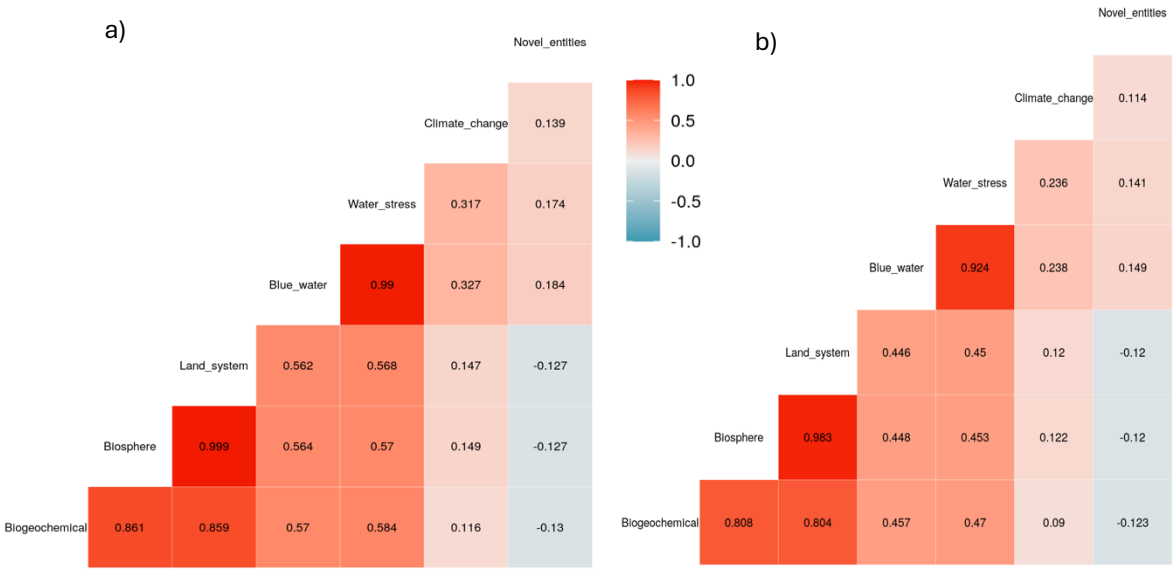
ANNEX A

Correlation, cluster and PCA analysis from production perspective

For both the correlation and cluster/PCA analysis the data employed is the share of total pressure each economic sector per boundary from the production perspective. Therefore, the sectors with higher pressuring shares are the ones that directly pressure the boundaries when producing. All the seven variables employed in the study up to now are used. Given that the data is not normally distributed nor homoscedastic, the correlation analysis is carried out using the Spearman Rank and the Kendall Tau correlation methods.

Figure A.1: Correlation matrix of the sectoral pressure exerted over each boundary from production perspective using (a) Spearman Rank and (b) Kendall Tau correlation



The hierarchical cluster analysis is first calculated using Euclidean distances and then clustered following 4 different techniques: single link, average link, Ward.D and Ward.D2. The number of clusters for each method is decided based on a qualitative assessment of dendrogram analysis. The final results presented in the discussion section of the paper consist of a qualitative interpretation of the results of the four clustering methods. The cluster results (Figure A.2) are plotted with the help of a principal component analysis (PCA). The two most significant components are employed in the y and x axis. In Figure A.3 we show the contributions of each variable in the components employed in the cluster figures.

Figure A.2: Cluster plots of sectoral pressure using different methods: (a) Single link, (b) Average link, (c) Ward.D and (d) Ward.D2

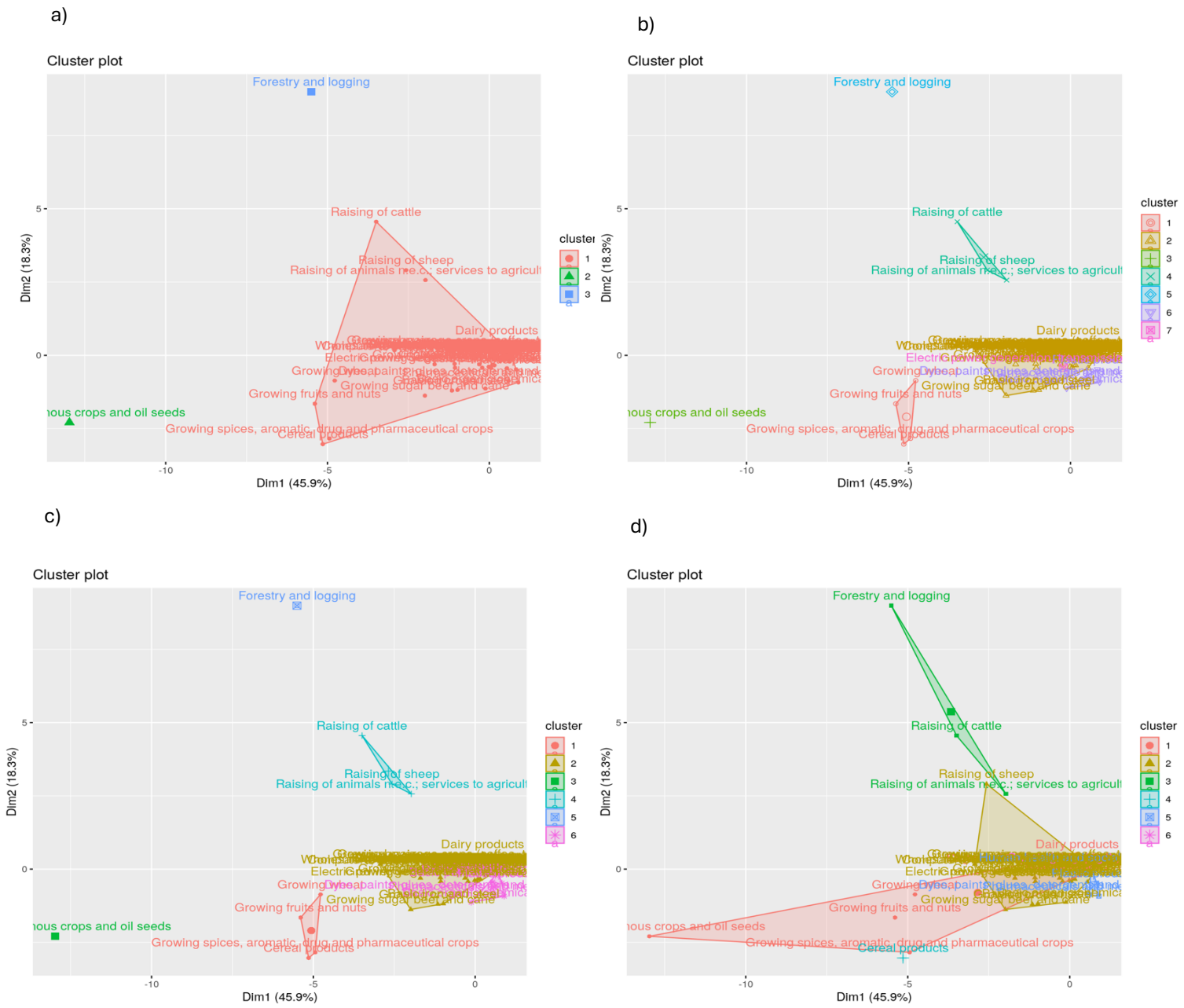
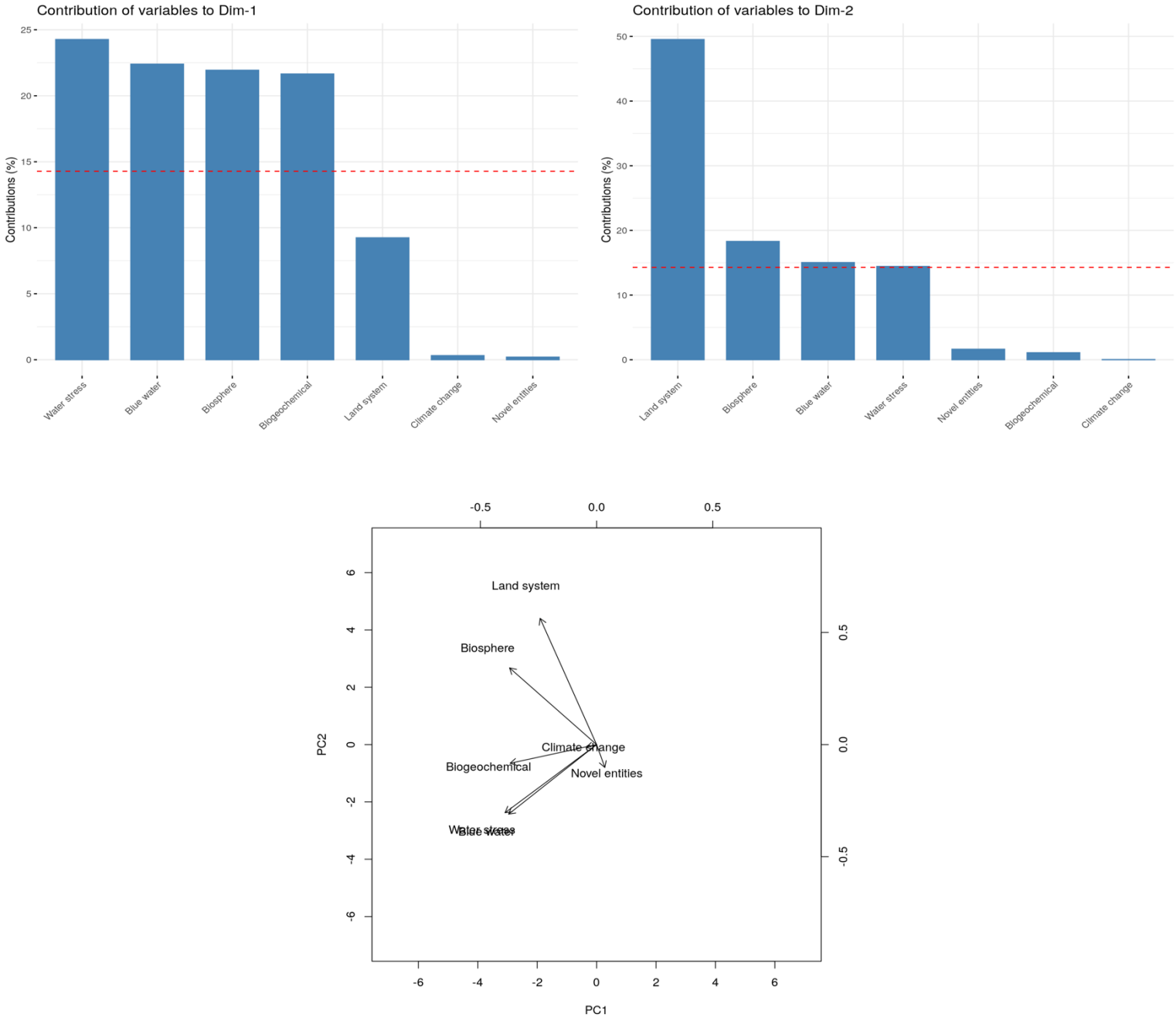


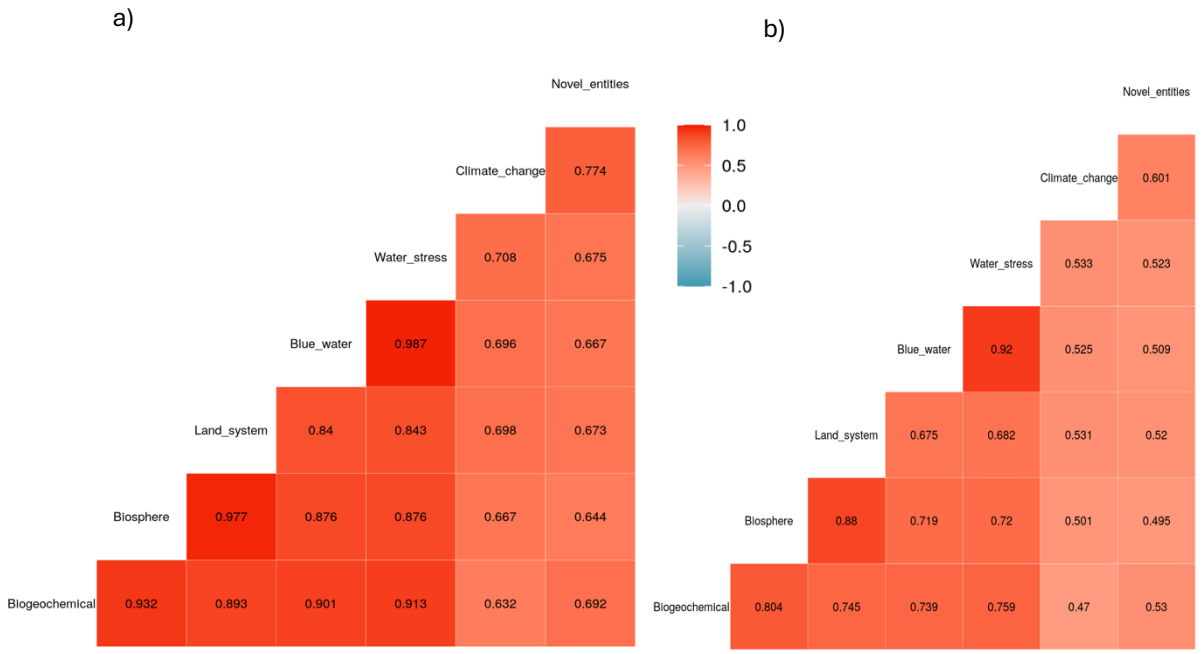
Figure A.3: Contribution of different variables for the PCA analysis upholding the cluster plots



Correlation, cluster and PCA analysis from consumption perspective

For both the correlation and cluster/PCA analysis from the consumption perspective the data employed is the share of indirect total pressure each economic sector per boundary. In other words, it's the pressure generated in the effort of the economic system to satisfy the demand of each sector, being it intermediary import consumption or final import consumption. Figure A.4 displays the correlation matrices.

Figure A.4: Correlation matrix of the sectoral pressure exerted over each boundary from consumption perspective using (a) Spearman Rank and (b) Kendall Tau correlation



The hierarchical cluster analysis with data from consumption perspective is calculated in a complete similar way.It is first calculated using Euclidean distances and then clustered following 4 different techniques: single link, average link, Ward.D and Ward.D2. The number of clusters for each method is also decided based on a qualitative assessment of dendrogram analysis. The results presented in the discussion section of the paper consist of a qualitative interpretation of the results of the four clustering methods. The cluster results (Figure A.5) are plotted with the help of a principal component analysis (PCA). The two most significant components are employed in the y and x axis. In Figure A.6 we show the contributions of each variable in the components employed in the cluster figures.

Figure A.5: Cluster plots of sectoral pressure using different methods: (a) Single link, (b) Average link, (c) Ward.D and (d) Ward.D2

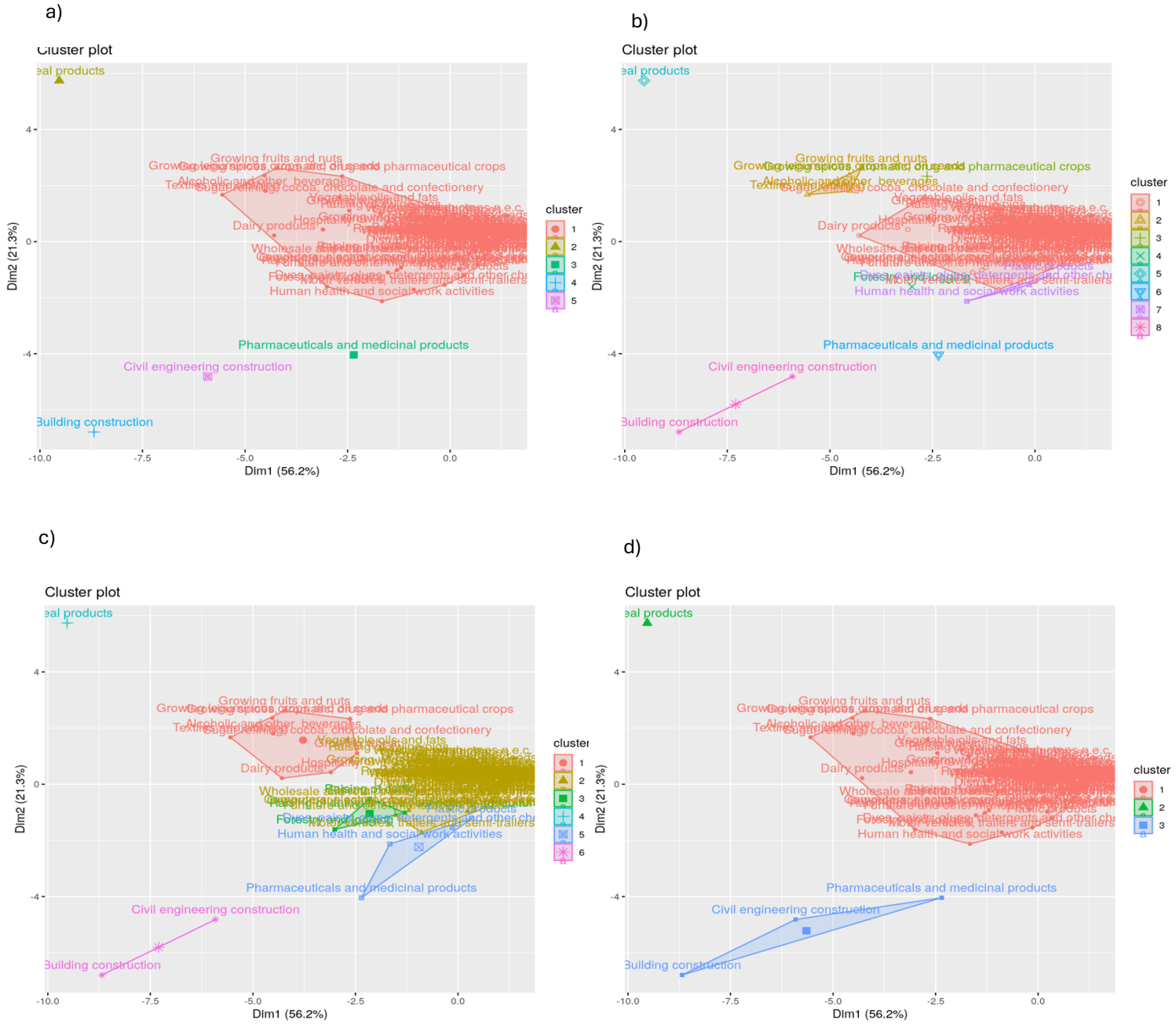


Figure A.6: Contribution of different variables for the PCA analysis upholding the cluster plots