

A low-angle photograph looking up at the canopy of tall, thin trees against a clear blue sky. The tree trunks and branches create a complex network of dark lines against the bright sky.

## WP 5 – MEASURING THE IMPACTS OF CIRCULARITY

Led by University “G. d’Annunzio”, Pescara with Messina, Aberta and Utrecht

Partners: Three companies and an overseas CE network

The sustainability implications, including environmental benefits, of the circular economy have been assumed rather than measured. A better knowledge of potential impacts is imperative, but is beyond the scope of current methodologies and tools for life cycle analysis. This WP5 aims to investigate the issue of measuring the sustainability of Circular Economy, by understanding the main methodological issues relating to measurement and proposing suitable indicators, methods and tools for measuring both the extent and effects of CE

sustainability, at different sectoral contexts and scales. The analysis will be conducted both from the perspective of theoretical/scientific contributions and from the perspective of the end users, such as companies and practitioners.

Aims: to investigate the assessment and communication of Sustainability and Circular Economy practices and projects, by 1) understanding the main methodological issues relating to measurement and proposing suitable indicators, methods and tools for measuring both the extent and effects of CE sustainability, in different sectorial contexts and at different scales. 2) Developing indicators are useful in measuring the extent of circularity in private sector organisations. The analysis will be conducted both from the perspective of theoretical/scientific contributions and from the perspective of the end users, such as companies and practitioners.

WP5 includes three ESR posts, with individual projects as follows:

## ESR 5.1 Measuring CE sustainability: methodological and practical issues

First supervisor Raggi, "G d'Annunzio" Pescara; co-supervisor Vermeulen, Utrecht

Based in Pescara with secondments in the Netherlands and Italy

This project tackles the methodological issues in the application of life cycle analysis to the circular economy. The project will provide an updated and detailed scientific discourse about measuring sustainability of a Circular Economy, available approaches and tools, their potential and limits. It will define the objects relevant to measure for sustainability and consider the methodological adjustments required to do this, as well as identifying the most appropriate tools and approaches for doing so.

### Objectives

1. Outlining an updated and detailed scientific discourse about measuring sustainability of a Circular Economy, available approaches and tools, their potential and limits;
2. Defining the measuring objects and identifying the most suitable approaches and tools, also understanding the methodological adjustments required;
3. Assessing the potential complementarity and synergies between approaches and tools that measure different contexts or variables; and
4. Identifying the main methodological and practical challenges to implementation and how to overcome them.

## ESR 5.2 Methods and tools to measure sustainability and CE at company level

First supervisor Salomone, Messina; co-supervisor Reyes, UTT

Based in Messina with secondments in France and Italy

Working at the company level, this project provides a systematic analysis of key experiences of measurement of sustainability for the circular economy, identifying the implemented methods and tools for different industry sectors, company dimension, sustainability perspective (environmental, economic, social), key waste streams and any other variable influencing these experiences. Findings will be used in conjunction with an industry case study to design best practices for accelerating the implementation of circularity at company level, identifying key strategies of universal implementation such as reporting on proper methods, data quality requirements, and organisational change.

### Objectives

1. Provide systematic analysis of key experiences of measurement of sustainability and CE at company level, identifying the implemented methods and tools for different industry sectors, company dimension, sustainability perspective (environmental, economic, social), key waste streams and any other variable influencing these experiences;
2. Determine success factors and limitations of these measurement experiences in order to design best practices for accelerating the implementation of circularity at company level, identifying key strategies of universal implementation, reporting on proper methods, data quality requirements, organisational change, etc.;
3. Determine the improvement potential of CE of specific selected industry case studies (specific waste streams, characteristics of related markets for recycled materials, potentiality for symbiotic exchanges, etc.);
4. Measure the sustainability and CE in the selected industry case studies that are following these best practices.

## ESR 5.3 Development of a sustainability indicator system to assess and communicate CE practices at company level

First supervisor Caeiro, Aberta; co-supervisor Salomone, Messina

Based in Lisbon with secondments in Italy and Taiwan

The far reaching re-organisation required to achieve a circular economy calls for openness to new ideas, including the consideration of best practice that may have been developed in a different context. This project aims to extend a sustainability indicator approach developed with public sector bodies for application in the private sector. Beginning with a systematic review of indicator frameworks and indicators to assess CE performance at company level, it will develop an open and participatory sustainability indicator system to assess CE performance at company level using a case study with multiple stakeholders.

### Objectives

1. Provide a systematic review of indicator frameworks and indicators to assess CE performance at company level;
2. Develop an open and participatory sustainability indicator system to assess CE performance at company level in a case study with multiple stakeholders;
3. Test and validate the sustainability indicator system to assess CE performance be used in the future at company level.



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