

Social Life Cycle Assessment in Biobased Industries: Identifying Main Indicators and Impacts

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Introduction

With regard to biobased industry, the production and usage of bioproducts might have positive and negative social impacts, however, existing research on the social aspects of biobased industry is limited. Thus, for assessing the impacts of producing biomass and its processing for biofuels and bioproducts valid data and in depth research is required. In this regard, the development of impact categories and indicators, is not the only challenge related to Social Life Cycle Assessment (SLCA) but data collection also is one of the most challenging issues. To address these challenges, this review aimed to compare the available frameworks specifically applied on biobased industries for identifying impact categories and indicators and therefore, to be a basis for inventory analysis stage of SLCA to be carried out for data collection of the social indicators and impacts of biobased industries.

Fig.1. Main steps for identifying indicators of bio-industry SLCA towards inventory analysis step

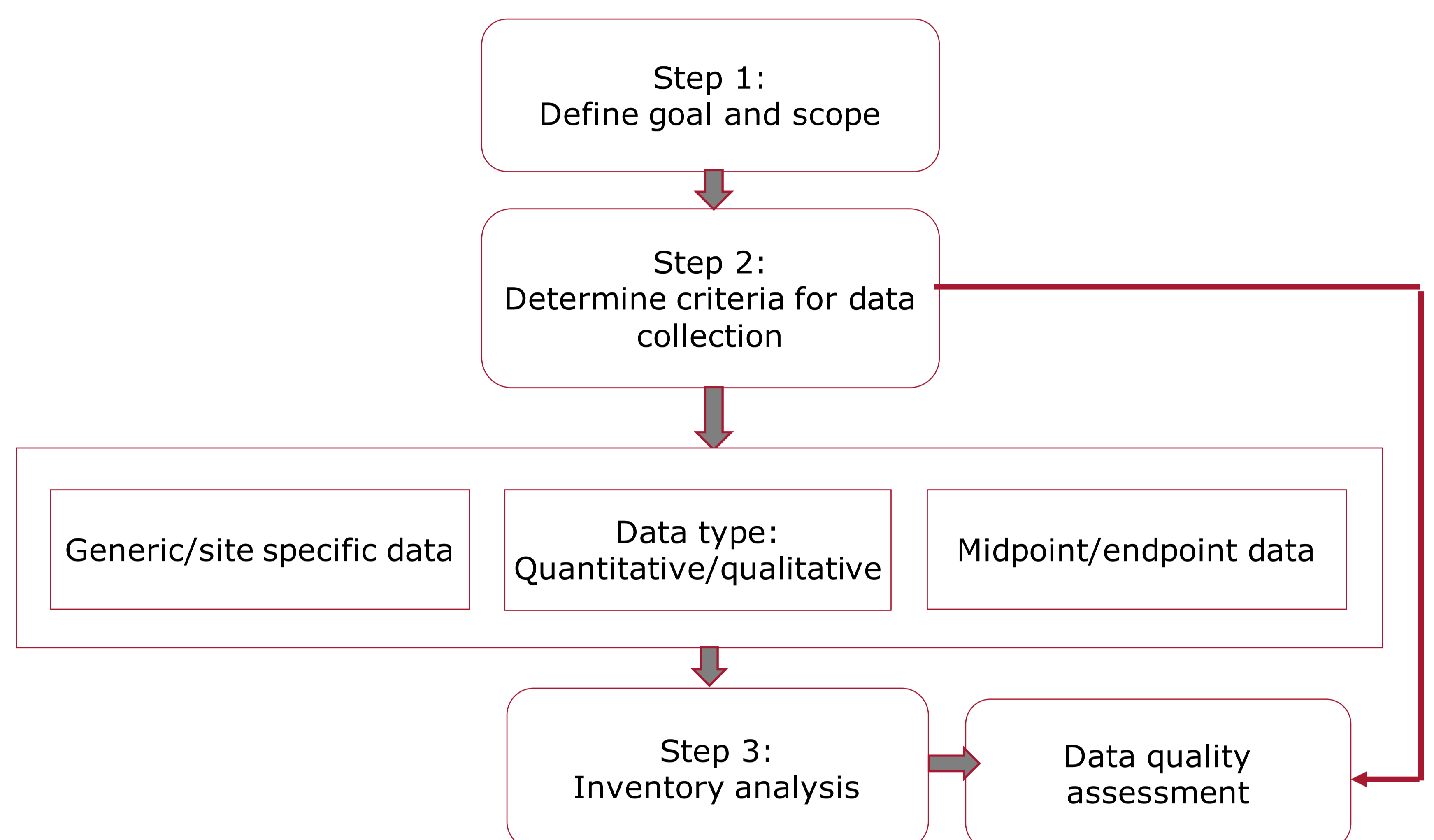


Fig 2. Main social indicators suggested in the main frameworks for social life cycle assessment of biobased industries (Food security, Income and Employment are midpoint and the rest are endpoint indicators)

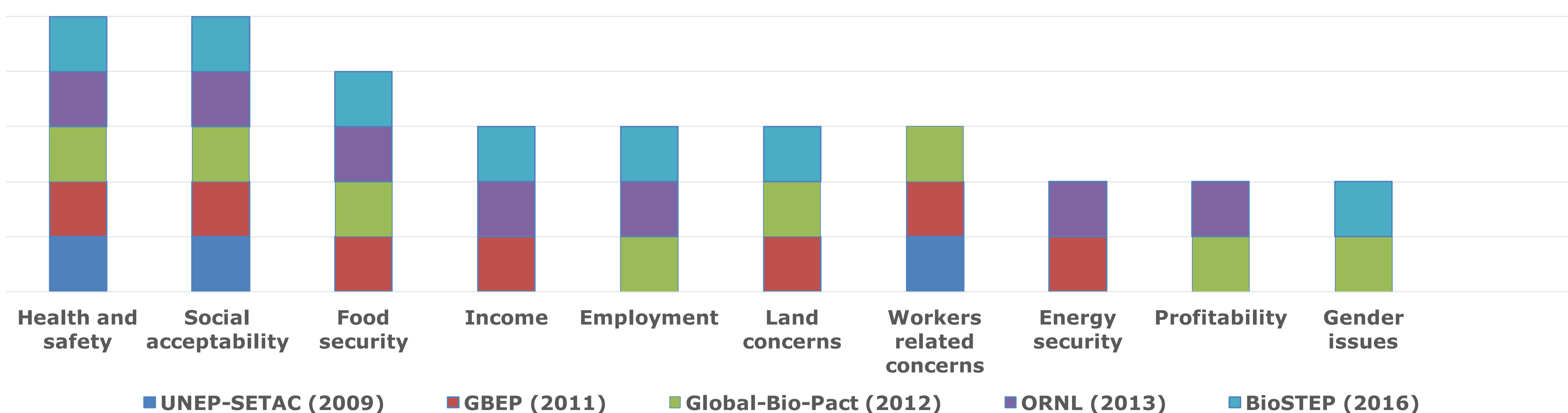
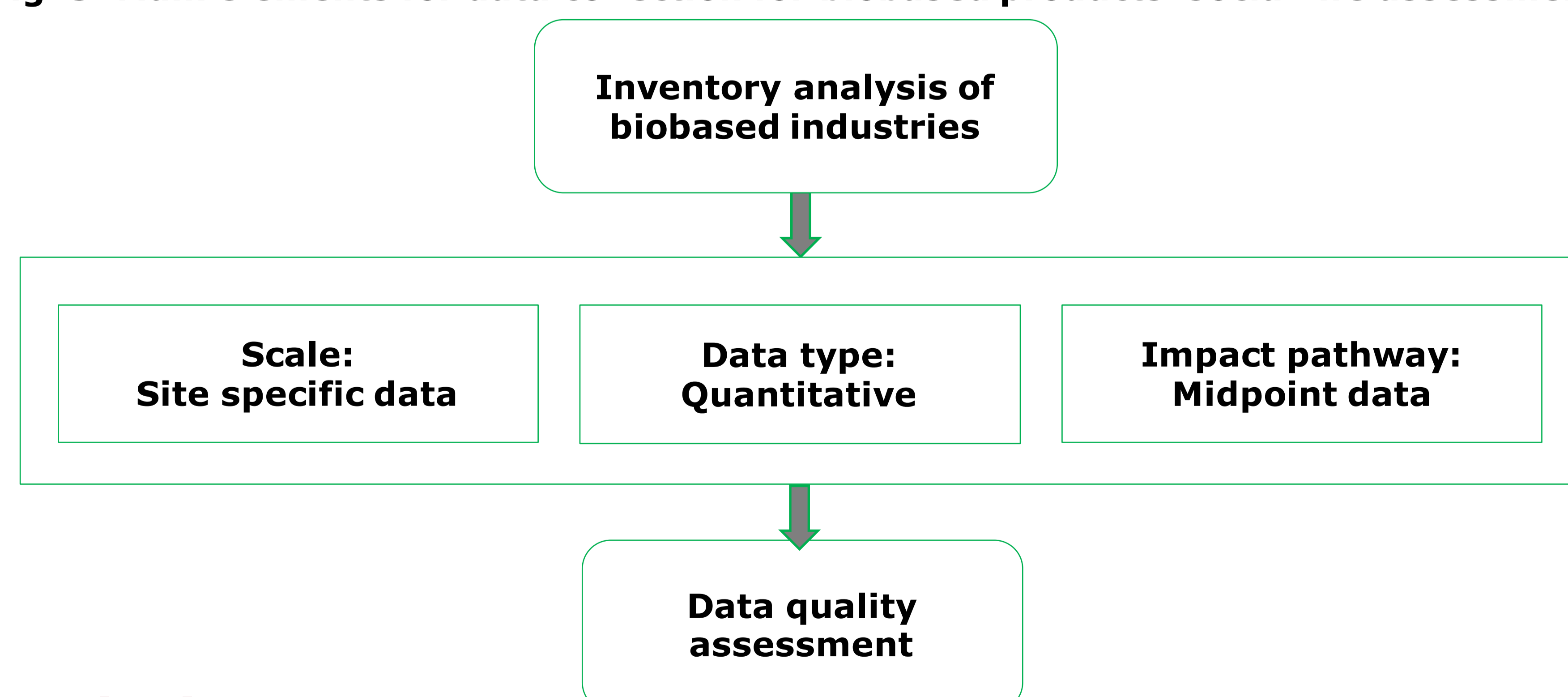


Fig. 3. Main elements for data collection for biobased products' social life assessment



Discussion and Conclusion

According to the reviewed frameworks in this study, quantitative, midpoint and site-specific data are the main elements taken into account when collecting the data for social impact assessment of biobased industry and processes. Through identifying the main socio(economic) indicators, this review provides useful information for future researchers in biobased industry sector in order to help them to identify the social issues based on the main identified elements for determining the social issues before starting the inventory analysis phase of SLCA for sustainability assessment of biobased industries. It is worth to mention that The Social Hotspots Database (SHDB) has established so far as the superior resource of social inventory data for for 57 economic sectors throughout 113 geographic regions. Anyhow, so far there is no one best approach which covers all social dimensions as it really depends on the scope of the study and the priorities of the stakeholders involved in the bio-industry under consideration. Therefore, additional research is required to enhance the partially new and restricted body of knowledge on the social aspects of bioenergy and bio-products.