The German Energy transition at the local level - A Discourse Network Analysis for identifying fostering and hindering discourse patterns and network structures

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Abstract

The German Energiewende is an enormous and far-reaching project, consisting of a huge variety of goals that aim in transiting Germany to a reduced and greener energy consumption.
While the far-reaching goals are set by the federal government, achieving the goals is crucially dependent on their implementation at the local level. Empirically a huge variation in the implementation of this goals at the local level can be observed. This variation can only partly be explained by independent preconditions of the state (such as average income, size or land-use). This paper studies more subtle varying factors, that might have an influence on the successful implementation of renewable energies. Based on the agenda setting approach and the Advocacy Coalition Framework, this paper analyzes the relation between discourses, local policy network structures and the success of a region in implementing renewable energies. Therefor a Discourse Network Analysis (DNA) is conducted which identifies differences in discourse contents and discourse network structures in four counties (two successful and two unsuccessful). Results support the hypotheses that the discourse content is strongly dependent on whether a county is rural or urban. Furthermore results show that the discourse network structures of successful counties tend to become more open and consensual over time, while in unsuccessful counties the discourse network structures become more clustered. This is a strong indicator for the connection between discourses, their network structures and the success of the successful implementation of the energy transition.

The German Energiewende (energy transition towards a green energy supply) is a unique national project. It represents the German response to at least three policy problems: 1) global climate change, 2) dependence on foreign energy resources, and 3) the wish to opt out of nuclear energy. Also the official plan for the transition was initiated by the federal government, most renewable energy project implementation under this policy takes place at the state and county level. Involving communities in the decision making process helps to attenuate controversy arising from NIMBYism, where the public is generally supportive of renewable energies but prefers to have these projects developed outside of their own "back yard". Some counties have made significant progress towards a transition to renewable energies, while others are lacking behind. This paper uses a local agenda-setting approach and network analysis to understand variation in county implementation of renewable energy projects.

This paper studies two important questions within local policy making: which issues are on the agenda and why? And how do the actor constellations of important policy participants look like? Starting from an agenda-setting perspective those issues are expected to be more present on the (media) agenda which are dealing with problems that are in close proximity and lead to a consternation within the respective population (cf. Jäckel, 2011). Furthermore the agenda-setting approach expects a high level of consensus to be necessary in order to reach policy outcomes and a change of the status quo Liu *et al.* (cf. 2010).

The DNA method applied in this paper is a relatively new approach which allows to analyze discourses in form of networks; thus systematizing the qualitative coding of documents and structuring the results of the analysis in form of actors cooccurence networks and networks that affiliate actors to categories of statements. DNA is a valuable approach in order to make discourse analysis replicable and structured and to satisfy the conditions for scientific methods set by Sabatier (2000). The aim of this paper lies in identifying different discourse patterns—content of discourses as well as actor constellations—and their relation to successful and unsuccessful implementation of renewable energies at the county level.

The first section introduces the German case of the energy transition and describes the puzzle lying in the huge variance in implementing renewable energies. The second section will be dedicated to introducing the local agenda-setting approach and the Advocacy Coalition Framework and shows how they can be fruitfully combined. Based on the puzzle and the theoretical foundation the hypotheses will be developed and introduced in section three. The fourth section delineates the method of difference for the case selection Mill (1882); it describes the idea behind this approach and the data collection necessary therefor. Afterward the methodological coding procedure of the DNA will be introduced. The following section shows the testing of the hypothesis and the results. The paper concludes with a discussion of the results, the contribution of this analysis and open

research questions.

The German Energy transition - initial position, public awareness and public opinion

Germany gave itself the challenge to transit to green energies until the year 2050. This transition includes concrete goals, for implementing renewable energies and reducing greenhouse gas emissions. The Federal Ministry of Economic Affairs and Energy (Former Federal Ministry of Economic Affairs and Technology) states the following five major goals: (1) reducing the greenhouse gases by 40 % until 2020 and by at least 80 % until 2050; (2) 60 % of the gross final energy consumption and 80 % of the electricity consumption should be produced by renewable energies in the year 2050; (3) the energy consumption should be decreased by 50 % (as compared to 2008), thus a yearly increase of the energy productivity by 2,1 % will be necessary, (4) the electricity consumption should be decreased by 25 % in 2050 as compared to 2008, a decrease by 10 % should be reached in 2020; the final energy consumption in the mobility sector should be reduced by 40 % as compared to 2005 and finally (5) the energetic remodeling of buildings should be increased to 2 % of the fixed property or real estate per year (BMWi & BMU, 2012, 3). After the nuclear catastrophe in Fukushima the German government decided to opt-out of nuclear energy, not least because of a high pressure from the public. The majority of the German population still supports the shut-down of the nuclear power plants, due to the incalculable risk of this form of energy production. Thus it is only logical, that a majority of the Germans favors the energy transition towards renewable energies in general. But besides this general acceptance various and plenty resentments exist when it comes to the implementation of renewable energies and the building of necessary infrastructure for a decentralized energy provision, such as the expansion of the grid or pumped storage hydro power stations. Hereby Germany has to deal with its own geographical constrains. As compared to the USA Germany is a relatively small country[1] with a high population density.[2] Capable areas for renewable energies—which need a lot more space for the production than conventional energies—are sparse and it is difficult to find construction sides where effects on residents can be eliminated.

Studying discourse networks in local policy making

While decided on the federal level, the states and counties play a crucial role in the transition process. Many counties have made regional decisions and master plans that even exceed the goals of the Federal Republic. However many other counties are lacking far behind.

[1] For comparison: USA: 9.8 Mio. km^2; GER: 360.000 km^2

[2] inhabitants per km^2: USA: 33 ; GER: 226

Figure (1) gives an overview over the percentage of counties that have implemented a certain ratio of renewable energies in the two German states Baden-Württemberg (BW) and Nordrhein-Westfalen (NRW).[3] The figure shows the large discrepancy between the implementation rates. While in both states most counties produce less than 20% of their consumption with renewable energies, the tendency in BW looks currently slightly better.

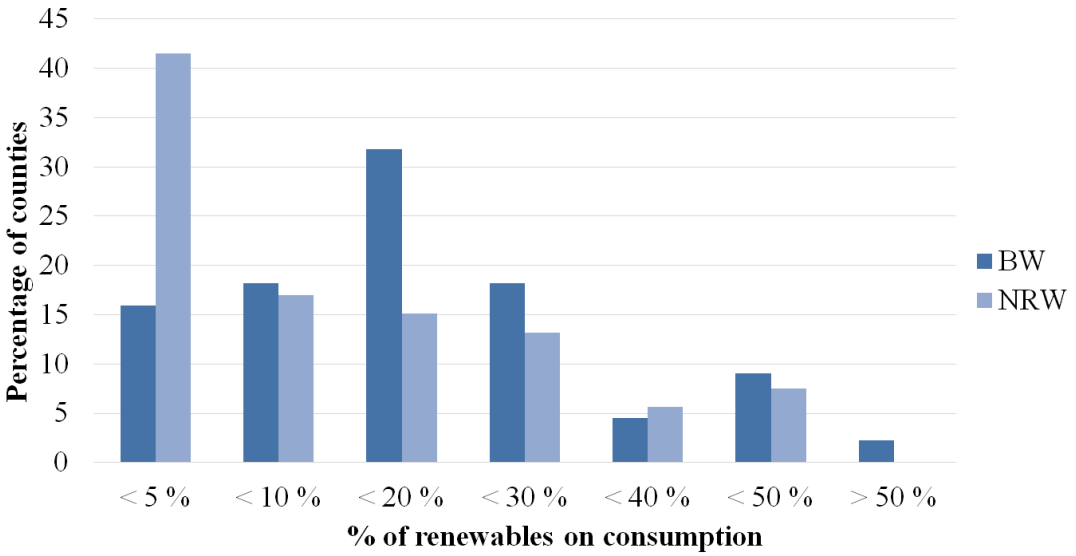

Figure 1: Renewable energies implementation variance in 2013

Successful and unsuccessful counties are found in all regions and with various economical, political and geographical preconditions. Regression analysis gives puzzling results as to which effect the preconditions have on the implementation.[4]
The question how the differences in local energy policy making can be explained remains open.

To understand why counties differ in the way they implement the energy transition at the local level, it is crucial to have a closer look at the issues that the local policy makers deal with. The *agenda setting* approach helps us to understand which issues make it onto the agenda. Liu *et al.* (2010, 71) summarize agenda setting as the "process in which certain public problems are identified, recognized, and defined, and specific solutions or alternatives are generated, considered, and attached to these problems." Furthermore the agenda setting approach by Kingdon (1995) studies not only policy outcomes but is more interested in the predecision phase of the policy process: "what problems attract attention and how policy agendas are set (and by whom), and what alternative solutions are being seriously considered." (Liu *et al.*, 2010, 71). There exist major structural difference between rural and urban areas, which might have a crucial impact on the policy

[3]Own calculation based on the data set provided by the German Society of Solar Energy (*Deutsche Gesellschaf für Solarenergie e.V.* (DGS)), available at energymap.info.

[4]An overview of the regression analysis and its results will be part of the more extensive version of this paper.

discourses and thus on the implementation of renewable energies. The current study applies two aspects of the agenda-setting approach in order to study variations occurring in the policy discourse and the constellations of policy participants between urban and rural areas: *issue selection* based on local salience (moderated through consternation and proximity) and (networks of) important policy participants.

The agenda setting approach expects issue to be on the agenda more likely if they induce a personal consternation and/or are in proximity to the respective policy makers (cf. Jäckel, 2011). Both aspects increase the salience of the issue for the public as well as for local policy makers. Structural differences between rural and urban areas predetermine which energy related issues induce personal consternation and/or are in proximity. But what structural differences might have a crucial impact on policy processes and outcomes? One major structural difference is the space available for infrastructural changes. For example in urban areas the narrow space will not allow the construction of huge power plants, e.g. wind power plants or pumped storage hydro power stations. Thus the daily life of the urban area residents is not expected to change through the direct burdens of renewable energies; like the noise of the power plants or relocation. Based on the fact that the direct burdens of the transition will not be to present in urban areas, categories like ecological and civil arguments [e.g. burdens for the public] will play a less important role in the discourse.

Other important structural differences are of socioeconomic nature. In areas with a weak economy the population might be more affected by the increasing costs of the overall transition process. Thus it is expected that economical arguments will play a major important role in the discourse about the energy transition within urban areas with a higher unemployment rate and lower average incomes. Supporters of the energy transition are expected to focus on the positive economical arguments; such as job opportunities and added value staying in the region. While opponents might argument with negative economic aspects like rising energy prices and a higher unemployment rate in the coal mining sector. This leads to the following hypothesis:

H1: In urban counties economical arguments will play a more important role in the discourse and are more contested, than in rural counties.

On the other hand implementation of renewable energy data shows, that industrial regions are not necessarily lacking behind in general. Hindering factors are present in wealthier more rural regions as well, but based on the agenda setting approach we assume these factors to be different. Rural areas are crucial when it comes to set up the necessary power plants and net capacities. Capable areas are sparse and often times close to residential areas. The transition process might influence the daily life of rural area residents due to burdens that come with e.g. the construction and maintenance of power plants

or grid infrastructure. Leading to a high personal consternation and a close proximity of the issue to the local residents. Thus hindering reasons might include that the burdens of renewable energies—like the noise level or necessary relocation—are to high and that the construction and maintenance will have a huge negative impact on the environment. In rural areas with a well functioning economy rising costs for energy are not leading to a direct personal consternation. Thus economical aspects are expected to play a less important role in the policy discourse. Supporters might focus less on economical aspects and emphasize for example the normative value of the energy transition, long term benefits and so forth. This leads to the following hypothesis:

H2: In rural counties civil and ecological aspects will play a more important role in the discourse, than in urban counties.

Beside the issues on the agenda, another factor for explaining variation in implementation could be the actor constellations at the local level. The agenda-setting approach emphasizes the importance of participants involved in policy making (see for example Liu *et al.*, 2010). Policy discourses and outcomes may vary substantially depending on the actors involved in the discourses, their beliefs and the coalitions they build. The Advocacy Coalition Framework (ACF) emphasizes the importance of actor constellations within the policy process as well (see for example Sabatier & Jenkins-Smith, 1993, 1999; Sabatier & Weible, 2007). According to the ACF coalitions form around shared (policy core) beliefs, which will be studied more closely within this paper. Observing the actor constellations can—among other things—give clues on the extent to which opponents and supporters of the transition are able to collaborate and 'speak with one voice', whether local initiatives for or against the transition are able to position themselves in the political process and which actors are dominating the discourse with their beliefs and interests. Combining the language of the ACF an the agenda-setting approach, problems for policy participants arise through proximity of issues that are not inline with policy core beliefs (e.g. pondering the environment).

Different actor constellations are expected to vary in their ability to address and solve policy problems. Liu *et al.* (2010, 83) identify consensus building to be central within local policy decision making. They describe consensus building as "a process to mobilize similar interests and settle conflicts that involve multiple parties. In many cases, local decision making involves the full range of stakeholders." (Liu *et al.*, 2010, 83). Therefor the success of a county is expected to be reflected in its (discourse) network. Structural differences between discourse networks of successful and unsuccessful counties are anticipated.

The energy transition is a long term process with many actors involved. It is not a decision process in which a clear pro and contra coalition can be identified but rather involves incremental changes from the status quo. For this incremental positive change an

open discourse and the absence of major conflict lines will be favoring. Successful counties are thus expected to have a more open discourse and a consensus based structure. Actors are not expected to be highly clustered in belief coalitions and conflict lines are not very present within the discourse. Thus we will verify the following hypothesis:

H3a: Over time the policy discourse in successful counties will become more open and disagreement between actors will decrease.

On the other hand the discourse in unsuccessful counties is expected to be less open and have a development towards more clustering and more cleavage lines; as hypothesis H3b states it:

H3b: Over time the policy discourse in unsuccessful counties will become more clustered and disagreement between actors will increase.

The operationalization of these hypotheses in network terms is described in detail within the method section.

In order to test these hypothesis it is necessary to identify successful and unsuccessful counties in wealthy rural as well as in less wealthy urban areas. The counties have very diverse preconditions, thus a careful case selection is necessary in order to make sure, that the differences are not based on these preconditions and that actor constellations and discourses might actually make the difference. In order to fulfill this task the cases were selected based on an extensive data base and with a statistical case matching approach described in the following section.

Methods

Comparable case selection

The variance of the implementation of renewable energies at the community level. Qualitative methods are often accompanied by an intransparent case selection based on pre-knowledge of the authors and may thus seem to appear from nowhere, but in qualitative research more than anywhere else "the cases you choose affect the answers you get" Geddes (1990). Thus in order to produce a replicable analysis it is most important, that the case selection is replicable itself (Dafoe, 2014; Nielsen, 2014b). Statistical matching methods are a good way of choosing the best available cases and as Nielsen (2014b, 23) puts it, they "offer substantial improvements over traditional practices of case selection: they ensure that "most similar" cases are in fact most similar, they make scope conditions, assumptions, and measurement explicit, and they make case selection transparent and replicable." and furthermore "Matching improves the credibility of case selection by providing comparisons to the cases not selected." (Nielsen, 2014b, 18).

For answering the research questions of this paper and testing the hypothesis a proper case selection is crucial. When analyzing the discourses, taking the implementation of renewable energies as the outcome, it is important to account for varying preconditions in the areas. For example an area that has only a low potential to install renewable energies can not per se be seen as having a worse policy course. Thus for testing the hypothesis it is necessary to select cases that are most similar in their economical, geographical and political preconditions and most different in their implementation of renewable energies. Matching of cases helps hereby to account for the various preconditions. To fulfill this task the following quantitative approach was taken:

To compare rural with urban and industrial areas two out of the sixteen German states where chosen: *Baden-Wrttemberg (BW)* and *Nordrhein-Westfalen (NRW)*. *BW* is rural in many areas, has a concentrated (car) industry in the greater area of the state capital *Stuttgart* and a low overall unemployment rate. The state was long led by a conservative government (*CDU*), but government changed in 2011 when the nuclear catastrophe in Fukushima fostered the green party. The government currently consists of the green party (*Die Grnen*) and the social democrats (*SPD*), and is led by the first green prime minister of the state in Germany. Geographically the state is coined rurally and by forest. Tourism is an important source of income, especially in southern *BW*. There are areas with high potentials of renewable energies, not rarely these potential areas coincide with touristic and/or forest areas. This might lead to potential controversies between fostering the energy transition and harming the local tourism industry as well as between fostering the energy transition and harming the environment. *NRW* on the opposite includes the most industrial areas in Germany. Especially the Ruhr region was coined by coal mining and is under permanent structural change since the beginning of the coal crisis. Unemployment rates are high in many areas. Through the energy transition the area experiences a double burden due to rising energy prices and decreasing employment in the industrial sector because of the closing of coal power plants. The social democrats are the major political force in the state, representing the workers interests. Potential areas for renewable energies are present. Since the themes of developing the industry and the unemployment rate might be dominating in this area, the topics around the energy transition might be framed more economically. Therefor a major possible conflict line in the public discourse may be seeing the energy transition as a threat or as an economical chance. Electricity has to be affordable also for low income households, on the other hand the energy transition and the related opportunities could be a great chance for the regions development.

BW consists of 44 and *NRW* of 53 counties. For these 97 counties data was collected on general preconditions (size of the county, number of inhabitants), on economical preconditions (average income per inhabitant, unemployment rate, agriculture—percentage of GDP produced in this sector), on political preconditions (election results of the last

local elections—for the four major parties) and on geographical preconditions (land-use—percentage of residential and traffic area; potential of installable solar and wind power).[5] Furthermore the current installed renewable energy power (wind, solar, hydro, biomas and gas from purification plants) was collected for all counties.[6] The data set now includes 12 independent variables describing the preconditions of the counties and their installed renewable energy power.[7] The next section describes the case selection based on this data set.

Identifying pairs of comparable cases. The data set includes the installed renewable power of the counties. To evaluate the amount of installed power two definitions are possible. First the installed renewable power should be seen in relation to the power consumption. Counties that are able to produce a high percentage of their consumption with renewable energies should be seen as more successful in the implementation, than counties with a low percentage (% of RE on consumption). The second possible definition accounts for the potential and measures the installed power of renewables in percentage to the potential power that could be installed (% installed of potential). The following examples show, that the two definitions are complementary and equally important for defining successful and unsuccessful regions. The county *Alb-Donau-Kreis* (*ADK*) in *BW* has a very high potential of wind energy, whiles the county is trying harder and installing many more wind power plants than the surrounding counties it will be very difficult to reach a high percentage installed of potential power. Thus to evaluate this county fair, the first measurement will be better: comparing the percentage power installed of consumption with other counties shows the effort the county is making. While measuring the percentage installed of potential will most likely be lacking behind those counties with a high potential. On the other hand the implementation of renewables is highly dependent on the potential: urban counties may have a lower potential of renewable energies due to space limitations and have a higher consumption. A low percentage of renewables on the consumption is thus not per se equal to policy failure. Measuring the installed power as

[5]The data on size, number of inhabitants, average income, election results, percentage of agriculture at the GDP and land use were collected through the data bases of the Statistical Offices of the two States - *Statistisches Landesamt Baden-Wrttemberg - http://www.statistik-bw.de/SRDB/* and the *Landesbetrieb Information und Technik Nordrhein-Westfalen (IT.NRW) - http://www.it.nrw.de/kommunalprofil/index.html*. The data of the unemployment rates is based on the statistics of the Federal Agency of Employment (*Bundesagentur fr Arbeit* - statistik.arbeitsagentur.de). The potential of installable solar and wind power for *BW* is based on the studies of potentials of the *LUBW Landesanstalt fr Umwelt, Messungen und Naturschutz Baden-Wrttemberg* and the *Landesamt fr Natur, Umwelt und Verbraucherschutz Nordrhein-Westfalen* (*Potenzialstudie Erneuerbare Energien NRW*) respectively.

[6]This extensive data collection was possible due to the EEG-obligation of net operators to disclose their data (EEG 2008 $45 - 52$ Bundesgesetzblatt Jahrgang 2008 Teil I Nr. 49 . The data utilized in this article is based on the conditioned version of this raw data from the 'EnergyMap' (energymap.info), published by the German Society of Solar Energy (*Deutsche Gesellschaft für Sonnenenergie e.V. (DGS)*)

[7]The full data set will be available for download.

compared to the potential will give a fairer fit of the effort of urban areas. Thus both measurements are important in order to identify a fair evaluation of the effort. Instead of taking one or the other measurement as the dependent variable, all counties are ranked according to their performance in both measurements. For both states separately the county with the highest percentage of renewables of the consumption gets the $ranking\_RE = 1$, the second best gets $ranking\_RE = 2$ and so forth. Accordingly the county with the highest percentage of installed power of potential power gets $ranking\_installed = 1$, the second best gets $ranking\_installed = 2$ and so forth. The two rankings will then be summed up, leading to a $ranking\_sum \geq 2$ for all counties. This procedure leads us to the dependent variable *ranking_sum* that neither favors rural nor urban areas. The ranking approach has the huge advantage that both factors are weighted similar in order to not overestimate one of the factors due to differences in their range of the percentages.[8]

The case selection has the aim to select cases, that are similar in their various preconditions, yet vary greatly in the policy outcome. Therefor the method of difference was applied (Mill, 1882, 483).[9] The method of difference aims for finding cases that are most similar in their preconditions and differ significantly in their outcome. The (to be studied) explanatory aspect of policy networks can than be seen as the explanatory variable for the difference in outcomes. The most-similar-systems design on the other hand aims in finding cases that are most similar in their preconditions and vary in their explanatory variable analyzing whether this has an effect on the outcome. This, certainly preferable, procedure was not feasible in this case, because the explanatory variable of policy networks is very costly to access and can thus not be accessed a-priori for all possible cases. However, based on the method of difference the case selection was not done arbitrary. For 97 counties the preconditions and outcomes were collected, similarities in preconditions were calculated based on the mahalanobis distance and case pairs were selected based on the small difference in this preconditions and the large difference in outcomes. Also not keeping up with the preferable most-similar-systems design, this procedure is clear, verifiable and reproducible. The qualitative content analysis can highly benefit from such a quantitative case selection method (Nielsen, 2014b).

The matching was conducted by using the R package *caseMatch* by Nielsen (2014a). Twelve covariates were used to match the cases (size of the county (*size*), inhabitants per square kilometer (*Inhabitants_sq*), the average income per inhabitant (*income*), the unemployment rate of the county (*unemployment*), the percentage of GDP produced in the agriculture sector (*Agriculture*), the election results for the four major parties CDU, SPD,

[8] In the urban case the *% of RE on consumption* varies between 0.2% and 20%, while the percentage of *% installed of potential* varies between 0.4% and 6.9%. In the rural case the *% of RE on consumption* varies between 3% and 54%, while the percentage of *% installed of potential* varies between 1% and 16%.

[9] Method of Difference as defined by Mill (1882, 483): "If an instance in which the phenomenon under investigation occurs, and an instance in which it does not occur, have every circumstance in common save one, that one occurring only in the former; the circumstance in which alone the two instances differ, is the effect, or the cause, or an indispensable part of the cause, of the phenomenon."

Die Grünen and FDP (*election_CDU, election_SPD, election_GR and election_FDP*), the percentage of the residential and traffic area (*land.use*), the potential to install wind power (*windpotential*) and the potential to install solar power (*solarpotential*)). For matching the cases the *Mahalonobis matching* algorithm was applied. Based on Nielsen (2014b) the Mahalanobis matching appeared to be most meaningful, because it "identifies units located close together in the k-dimensional space defined by the covariates." (Nielsen, 2014b, 10).[10] It "identifies similar units by minimizing pairwise Mahalanobis distance, a generalization of Euclidean distance that accounts for correlations between variables (Rubin, 1973)" (Nielsen, 2014b, 8). The outcome variable is the Ranking_Sum. Applying the algorithm leads to find matches that are most similar in their twelve covariates and at the same time have a highly different outcome. In other words the algorithm results in pairs that have the same preconditions (based on the data collected for the twelve covariates) that appear to be meaningful for the implementation of renewable energies and yet show a very different implementation success according to their Ranking_Sum.

Case selection. Since the research questions aim in identifying the patterns for rural and urban areas, in *BW* only the 25 counties were included in the matching procedure that have a residential and traffic area lower than 15 percent (land.use ≤ 15), while in *NRW* only those 26 counties were included that had a residential and traffic area bigger than 30 percent (land.use ≥ 30). This selection is justifiable because the aim does not lie in generalizing the patterns for the states, but in identifying patterns for rural and urban areas independent from their state affiliation.

The matching leads to various pairs that suffice the condition of similar covariates and diverging outcomes.One problem that has to be accounted when selecting the cases in such a quantitative way is, that the documents on which the analysis is based are not available for all cases. Either there might be no newspapers with a local part for the county or these newspaper archives might not be accessible, as was the case for the county *Unna* that was part of five of the ten first matches for *NRW*. Furthermore 2 pairs included the county of *Bottrop*. Document research showed, that Bottrop has been announced to be an *InnovationCity*, which leads to plenty of outside funding of the transition process and thus makes it incomparable to the other cases. Out of the first ten matched pairs for both states one pair each was chosen based on accessibility of the data. For rural BW the matching pair *Alb-Donau-Kreis* (*ADK*) and *Bodenseekreis* (*FN*) and for urban *NRW* the matching pair of *Hagen* (*HA*) and Bonn (*BN*) are analyzed. These four cases cover a successful and a unsuccessful county in both, rural and urban, areas. This paper introduces a comparative approach in applying the DNA, which is unique so far. The comparative approach has the huge advantage to be able to explain causal

[10]Formally the "Squared Mahalanobis distance is defined for two $p \times 1$ vectors x and $y$as $D^2 = (xy)\sum^{-1}(xy)$ where $\sum$ is the covariance matrix of the $p \times p$ distribution." (Nielsen, 2014b, 24)

relations between network structures, discourse patterns and policy outcomes, which is not possible when analyzing single cases only. Thus advancing the current applications of DNA further which currently concentrates on the descriptive analysis of single case studies. The amount of cases is rather small and expanding it would be desirable. However, as the description of the coding process below shows, the data collection is very extensive and time consuming. Thus making a further expansion of cases not feasible within this paper. Nevertheless it will be an interesting part of further research to analyze more cases with DNA and thus get an even stronger support for the causal relations found.

In order to identify local discourse specifics, it is necessary to code newspapers that cover local aspects, local policy discourses and local events. Whiles Germany has a huge variety of daily newspapers, generally only one or two newspapers are covering local circumstances. The articles were selected from the biggest newspaper with a local part for the county. In all four counties the newspapers chosen are the most present in the discourse, reaching by far the most readers. In both counties of BW no other newspaper is reporting about local circumstances, making the given newspapers the number one written source for analysis. Both counties in NRW are highly populated and more newspapers are present. However, the two newspapers chosen have by far the most readers and thus their presentation will have an important impact within the media discourse. For further research it would be very desirable to expand the amount and type of documents analyzed. Yet, within the scope of this paper analyzing the four major newspapers seems to be a reasonable procedure.

For every case the newspaper was searched by the phrase "Energiewende (energy transition) and *County name*", e.g. for the ADK the newspaper Südwest-Presse was searched for the term "Energiewende and Alb-Donau-Kreis". While the *Südwest-Presse*, *Südkurier* and *Bonner General-Anzeiger* were searched through the archive wiso[11] the newspaper *Westfalenpost* was searched in the newspaper owned archiv[12]. The amount of articles found through this searching procedure are listed in table (1). Excluded were hereby save-the-date-notices and letters to the editor. The article search was limited to all articles published prior to September 30th 2014, there was no starting date set for the search.

	Alb-Donau-Kreis	Bodenseekreis	Hagen	Bonn	Total
Total # of Articles	167	138	128	217	650
# Articles analyzed	142	138	128	145	553

Table 1: Articles to be coded by county

Figure (2) shows the timely distribution of the articles. In order to account for the longitudinal development, four one year long time periods will be analyzed.[13]. As figure

[11] wiso-net.de

[12] derwesten.de/wp

[13] After the summer break the new political year starts in September, which makes September to

(2) shows, only 3.4% of the statements come up in the search before the 1st of September 2010, which makes it reasonable to not consider statements that were made before that point in time, in order to keep time periods equally long.

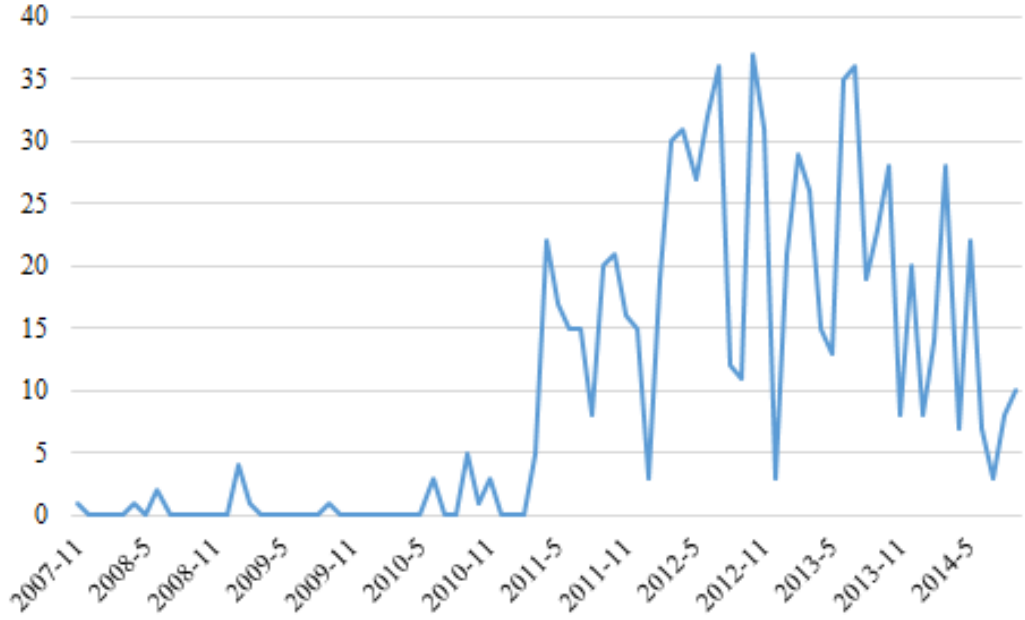

Figure 2: Number of statements

Discourse Network Analysis

The Discourse Network Analyzer (Leifeld, 2009, 2012; Janning *et al.*, 2009) allows to get a systematic overview over the actors within a discourse, the arguments they are using and the concepts they are referring to.[14] Due to textual analysis it gives a structural inside on actor constellations, shared concepts and belief similarities between actors. Discourse coalitions can thus be identified empirically. Instead of the direct measurement of e.g. cooperation between two organizations, the DNA measures similarities of actors based on the statements made. This procedure relies on the the ACF literature (Sabatier & Jenkins-Smith, 1993, 1999; Sabatier & Weible, 2007), which is based on the assumption that advocacy coalitions will form around shared beliefs and actors with similar beliefs are expected to more likely cooperate with each other in order to reach their goals. The huge advantage of a DNA is the threefold connection between actors, organizations and categories. It provides a unique chance in identifying argumentation structures, which can not be identified by more quantitative approaches. DNA allows to perform a structured

August a natural time period for analyzing political discourses, in the absence of major turning points and events. The time periods thus are: (1) 1st October 2010 - 30th September 2011,(2) 1st October 2011 - 30th September 2012, (3) 1st October 2012 - 30th September 2013, (4) 1st October 2013 - 30th September 2014.

[14]The DNA software (Leifeld, 2012) is a powerful tool which structures hand-coding and generates output in form of networks. It is available for free download at www.philipleifeld.de

qualitative text analysis. Actors, their affiliate organizations and the categories that they are referring to, in a positive or negative way, are coded whiles reading the documents. Reading texts manually has the huge advantage that gradual differences and negations can be identified, which is the basic of identifying conflicting structures within policy debates. DNA is thus not only able to identify which arguments are used in which text (as in more quantitative approaches like *word count*, *wordfish*, etc), but also able to assign these arguments to actors. Thus allowing not only for the analysis of documents authored by a specific speaker (party manifestos, etc.) but especially effective in analyzing documents in which the actor has to be identified (e.g. newspaper articles). Leading to a threefold information between actors, organizations and categories and furthermore identifying conflicting structures; and thus being able to construct networks out of the conducted coding. So far DNA is applied to textual documents only; also analyzing transcribed video or audio data is possible. In existing applications DNA is mainly used to analyze political or media discourses (see for example Fisher *et al.*, 2013a,b; Leifeld, 2013; Leifeld & Haunss, 2011; Nagel, 2015). The sources for the analysis range from newspaper articles (Leifeld, 2013; Leifeld & Haunss, 2011; Nagel, 2015) over positional papers to hearings and testimonies (Fisher *et al.*, 2013a,b).

Zitate von Philip einbauen

Hypothesis that are based on the current policy discourse and policy network literature can be analyzed and tested with DNA. Leading to replicable and falsifiable results in a broad range of settings, thus as analyzing discourse and belief coalitions , conflict structures (Fisher *et al.*, 2013b; Nagel, 2015) and the framing of policy problems (Leifeld & Haunss, 2011).

The coding procedure

After the articles are added to the program, statements are identified within the text. A phrase in the article is understood to be a statement if a spokesperson (or an organization) can be clearly identified and the person makes a statement relevant to one of the categories analyzed. Within the discourse five major argumentation categories are studied: Civil, ecological, economical, political and technological arguments. A relevant statement would for example be *"The Economic minister of NRW, Garrelt Duin, states that modern generation plants will be necessary to complement the renewable energies."* The statements will then be highlighted, which adds a tab to the statement. The tab offers the possibility to manually record the spokesperson and her or his affiliation to an organization. If the person is making a statement belonging to a specific category, this statement must not always be positive; thus there is an additional parameter *agreement* which can be set to *yes* or *no*. Every statement consists of five parameters: the category, the speaker, the organization, agreement yes or no and the time point when the statement was given (this is generalized by the publishing date of the article). In the given example the person would be "Garrelt Duin", the organization is the "Ministry of Economy of

NRW". The statement made belongs to the category "Tech - base load supply needed" and the agreement is "yes". After coding, the data set consists of the statements with their parameters. This method allows to draw networks based on secondary data. Instead of surveying actors about their relationships to each other and their beliefs, similarities, connections and coalitions can thus be identified based on the categories the actors are referring to within the media. Various relationships and networks can be analyzed through this method. Affiliation networks connecting actors with specific categories can be analyzed as well as co-occurence networks of actors based on category similarity. In this respect DNA is able to identify discourse coalitions, argumentation patterns and argumentative turns. Thus it is a great tool to analyze if and how discourses did matter within a policy making process.

Crucial for a proper analysis is the definition of the category space, to which the statements are assigned. A clear category space allows to follow the coding procedure and makes the analysis as retraceable as possible. In order to get a clear category space 100 articles were coded, developing the categories during the coding process. Afterward the empirically found categories were completed with further theoretical possibilities. For example for wind power positive, negative and challenging statements were found. Thus for all other technologies (solar, nuclear and other renewables) all three sub-categories were added, whether found empirically in the sample or not. This procedure led to a code book consisting of 5 Macro-Categories, refined in 71 Meso-Categories and those further refined in 101 Micro-Categories. The five Macro-Categories are *Civil society, Ecology, Economy, Policy and Politics* and *Technology*. To test the reliability of this code book 20 articles were coded by two different researchers. In order for the researchers to code the same phrases the 64 statements were highlighted in advance, and the categories were filled in independently. Coding the predetermined statements led to a reliability score of 67%. This score can be seen as sufficiently high. The code book was then utilized to code all the 553 articles. Through assigning the statements made in the article to the Macro-, Meso- and Micro-Categories it will be possible to analyze the argumentation patterns, story lines and actor coalitions in the four regions under consideration. Thus allowing to verify the hypotheses whether difference in discourses and network structures are present due to varying preconditions and how they affect the outcome.

Network operationalization

In network analysis the openness of a discourse (e.g. no strict polarization) and the fact whether actors are talking about the same things can be captured through the concepts of *modularity* and *segregation*. *Modularity* describes the community structure of the network—it depicts to which extent a network is modular in a way that there are commu-

Network level measurement	Theoretical meaning
Agreement Modularity	degree of polarization in belief coalitions - independently of actor type
Agreement Segregation	degree to which beliefs are segregated along actor types
Common Modularity	degree to which actors that are talking about the same things are clustered
Common Segregation	degree to which actors that are talking about the same things are segregated along actor types
Disagreement density	degree to which disagreement is present in the network

Table 2: Network level measurements and their theoretical meaning

nities with a high internal density and much fewer links connecting these communities.[15] The concept of *segregation* verifies to which extent the network is segregated along specific actor attributes—in the current case along actor types.[16] And can thus give an expression of whether the same actor types e.g. tend to support the same ideas or whether various actor types talk about and agree on the same things. A further network concept analyzed here is the network density of the disagreement network. A high density of the disagreement network can be an indicator for deep conflict lines within the discourse. Within the DNA of this article three different types of networks can be analyzed: the *agreement network* (actors are connected if they agree on the same category), the *disagreement network* (actors are connected if they disagree on the same category) and the *common network* (actors are connected if they either agree or disagree on a category, thus if they are talking about the same category). Table (2) gives an overview of the network concepts and their theoretical interpretation in the current context.

Due to a longitudinal data collection it is possible to analyze the evolution of the network in each county by comparing longitudinal network measurements. Since every discourse will be structured differently, comparing the raw network measurements across cases is much less revealing than comparing the relative development of the discourses.

Analyzing the network measurements over time would lead to the following interpretation of Table (2): A high *agreement modularity* means that actors are clustered in belief coalitions, having a high agreement amongst each other and low agreement across coalitions. An increase of this measure over time would mean that the belief coalitions get more strictly separated from each other. Thus increasing the difficulty of having an open discourse and problem solving. A high *agreement segregation* shows that there is a high agreement on common beliefs among same actors and a low agreement across actor types. A low or lowering agreement segregation thus means that various actor types agree on

[15]To analyze the modularity the *edge.betweenness.community*-algorithm of the R package *igraph* was used (Csardi & Nepusz, 2006). The underlying idea is to delete the links with a high edge betweenness centrality and analyze which and how many deletions lead to a best fit of the community structure (Girvan & Newman, 2002).

[16]The *Get_Network_Segregation*-algorithm used to detect segregation is part of the *Henry-R-Utilities* (HRUv.2d) by Adam D. Henry.

the same beliefs and thus a more open dialog is expected. A high *common modularity* would express the fact that various dialogs are present at the same time, actors are clustered by topics and are talking about different aspects of the transition. A high *common segregation* depicts that different actor types are talking about different aspects, and that there is little common discourse—e.g. political actors talk about different aspects than energy suppliers. Thus an open dialog is less present and finding solutions more difficult. Observing the development of the *disagreement density* will give an insight on the development of conflicting structures. An increasing disagreement density would show that conflicting links and thus conflict is increasing within the discourse. For all five measurements we expect a decrease to be favoring for the discourse, leading to more open discourse structures, easier ways of finding agreement and an increase in problem solving capabilities.

Keeping the above operationalization in mind, formulating hypotheses $H3a$ and $H3b$ in strict network terms will lead to:

H3a: Over time the policy discourse in successful counties will show a decrease in (1) the agreement modularity; (2) the agreement segregation; (3) the common modularity; (4) the common segregation and (5) the disagreement density.

H3b: Over time the policy discourse in unsuccessful counties will show an increase in (1) the agreement modularity; (2) the agreement segregation; (3) the common modularity; (4) the common segregation and (5) the disagreement density.

Results

In the 553 articles 1733 statements were made by 512 actors belonging to 226 different organizations. In order to answer the hypothesis *1* and *2* the *19* meso-categories were studied more closely. Table (3) gives an overview over the 10 most mentioned frames across all cases. The percentage shows the share of a given category of all statements made within a county, independently of whether they are mentioned in a positive or a negative way. Thus showing the mere importance of specific categories within a county. The background color expresses whether the categories are positively or negatively coined.[17] This overview shows, that there is a broad positive consensus for most categories supporting the transition. Critical within each case are those categories with a high percentage and a darker background color, since these are the categories most present in the discourse and negatively coined. The table shows, that the two urban areas Hagen and Bonn have many more contested categories and some of them are very present in the discourse. The

[17]Background color = percentage of positive statements: white: 100%-75%; light gray: 74% - 50%; medium gray: 49% - 25%; dark gray: 24% - 0%

	ADK	FN	HA	BN
Econ - Energy transition economical positive	14%	19%	25%	26%
Pol - energy transition - right path	23%	17%	19%	22%
Pol - politics are to volatile / slow	9%	4%	8%	13%
Pol - regional solutions - positive	8%	18%	5%	2%
Ecol - pondering environmental protection	9%	15%	6%	3%
Tech - other renewable technologies - positive	6%	7%	2%	5%
Tech - nuclear shut-down - positive	11%	0%	2%	5%
Pol - incentives (e.g. EEG) - needed	1%	3%	4%	6%
Econ - Energy security - not in danger	2%	1%	6%	4%
Tech - windpower - regional - positive	4%	4%	2%	1%

Table 3: Percentage category of total statements in county and percentage of positive statements therein (background color: white: 100%-75% of the statements were positive; light gray: 74% - 50%; medium gray: 49% - 25%; dark gray: 24% - 0%)

bar plots (Figure (3), (4), (6) and (5)) look into more detail at the contested categories in each given region. Only categories that were mentioned at least 3 times in a negative manner are pictured here. This gives a clear overview over the most contested arguments within the discourse, in absolute numbers of statements. Comparison of the bar plots shows, that in urban areas many more categories are highly contested (8 categories), than in the rural areas (4/5 categories); showing a more complex and overall more contested discourse about the energy transition within those regions. The economical frame is most present and most contested in both urban areas. In the urban area of Hagen more than twice as many statements are expressing that the energy transition is bad for the economy, than expressing that it is good for the economy. In Bonn a marginal majority is supporting the same negative attitude. On the other hand, while contested in rural areas as well, in both rural areas exists a huge majority of statements that express, that the transition is good for the economy. The economical argumentation is not as important in the rural areas (4th position out of 5 in the ADK) and not nearly as highly contested as in the urban areas. This observation strongly supports hypothesis $H1$, stating that *"In urban areas economical arguments will play a more important part in the discourse and are more contested, than in rural counties.*

Ecological aspects play a central role in both rural areas and the pondering of the environmental protection is highly contested in both areas. In the successful rural area ADK the fact that the burdens of renewable energies have to be accepted is highly controversial. This might be explained by the fact that a lot of wind power plants are already present in this area and that residents believe they have done their part for a successful transition already. Hypothesis $H2$ - that *"in rural areas social and ecological aspects will play a more important role in the discourse, than in urban areas."* - can thus be clearly supported.

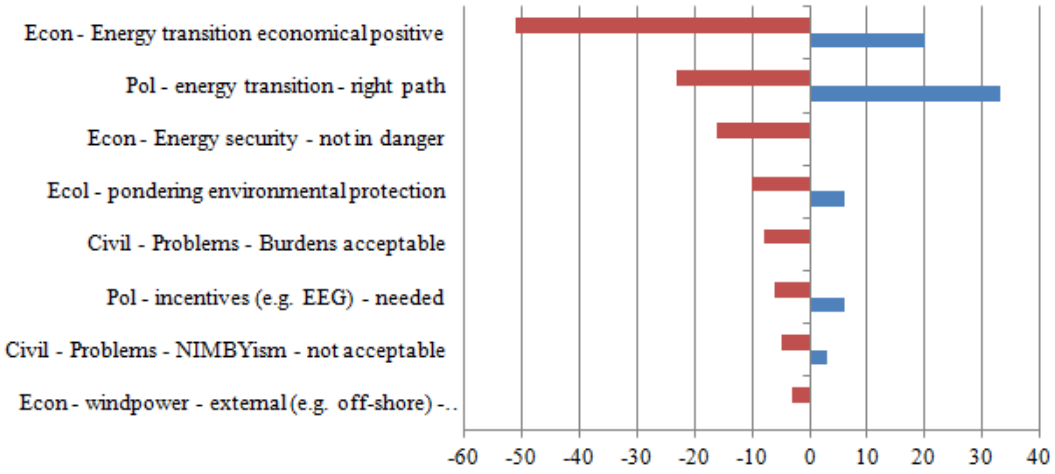

Figure 3: Hagen: Contested categories

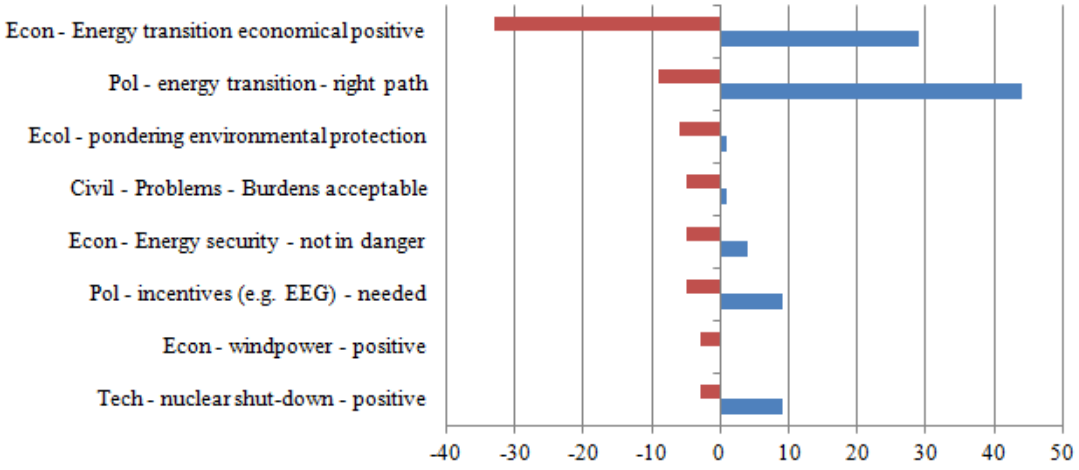

Figure 4: Bonn: Contested categories

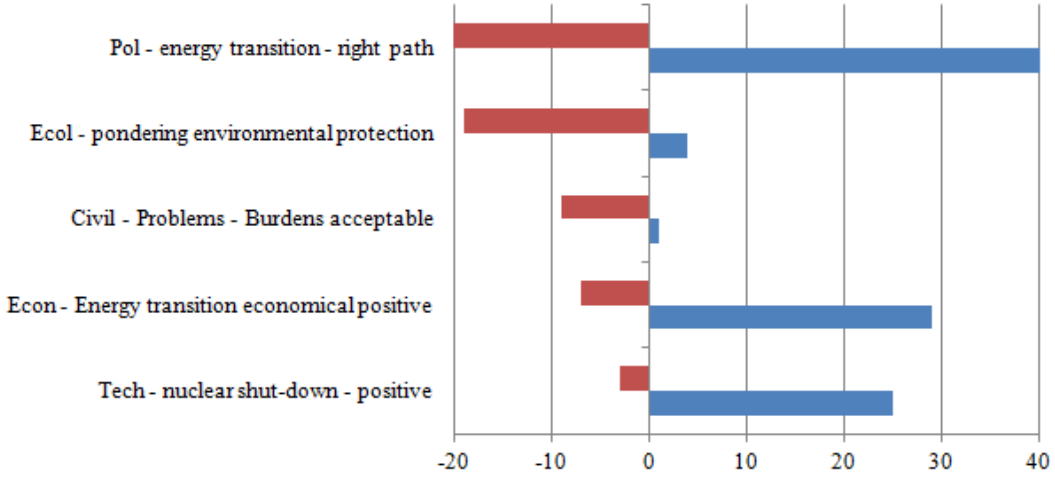

Figure 5: Alb-Donau-Kreis: Contested categories

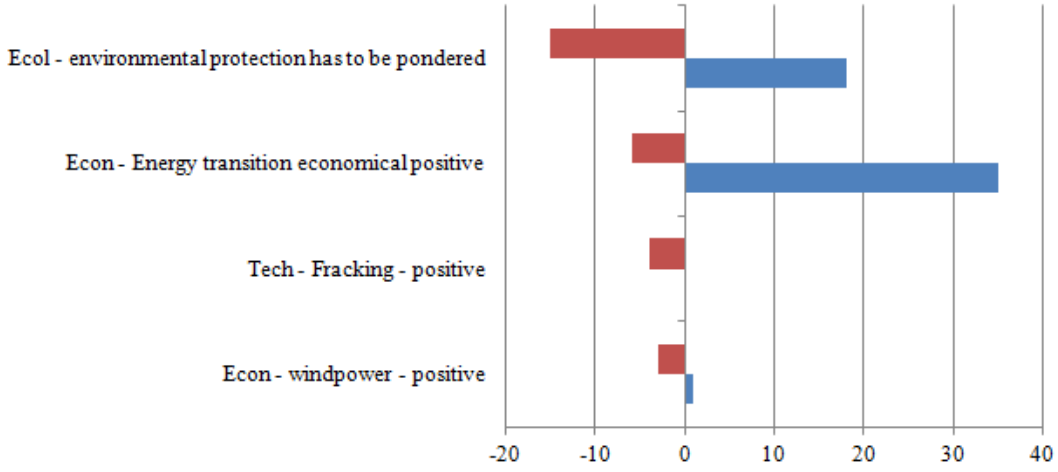

Figure 6: Bodenseekreis: Contested categories

In order to test the network structural hypothesis H3a and H3b co-occurence networks are analyzed. In these co-occurence networks links between to organization exist whenever they support a common statement. The more statements the organizations commonly agree on, the more weight has the link between the two of them and the darker it is depicted in the graph. While specific actor groups might look strong because of their internal density, they might not be very present within the discourse. Therefore the size of the nodes depicts the statement frequency of specific actors, thus visualizing their presence within the discourse.

The network structures and their evolution are expected to play a crucial role in explaining the success and the unsuccessful of counties in implementing renewable energies.[18] Network analysis is often times based on a merely descriptive analysis of the network. Describing network structures and network measurements in an intuitive way. A simple task in trivial networks, this becomes an unbearable task in more complex networks and when comparing multiple networks with each other. In order to reach reproducibility and clearness, the present evaluation is based on graph level measurements in order to explain variances between the cases and their timely evolution.

Hypotheses 3a and 3b expect to see different developments in the network structure for successful and unsuccessful counties. Graph level measurements were conducted for all four cases. Measured were the *agreement modularity* (a.mod), the *agreement segregation* (a.seg), the *common modularity* (c.mod), the *common segregation* (c.seg) and the *disagreement density* (d.density) (see table (2) for theoretical explanation of measurements). In order to account for the longitudinal evolution, the data collection was separated in four one-year periods. Table (4) summarizes the results for all cases and all time periods.

The correspondent hypothesis expect a decrease of all five measurements over time for

[18]The visualization of the networks for the total time period and for every single time period can be found in the Appendix for all four cases.

County	timeperiod	a.mod	a.seg	c.mod	c.seg	d.density
ADK (r,s)	year 1	0.188	0.447	0.110	0.443	0.187
	year 2	0.065	0.476	0.052	0.456	0.229
	year 3	0.055	-0.238	0.099	-0.325	0.536
	year 4	0	-0.068	0.011	-0.104	0.786
FN (r,us)	year 1	0	NaN	0	NaN	NULL
	year 2	0.107	0.071	0.020	0.097	0.291
	year 3	0.003	0.178	0.004	0.155	0.235
	year 4	0.1	-0.333	0.140	-0.356	0.382
HA (u,s)	year 1	0	1	0	1	NULL
	year 2	0.033	0.528	0	0.481	0.352
	year 3	0.051	0.469	0	0.459	0.363
	year 4	0.165	0.701	0.012	0.709	0.416
BN (u,us)	year 1	0.063	-0.257	0.070	-0.379	0.303
	year 2	0.020	0.030	0.061	0.069	0.163
	year 3	0.374	0.325	0.157	0.290	0.304
	year 4	0.438	0.667	0.499	0.600	0.600

Table 4: Graph level measurements (r: rural, u: urban, s:successful, us: unsuccessful)

the the successful counties, while they expect an increase for the unsuccessful counties. The urban successful county *HA* shows a negative tendency in the agreement segregation and common segregation, while both modularity measurements stay rather stable. In the rural case the tendencies are much clearer. The successful rural case *ADK* shows a decrease in agreement modularity, agreement segregation, common modularity and common segregation. Thus leading to a less clustered and more open discourse over the time of the analysis. Not in line with the hypothetical expectations is the development of the disagreement density; which is either stable (HA) or positive (ADK), thus not showing the expected decrease of disagreement over time. In total the findings strongly support hypothesis *H3a*, with the exclusion of the development of the disagreement density.
The discourse of the unsuccessful rural county *FN* shows only minimal variance over time. While the common modularity and the disagreement density clearly increase, the other three measurements are rather stable over time. The unsuccessful urban county *BN* however shows much clearer results, with increasing levels of all five measurements. Thus in total hypothesis *H3b* is strongly supported by the results of the discourse network.

The confirmation of both hypothesis strengthens the idea of an underlying relation between the evolution of the discourse network structure and the successful implementation of renewable energies in the analyzed counties.

Discussion

The DNA in this paper was able to reveal an interesting insight into the discourses about the energy transition. Results show, that the content of the discourses widely varies

between rural and urban counties. In urban counties the discourse mainly focuses on economical aspects of the transition, and this aspect is discussed highly controversial. In rural areas political and ecological aspects are more present and highly contested in the discourse. Economical aspects are mainly used in a positive way, as how the local economy will benefit from the transition. These results are in line with the hypothetical expectations that residents of rural areas will be affected more in their daily lifes by the implementation of renewable energies, while the urban areas are hit harder by the economical side of the transition. This study does however not show any support for the hypothesis, that unsuccessful areas will have a discourse that is more negatively coined, than the discourse in successful areas.

This paper hypothesized that the development of the network structure is related to the success of a county. The analysis of the network structures discovered interesting development processes, which show that the segregation and modularity of the discourse networks of the successful counties decrease over time, while they increase over time for unsuccessful counties. Without making any claims about the causality of this relationship, it is compelling that the development of the network structure might indicate the outcome of the policy making process in a given county and that variances in these discourses are actually measurable.

Outlook

This paper is a first attempt to explore how the success of a county is mirrored in the policy network structure and does not claim to be generalizable. Results show that distinct development processes are at work in successful and unsuccessful counties, which is a strong indicator for a relationship between success and network structure development.

Further research will continue to explore the relationship between network structures, their development and success. In a next step, information on policy networks will be collected by directly surveying the relevant actors about their beliefs, their perception of the network (e.g. how influential are other organizations) and their drivers for link formation. Through this information belief and collaboration networks can be retrieved. Comparisons between those and the discourse networks will give further insight on the factors driving network evolution and on the relation between the various network structures and success.

References

BMWi, & BMU (eds). 2012. *First Monitoring Report - "Energy of the future"*. Paderborn: Bonifatius GmbH.

Csardi, Gabor, & Nepusz, Tamas. 2006. The igraph software package for complex network research. *InterJournal*, **Complex Systems**, 1695.

Dafoe, Allan. 2014. Science Deserves Better: The Imperative to Share Complete Replication Files. *PS: Political Science & Politics*, **47**, 60–66.

Fisher, Dana R, Leifeld, Philip, & Iwaki, Yoko. 2013a. Mapping the ideological networks of American climate politics. *Climatic Change*, **116**(3-4), 523–545.

Fisher, Dana R, Waggle, Joseph, & Leifeld, Philip. 2013b. Where Does Political Polarization Come From? Locating Polarization Within the US Climate Change Debate. *American Behavioral Scientist*, **57**(1), 70–92.

Geddes, Barbara. 1990. How the Cases You Choose Affect the Answers You Get: Selection Bias in Comparative Politics. *Political Analysis*, **2**, 131–150.

Girvan, Michelle, & Newman, Mark EJ. 2002. Community structure in social and biological networks. *Proceedings of the National Academy of Sciences*, **99**(12), 7821–7826.

Jäckel, Michael. 2011. Die Agenda-Setting-Forschung - Hauptaussagen und Weiterentwicklungen. *Pages 189–220 of:* Jäckel, Michael (ed), *Medienwirkungen: Ein Studienbuch zur Einführung*. Wiesbaden: VS Verlag für Sozialwissenschaften.

Janning, Frank, Leifeld, Philip, Malang, Thonas, & Schneider, Volker. 2009. Diskursnetzwerkanalyse - Überlegungen zur Theoriebildung und Methodik. *Pages 59–92 of:* Schneider, Volker, Janning, Frank, Leifeld, Philip, & Malang, Thomas (eds), *Poltiknetzwerke. Modelle, Anwendungen und Visualisierungen*. Wiesbaden: VS Verlag für Sozialwissenschaften.

Kingdon, John W. 1995. *Agendas, Alternatives, and Public Policies*. 2 edn. New York: Harper Collins.

Leifeld, Philip. 2009. Die Untersuchung von Diskursnetzwerken mit dem Discourse Network Analyzer (DNA). *Pages 391–404 of:* Schneider, Volker, Janning, Frank, Leifeld, Philip, & Malang, Thomas (eds), *Poltiknetzwerke - Modelle, Anwendungen und Visualisierungen*. Wiesbaden: VS Verlag für Sozialwissenschaften.

Leifeld, Philip. 2012. *Discourse Network Analyzer (DNA)*. Bonn: Max Planck Institute for Research on Collective Goods.

Leifeld, Philip. 2013. Reconceptualizing Major Policy Change in the Advocacy Coalition Framework: A Discourse Network Analysis of German Pension Politics. *Policy Studies Journal*, **41**(1), 169–198.

Leifeld, Philip, & Haunss, Sebastian. 2011. Political discourse networks and the conflict over software patents in Europe. *European Journal of Political Research*.

Liu, Xinsheng, Lindquist, Eric, Vedlitz, Arnold, & Vincent, Kenneth. 2010. Understanding Local Policymaking: Policy Elites' Perceptions of Local Agenda Setting and Alternative Policy Selection. *Policy Studies Journal*, **38**(1), 69–91.

Mill, John Stuart. 1882. *A System of logic,ratiocinative and inductive, being a connected view of the principles of evidence, and the methods of scientific investigation*. 8 edn. New York: Harper & Brothers.

Nagel, Melanie. 2015. *Polarisierung im politischen Diskurs: Eine Netzwerkanalyse zum Konflikt um ,,Stuttgart 21"*. Springer-Verlag.

Nielsen, Richard. 2014a. *Package 'caseMatch' - Identify similar cases for qualitative case studies*. Version 1.0.1 edn.

Nielsen, Richard A. 2014b. Case Selection via Matching. *Sociological Methods & Research*, 1–29.

Rubin, Donald B. 1973. Matching to Remove Bias in Observational Studies. *Biometrics*, **29**, 159–183.

Sabatier, Paul A. 2000. Clear Enough to be Wrong. *Journal of European Public Policy*, **7**(1), 135 – 140.

Sabatier, Paul A., & Jenkins-Smith, Hank C. 1993. *Policy Change and Learning: An Advocacy Coalition Approach*. Boulder, CO: Westview Press.

Sabatier, Paul A., & Jenkins-Smith, Hank C. 1999. The Advocacy Coalition Framework: An Assessment. *Pages 117–168 of:* Sabatier, Paul (ed), *Theories of the Policy Process*. Boulder, CO: Westview Press.

Sabatier, Paul A., & Weible, Christopher M. 2007. The Advocacy Coalition Framework: Innovations and Clarifications. *Pages 189–220 of:* Sabatier, Paul A. (ed), *Theories of the Policy Process*, 2 edn. Boulder, CO: Westview Press.

Abbreviations

ACF Advocacy Coalition Framework

BW Baden-Württemberg

DNA Discourse Network Analysis

NRW Nordrhein-Westfalen

A Appendix

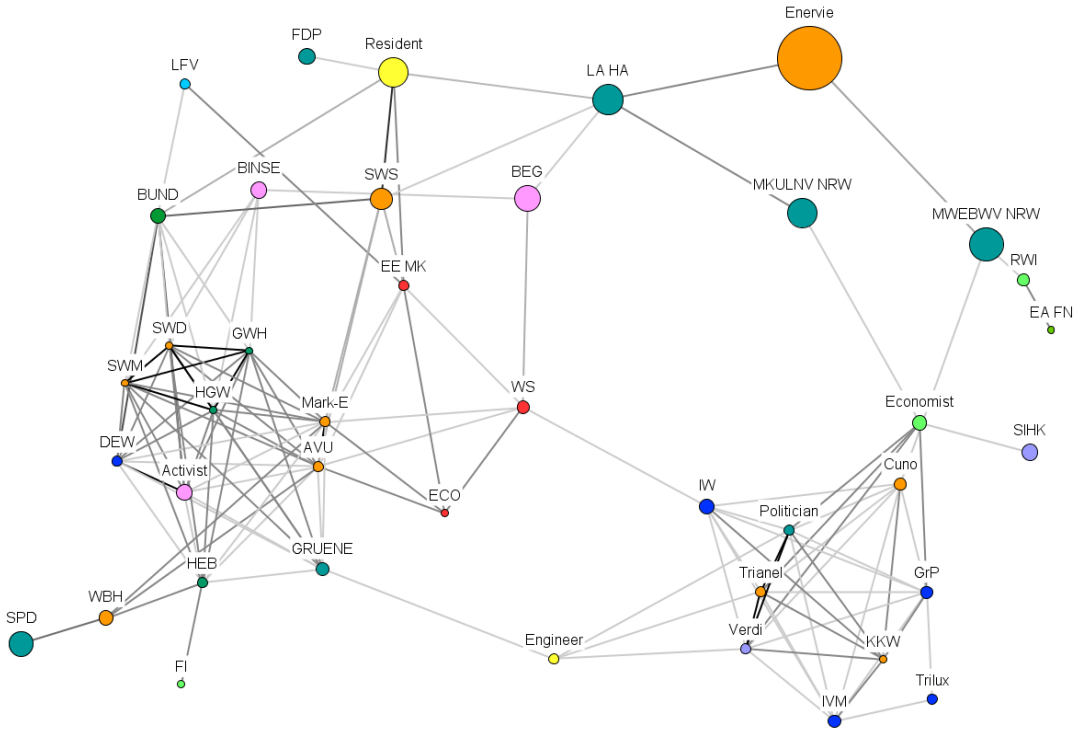

Figure 7: Hagen (urban, successful): Co-occurence network of organizations based on common categories

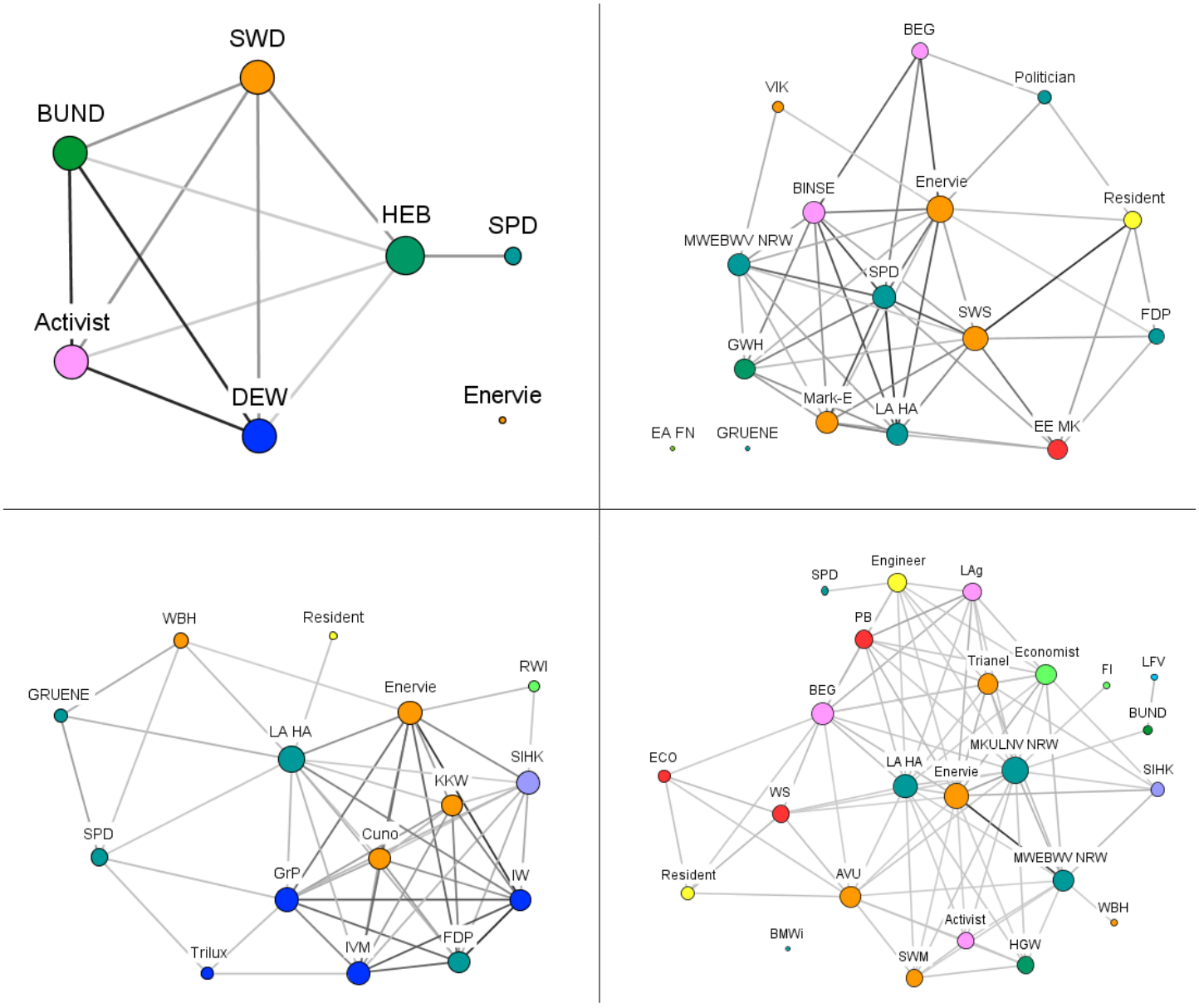

Table 5: Hagen (urban, successful): Yearly co-occurence networks of organizations based on common categories (upper left: year 1, upper right: year 2, lower left: year 3, lower right: year 4

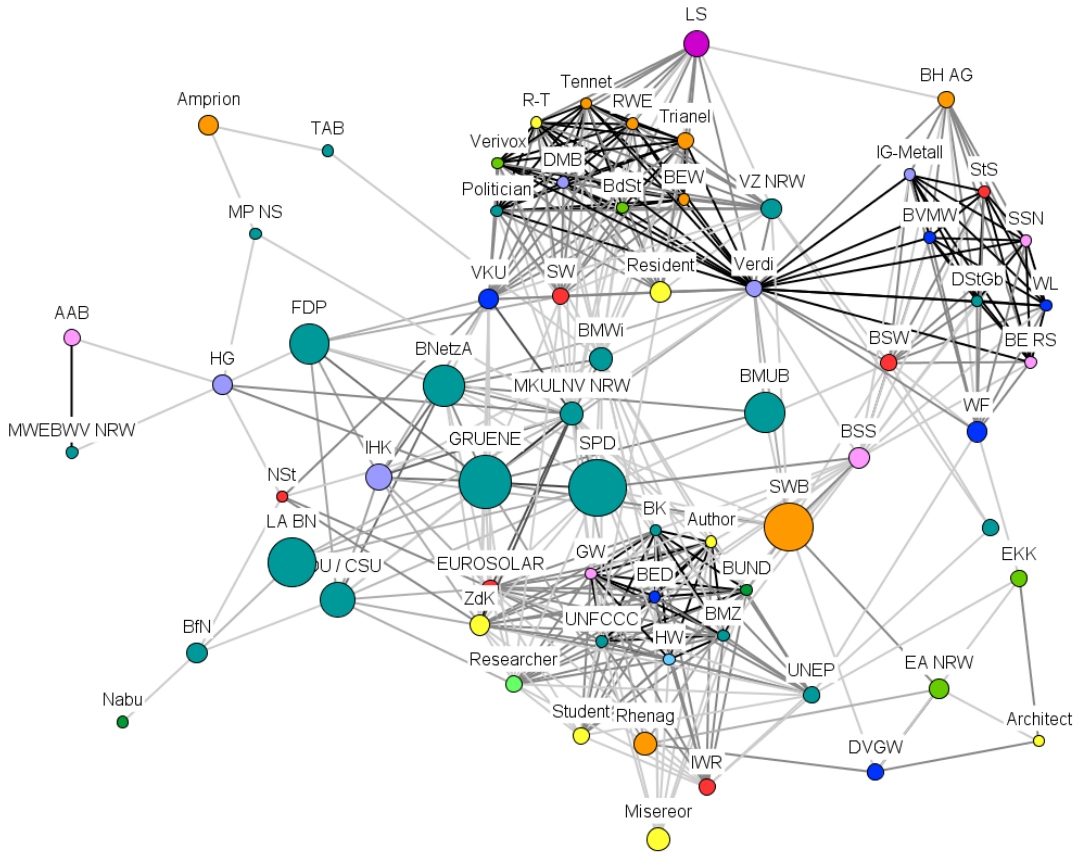

Figure 8: Bonn (urban, unsuccessful): Co-occurence network of organizations based on common categories

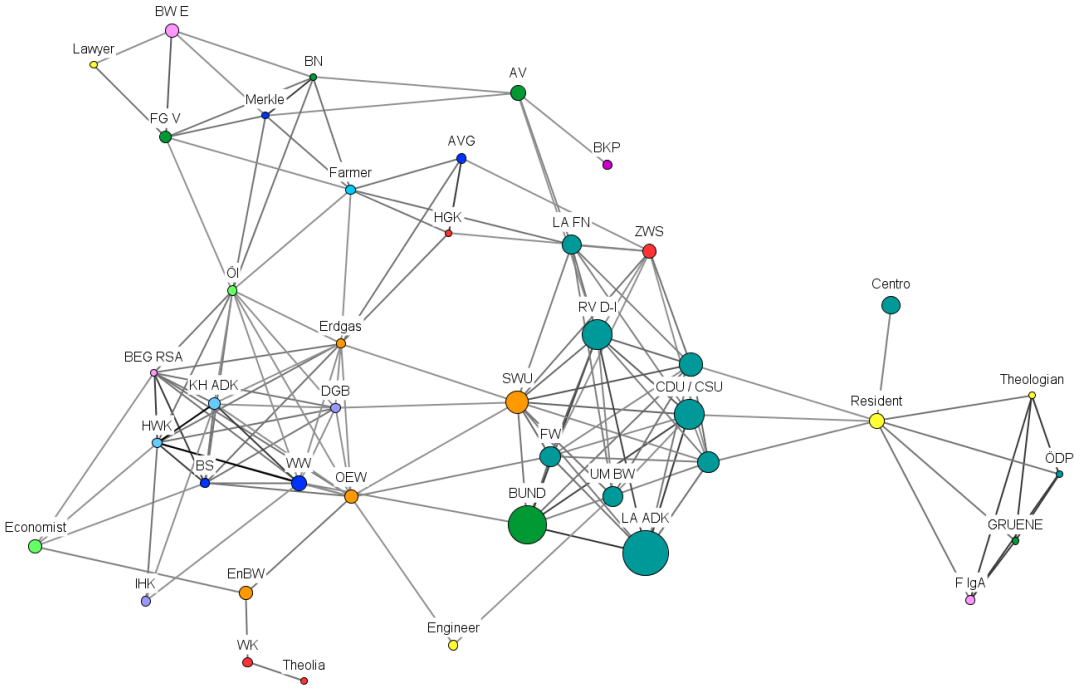

Figure 9: Alb-Donau-Kreis (rural, successful): Co-occurence network of organizations based on common categories

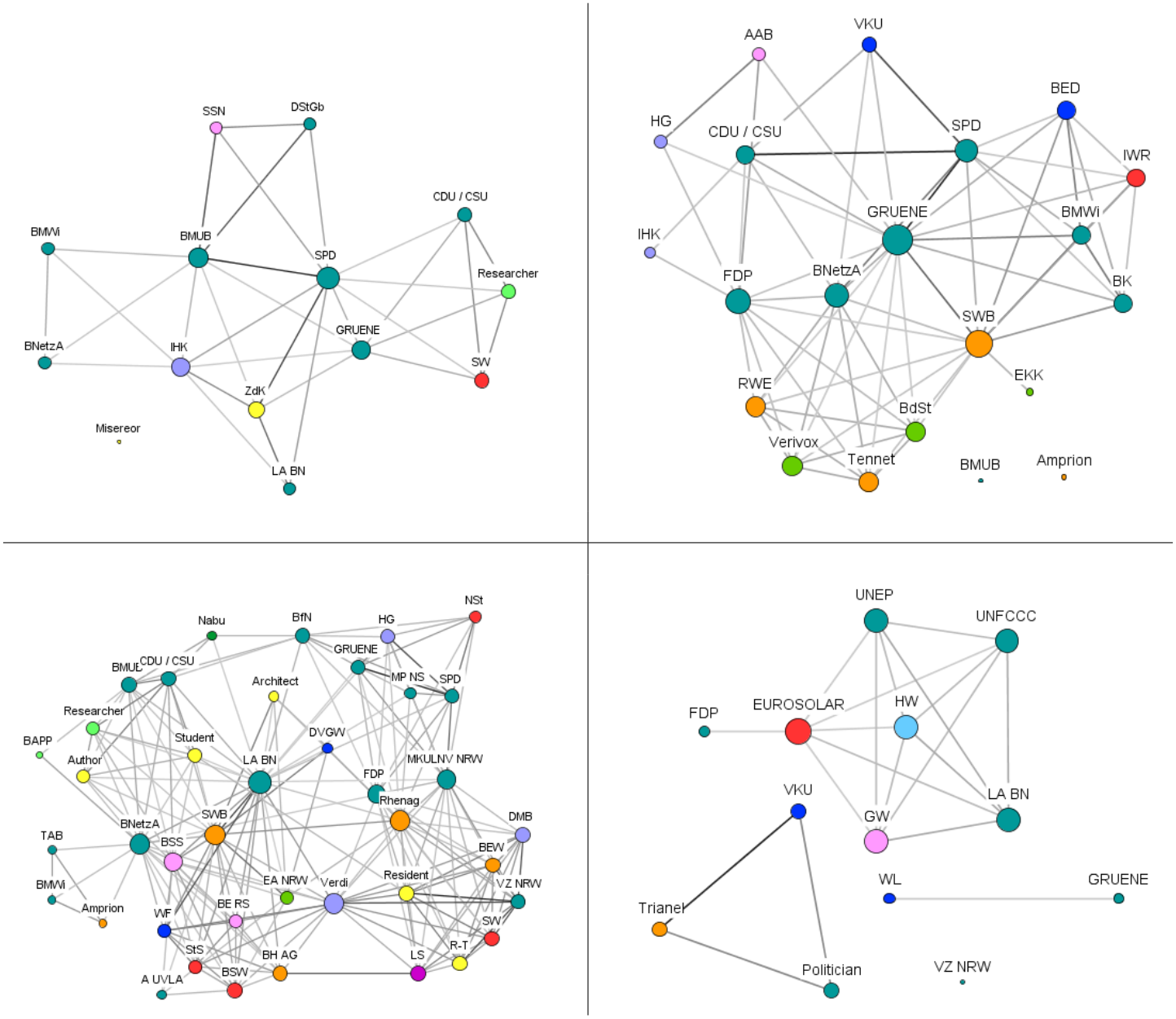

Table 6: Bonn (urban, unsuccessful): Yearly co-occurence networks of organizations based on common categories (upper left: year 1, upper right: year 2, lower left: year 3, lower right: year 4

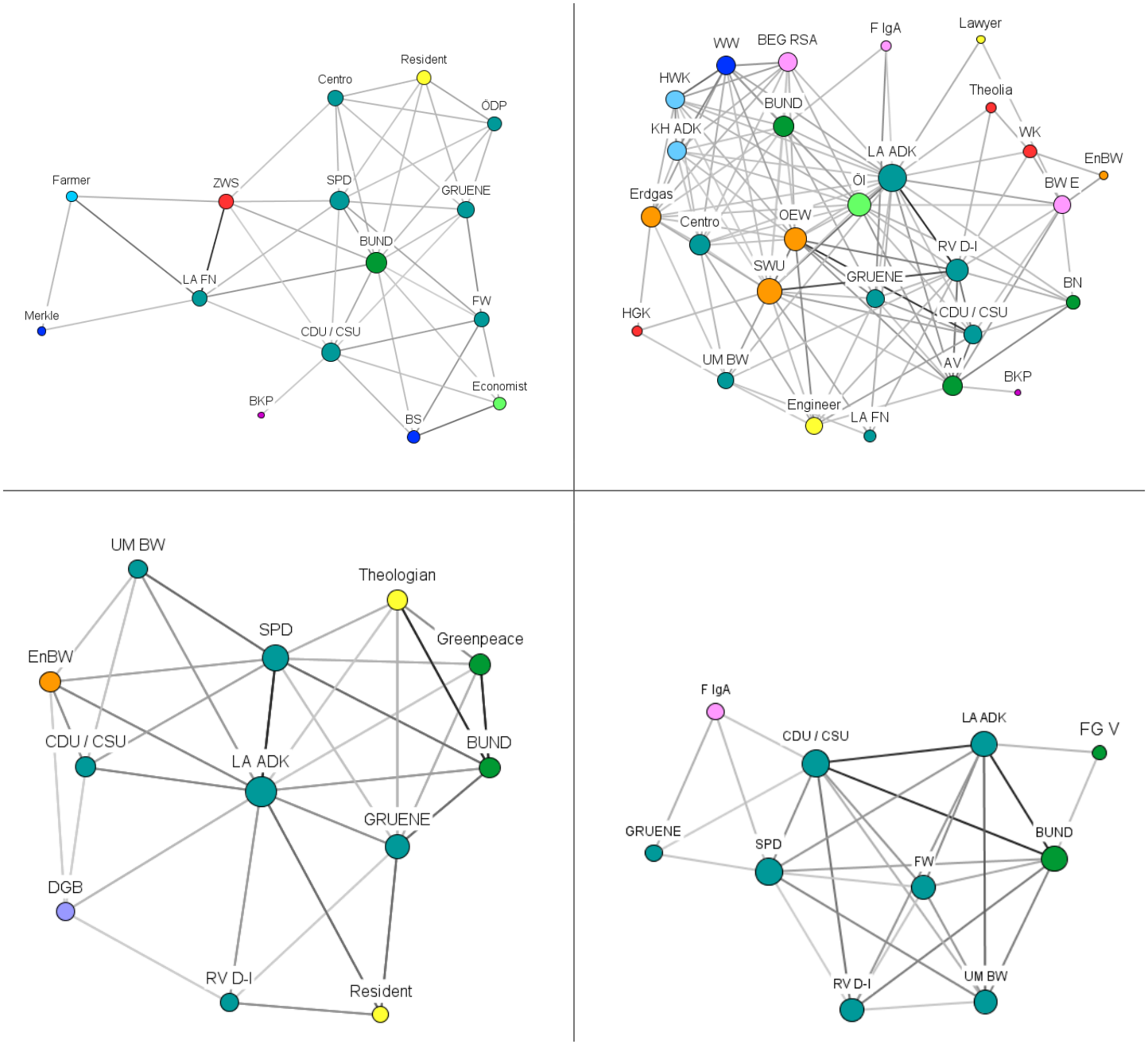

Table 7: Alb-Donau-Kreis (rural, successful): Yearly co-occurence networks of organizations based on common categories (upper left: year 1, upper right: year 2, lower left: year 3, lower right: year 4

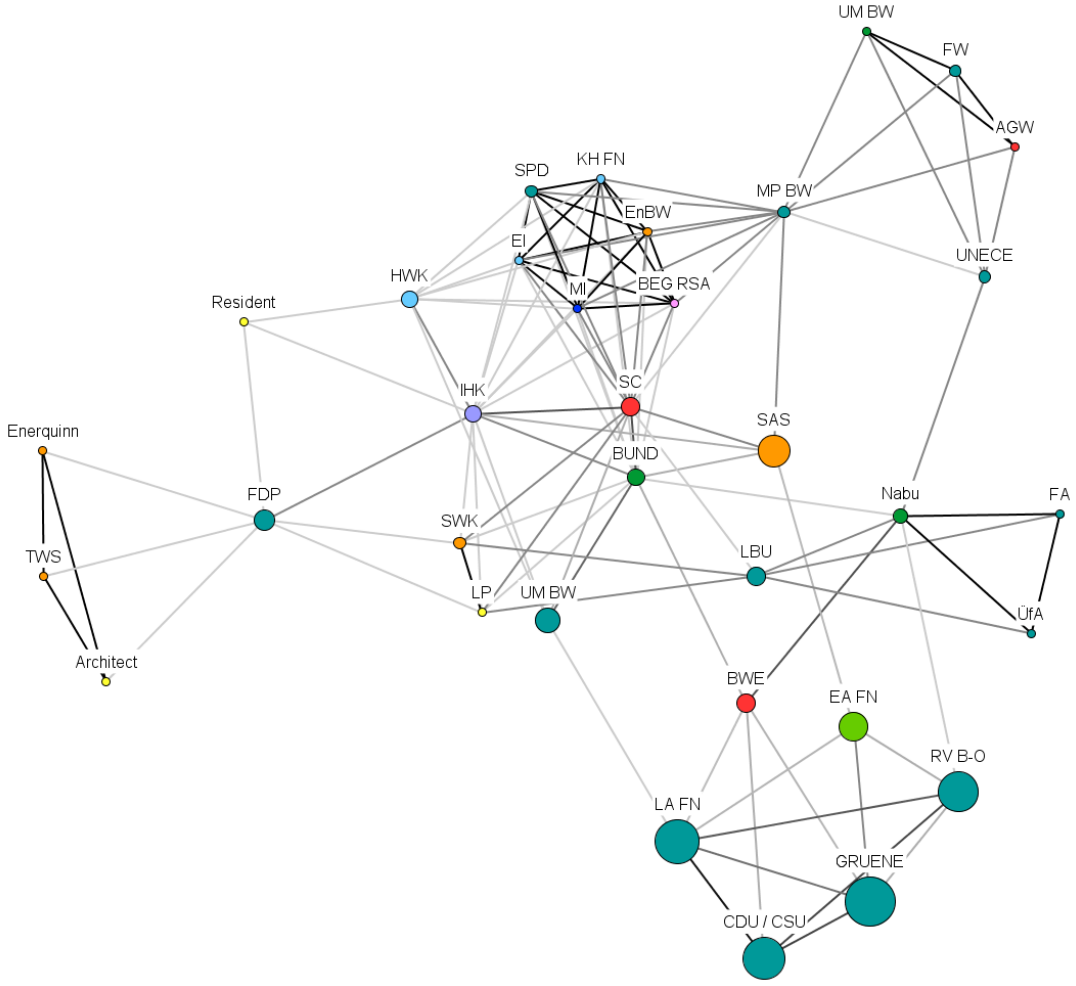

Figure 10: Bodenseekreis (rural, unsuccessful): Co-occurence network of organizations based on common categories

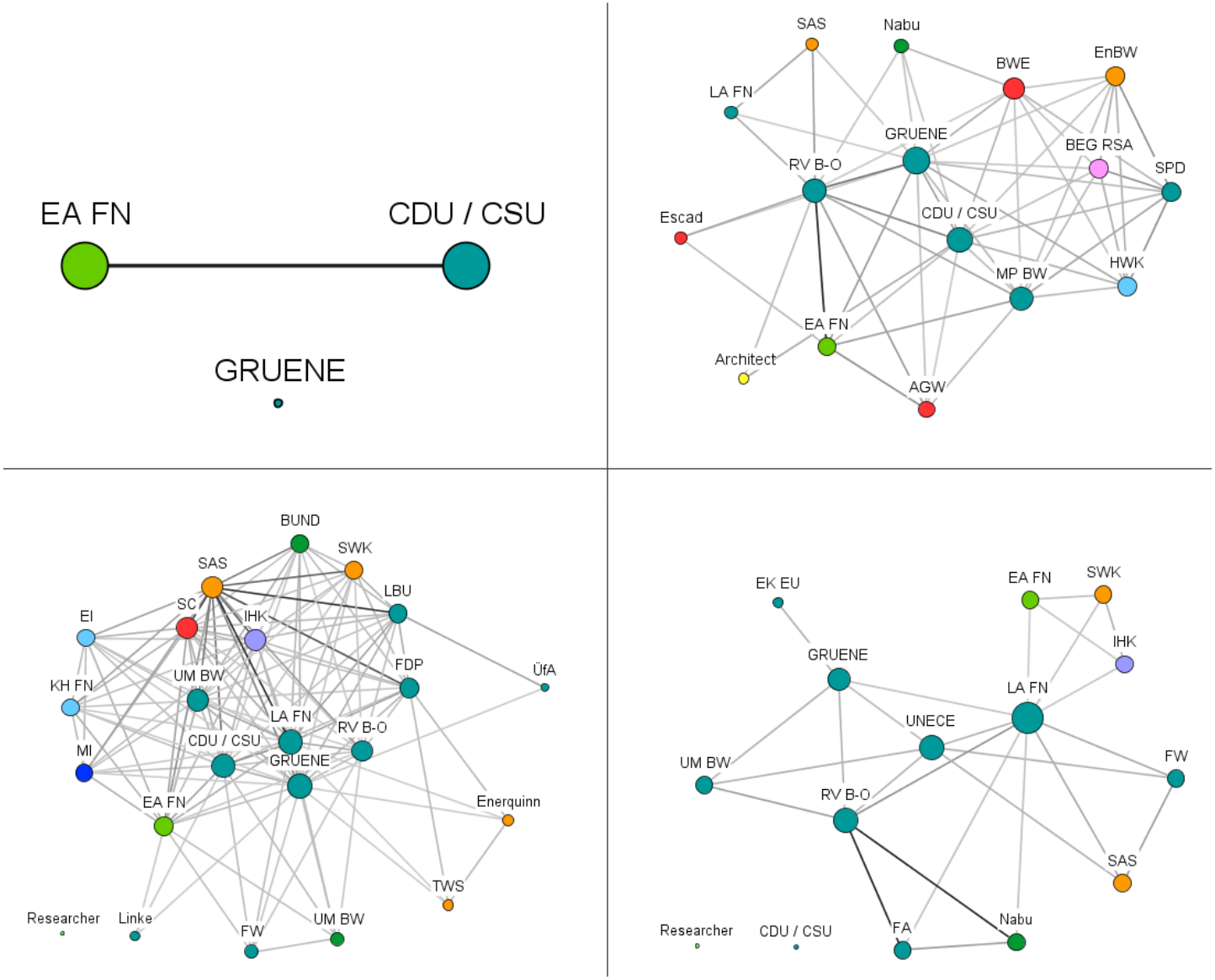

Table 8: Bodenseekreis (rural, unsuccessful): Yearly co-occurence networks of organizations based on common categories (upper left: year 1, upper right: year 2, lower left: year 3, lower right: year 4