the wa		Relation: Heat Producer Covering
Soperation with other heat producers in Monte city. But in fact they cover the Monte energy (heating) demand by 55%,		Relation: Heat Producer HasAgreen
os los de competition.		Relation: Heat Producer delivering
the electricity. The incidentary mainternation (normality waste, They burneduct of the utilization is beat, But it cannot fully		Relation: Heat Producer rus Agree
anabilities due to an agreement with TEKO. In consequence, 2/3 of its nower is wasted. The canadity of KOSIT is 500E000 GI		Relation: Heat Producer constitution
to the agreement, it is allowed to sell the city only 1806000 GJ. If KOSIT could deliver 5006000 GJ energy from		Relation: Heat Producer actualCO2
o the pipe system, a CO2 coefficient of 350 kg/MWh would be reached. This is a high coefficient, but it is produced as the		Relation: Heat Producer sellingPrice
be burned anyway. For comparison, CO2 coefficient for burning Coal is 360 kg/NWh, and for Gas it accounts for 230 kg/NWh.		🗄 🔲 🔶 Actor: Power Plant
ghted CO2 coefficient for TEKO that uses combination of Gas and Coal accounts for 322 kg/MWh[VAC3].		🖃 🔲 🔶 Actor: Incinerator
ove, the cooperation between heat producers is based on an agreement between TEKO and its competitors, which does not allow		🗉 🔲 🔶 Actor: Citizen
to deliver energy and heat beyond the 5 % of the total needs. This situation does not represent a free market competition.		🗉 🔲 🔶 Actor: Private Investor
s interest, the main heat producer does not let the incinerator to use the system to a greater extent. Especially when		🖻 📃 🔶 Actor: City
he heating prices, this is not a good situation: the price for energy from power plant is 18 eur/GJ, while from incinerator		🗉 🔲 🔶 Objects
GJ. If the incinerator was allowed to provide more energy, the energy price would decrease to 15 eur/GJ. As a citizen I		🕀 📃 🔶 Actions
4 <u>eur</u> /GJ only because the main power plant (owner of the heating exchanger) doesn ^O t allow the competitor to sell more.		🗉 📃 💠 ActionInputOutputs
not happy about the energy costs, they start thinking about alternative solutions like heat pumps. For example, low		Enums
sources exist around Kosice, which may provide 1E200E000 GJ per year without CO2. Private investors already introduce this	-	Variables
though on a small scale. Also on the individual level people invest in individual gas furnaces at homes or flats.		······ 🔄 💠 Annotations
ave is that heat transfer is associated with losses. Modern gas furnaces are as effective as large heating stoves, so some		
I them at home. They utilize fossil fuels, but by avoiding the transmission losses, this contributes to some reduction in		
there is a versibility in Veries to have a sustainable utilization of versus of the years of versus ble ensure		
to chere is a possibility in Addite to have a subtainable utilization of resources with the dage of tenewalte chergy asymptotic if Addite chergy and the second 14 bm from Vosice and anget in the second		
example in Marke City includees generating energy, which is located if AM from Marke agglomeration, it will generate		
surce was hought by a commany with Bussian and French owners (a gas commany), which has stonned any investments in this		
of other interests to sell gas from Russia (contradicting interests).		
cular problem is that in order to utilize the geothermal energy, an existing heating exchangers is needed, which belongs		
producer (TEKO).		
psible energy deco-sourcesó will be introduced, the TEKO power plant will need to produce only 700Ê000 GJ to satisfy the	~	
rios Expert v0.1.txt		< >



CCD Tool Supporting Visualisation: Ontology







CCD Tool Supporting Traceability



PROGRAMME

🖶 Annotation - Eclipse Platform 1 a |> Edit Diagram Navigate Search Project Run CVS Window Help File V - F 🗄 Outline 💷 Bookmarks 🔊 CCD Annotation View 🔀 😰 LondonHousing.ccd 🛛 🔪 🚺 LondonHousing.ccd_actions LondonHousing.ccd 898 To work with London's boroughs to ensure the effective local delivery of our shared aims. 🖃 🥅 🔶 CCD London Housing 8.. 899 😑 📄 🔶 Actors Annotation Tool 🖻 📃 🔶 Actor GLA 900 🔲 🔶 File Annotation GLA 901 File Annotation hat my housing policies are already having such a posit 902 3.1 Delivering across London 903 🖻 🔲 🔶 Actor Borough 904 Vision To develop, through the HCA, new partnerships and better approaches to providing homes in successful communities. File Annotation BOROUGHS 905 London now has a unique set of arrangements in place - with the Mayor responsible for housing strategy and investment, and the HCA File Annotation BOROUGHS CD Tool 906 and its London board, chaired by the Mayor, responsible for housing delivery. These arrangements provide an opportunity for the 🚊 🥅 🔶 Actor Finance House 907 Mayor, the HCA and the boroughs to work much more closely and effectively 🔭 in the past to deliver the homes that London File Annotation finance houses 908 developing better relationships with the development industry as a whole, and creating new ways of working Bu Actor Developer here is a need File Annotation DEVELOPERS to build on these devolved arrangements, to ensure that local communities have greater engagement in and support for how housing is delivered in their local area. 😑 🥅 🔶 Actor HCA London's housing market has been seriously affected by recent economic and financial conditions. The economic downturn has created 🥅 🔶 File Annotation HCA major challenges in maintaining delivery of London's housing supply pipeline. File Annotation The HCA is the primary agency for the delivery of this : But it is essential that delivery is maintained, as the downturn has not, in any way, reduced the need and demand for more homes Relation responsible for 😑 🔲 🔶 Actor Mayor in the capital (see Section 1.1). In fact, many problems have been exacerbated. Providing an adequate supply of high-quality homes 🔲 🔶 File Annotation Mayor is also vital to maintain London's international competitiveness, and the construction industry itself is a major source of employment in the capital. In addition, a loss in capacity in the development sector will impede market recovery for London. File Annotation The Mayor has negotiated affordable housing Control Relation prepare and publish Selection borough-developer-scenario-2.txt Housing Strategy Final Feb10.txt RosewellInterview 28-06-11.text MarketDownturn.txt 📄 🔶 File Annotation Mayor must prepare and publish a statutory Londor 🥯 *LondonHousing.ccd diagram 🔀 File Annotation Mayor responsible for housing strategy and invest 😑 🥅 🔶 Relation work with 🔨 😳 Palette 🔲 🔶 File Annotation The Mayor will work with the HCA and with borough Household income Infrastructure LondonHousingStrategyObjective Housing 📐 🗨 🔍 🗔 🗕 🗸 File Annotation These arrangements provide an opportunity for the □ | ♦ Relation work with C Ohierts File Annotation The Mayor will work with the HCA and with borough is-a has is-a maximum household income Actor File Annotation These arrangements provide an opportunity for the Object File Annotation HCA and its London board, chaired by the Mayor, r Actor Household Housing SocialHousing IntermediateHousing Household LondonHousingStrategy Connections Relation household income Actor Supertype 😑 🦳 🔶 Objects responsible for Object Supertype 😑 📄 🔶 Object Housing is-a File Annotation proportion of affordable within each of those types Relation HCA 🚊 🥅 🔶 Attribute is affordable OwnerOccupiedHousing File Annotation The ratio of lower quartile earnings to lower quartile 🥅 🔶 Attribute Value true 🔽 🔶 Attribute Value false prepare and publish 🔶 GLA 🔶 Borouah 😑 🥅 🔶 Attribute is market work with 🔲 🔶 Attribute Value true work with 🥅 🔶 Attribute Value false CD Tool A Mayor 😑 🥅 🔶 Attribute tenure > Attribute Value owned Attribute Value rented Properties 🖾 Attribute Value rented and owned Relation 😑 🥅 🔶 Object Private Housing 🕅 🔶 File Annotation market Property Value Core File Annotation In the current period of housing market uncertainty File Annotation The Mayor will work with the HCA and with boroughs to deliver these targets.,... Annotations □ → Attribute isAffordable Appearance Description 🔲 🔶 Attribute Value true 💷 work with Name 🔲 🔶 Attribute Value false Source Actor Mayor 😑 🥅 🔶 Attribute tenure Actor HCA Target 🔲 🔶 Attribute Value owned Attribute Value rented > 🕈 🕅 🗗 e 🕄 🎒 SEVENTH FRAMEWORK



Transformation: From narrative text to formal statements in code





Visualising Transformation for Stakeholders: **OCOPOMO Identification of Aspects of Relationships**



Phrase in scenario description	Aspect (issue)	Category	Characteristics of aspects	Model component
living in a three room flat house is not well insulated reflecting alternatives to decrease [energy] consumption and to switch the source of energy [to renewable and green]	Energy consumption	State: Alternative or multivariate	If alternative: {"nuclear", "gas", "solar", "wind", "bio-mass", "hydro-thermic"} or if multivariate: <nuclear <math="">x_s per cent, gas x_f per cent, solar x_n per cent, wind x_w per cent, bio-mass x_b per cent, hydro- thermic x_h per cent></nuclear>	Condition part of a rule in an agent's rulebase, fact
		Goal (description of desired future state)		Also a fact
	consume	State change (ways and means, measures to be taken)	Action description: insulate house to reduce energy consumption switch to green energy provider	Action part of a rule in an agent's rulebase, to be determined by analysing possible ways from current states to goals
	Household	Actor	Endowed with a rule base, a fact base and goals	Agent class

Visualising Transformation for Stakeholders: **OCOPOMO Detailing Facts**



SEVENTH FRAME

Model structure	Model comp	Name	Natural language description	Formal description (Code)
	Structure	Household	Agent class	class household{}
Agent "Household"	Facts	Acts Current state Desired state	Current consumption of energy per household	Class ConsumptionState { double InsulationClass;
			Current state of house insulation	<pre>double soilCapacity; double priceOfSolarEnergy;</pre>
			Current price for heating energy per energy type	<pre>double windCapacity; double priceOfWindEnergy;}</pre>
			Desired insulation of house	PlanningGoal [objective insulation] [objective minimumCost]
			Desired consumption of energy in households	[objective greenEnergy] [priority high]
Agent "regionalGo vernment"	Struc- ture	regionalGo vernment	Agent class	Class regionalGovernment{}
	Facts	Desired state	Maximum necessary import of gas from UA	PlanningGoal [objective reduceGasImport]



Visualising Transformation for Stakeholders: **OCOPOMO Identification of Rules**



Model structure	Model comp	Name	Natural language description	Formal description (Code)
Agent	Struct.	Househ	Agent class	class household{}
"Household"	Facts	Risk	House owner will not insulate house Government will not subsidise investment in soilPlants on house GreenEnergy Production cost might heavily exceed the price of nuclearEnerg.	Risk [noInsulation]; Risk [HighEnergyCosts]; Risk [noInvestmentSubsidy]; Risk [highCostsGreenEnergy]; Risk [lowCostsNuclearEnergy]
	Rules		If it is true that investment in SoilPlants is subsidised by Government AND if houseOwner insulates house AND if GreenEnergy Production cost do not exceed prices of nuclearEnergy AND if GreenEnergy Production cost do not exceed prices of gasEnergy AND if enough Sun to produce SoilEnergy then invest in soilEnergy plants	<pre>If (noRisk){ Purchase(SoilPlants) AND Receive(InvestmentSubsidy) }</pre>

Simulation Outcome for Stakeholders: Model- **OCOPOM** based Scenario and Graphical Representations



- Simulation runs (step 5 in the OCOPOMO policy development) process) generate audit trails and statistical charts
 - Not necessarily readable for stakeholder
- Policy modellers transform simulation outcome into readable format
 - Model-based scenarios (text description about what happened in the simulation)
 - Supported by charts

27







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OCOPOMO policy development process: integrated approach from narrative scenarios to formal policy models

- Iterative process of identifying the parameters and features informing formal policy models
- Consistent conceptual description (CCD): Incorporating traceability in the iterative policy development process
- Open collaboration in policy development through integrated web
 2.0 based e-participation toolbox
 - Enabling policy analysts, policy operators and wider stakeholder groups to work together collaboratively



Expected impact



- Contribution to strategic policies and to implement open government
- Contribution to transform government and administration to an open, effective and efficient participative governance (good governance principles)
- Provide new opportunities for open discourse among stakeholders of the policy domain and the policy experts
 - > in stakeholder-oriented scenario generation
 - in evaluation of formal policy models
- Improve transparency and traceability in strategic decision making by involving different stakeholders in the participative process via the open collaboration platform





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Many thanks for your attention!

