# A journey to circular economy: Dealing with institutions, networking and legitimacy

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Popularity, and demand on the circular economy has increased due to environmental, social and economic reasons. Circular economy is often carried out as projects to integrate new ideas and thoughts into the developing process. Flexible nature of the projects encourage innovation but also entail difficulty with internal and external coordination. A circular economy aims to minimize waste and make maximum use of resources. The firms usually see the circular economy projects as any other organizational activities and therefore cannot comprehend what hinders and resource constraints projects might encounter. The situation is further complex when SMEs engage in circular economy and try to minimize resource input, waste, emission and energy leakages by slowing, closing and narrowing energy and material loops through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, recycling and upcycling (Geissdoerfer et al., 2017; Spring and Araujo, 2017).

Studies on circular economy are gradually coming up but no study, to our knowledge, has yet tackled how SMEs deal with institutional and organizational difficulties in realizing circular economy ideas. We assume that a functioning coordination is necessary with internal and external actors to communicate the ideas and gain legitimacy and access to the required resources. Nyuur et al (2018) observe that SMEs heavily rely on business and political networks as an important competitive strategy to overcome their limitations and succeed in the intensively competitive and increasingly turbulent environment. Approach to circular economy is demanding in the sense that it deals with innovativeness, exposes to both internal and external challenges and needs to solve several unresolved issues and persuade different institutions, organizations and policy makers. Institutional theory is concerned with how firms and groups secure their positions and legitimacy, by confirming the rules and norms of the institutional environments in which they operate (Scott, 2007; Bell and Cooper, 2018). This study applies institutional theory as the starting point and analyzes how SMEs interact with the partners to achieve the goal of circular economy.

Meyer and Rowan (1977), referred by Czinkota et al (2014), early recognized that organizations should meet the rational criteria set by the institutional context in order to be considered efficient to maximize legitimacy and resources, and attain their ability to survive. Given SMEs resource limitations (Harris et al., 2012), they are in need to develop network with actors who can make their activities legitimate. Networks are viewed as a "system of interrelated actors" (Hohenthal et al., 2014) and also as a "set of two or more connected relationships" (Axelsson and Easton, 1992). Both these approaches are relevant in circular economy as SMEs seek long-term relationships with partners in vital areas of business, and of social and political interest. Suchman (1995) describes external legitimacy as the acceptance of an actor by the broader social environment. Internal legitimacy is necessary for internal coordination and to get support in the organization.

Institutions offering legitimacy, and network for developing relationships with other actors are two key issues in this study. Although new, interlink between institutions and network have been discussed in other studies (Owen-Smith and Powel, 2008; Persson et al (2011). One such link is created to secure support of institutions, and sometimes to shape organizational policies through networking process such as lobbying, cooperation and relationship management

(Mellahi et al., 2016; Narooz and Child, 2017). Interpartner legitimacy is another example to get the organization's activities socially approved (Persson et al. 2011). By applying institutional theory and network perspective, this study aims to analyze how SMEs' actions toward circular economy is legitimized by establishing network with different organizations and institutions. Two concrete research questions are addressed:

- How does the SME identify the challenges and proceed with the development of business activity toward circular economy?
- How does networking take place to legitimize and sell the concept of circular economy to different stakeholders?

## THEORETICL BACKGROUND AND FRAMEWORK

### Network

The initial framework of IMP based network is known as ARA – actors, activities and resources, the importance of which have been recognized over time (Cova and salle, 2000; Ghauri et al., 2008). Actors are analyzed due to their role in recognizing and organizing critical issues of the network (Hyder et al., 2017). Resources can be of tangible and intangible nature. According to Abrahamsen and Håkansson (2017) resources are goods and services, manufacturing facilities, finance, technology, knowledge and personnel that companies develop and share. Activities are the firms' efforts and engagement to interact with other actors and combine resources to fulfill the requirement.

Smaller firms tend to rely on external parties to secure information, resources and other support for strategic initiatives (Naroos and Child, 2017). Håkansson and Gadde (2018) point out the dynamic role of network, which allows actors to join, stay over time and leave depending on the need of the actors and the activities, which the network can provide. For SMEs, it could be difficult to have active role in the network for its size and limited resources they have at their disposal. Even identifying the right actors is not an easy task for them as needs could be changing, and of different character and critically.

### Legitimacy

Legitimacy deals with acceptance of some action by a group of people, organization or society who might be interested in the action. According to Suchman (1995, p. 574) "legitimacy is a generalized perception or assumption that the actions of any entity are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs and definitions". Woldesenbet (2018) argues that although legitimacy is crucial for organizational survival and growth, little is known how legitimacy is acquired and maintained. In circular economy, it is required that firms practices are legitimate and accepted by different actors with varied goals and aims. Handelman and Arnold (1999) identifies two types of legitimacy in introducing product in the market. Pragmatic legitimacy, the first type, focuses on the individual benefits of the stakeholders (Persson et al., 2011) while the other type, social legitimacy relates to current social norms and cultures which decide whether a social actor's action is appropriate (Scott, 1995). Similarly, in a study of country-of-origin and legitimacy, Wang el al (2014) identify two types of image. Performance image includes a product's quality, price advantage, economic development and firm competence to benefit different stakeholders. The institution image on the other hand deals with business culture, national strength, national institution and social norms.

## Combining network and legitimacy

Marano and Tashman (2012) argue that it would be a difficult task when different stakeholders within the same organizational field present legitimacy requirements to the firm. In circular economy, regulatory bodies, industry, sustainability institutions, energy organizations might have competing demands, which the firm needs to fulfill for getting legitimate. Peng (2003) find a clear link between networking and legitimacy and assert that firms need to establish and intensify network with the environment including managers of other businesses and more powerful players with legitimacy. In sensitive business areas, firms develop networks with government and important institutions to gain legitimacy and establish relationships helpful to business operations (Hyder and Fregidou-Malama, 2009).

Oparaocha (2015) has examined the use of institutional networks by SMEs in the context of international entrepreneurship. According to him, institutional networks represent the network relationships that can exist between a firm and publicly funded, open access institutions. Aim of the institutional networks is to support the firm without incurring cost. These networks seem to have a structure and more permanent. In this study, we see networking as a dynamic action by SMEs to take part in activities for acquiring resources, information, knowledge and get acceptance of the activities by the broader social environment.

## RESEARCH METOD

To carry out this study a single case on a high tech SME from mid Sweden has been conducted. By applying a case study method, data has been collected through semi-structured interviews with the project manager, observations, seminars and seven whole day workshops involving some collaborating companies and the cluster organization in the steal manufacturing industry. The total number of face-to-face interviews goes up to 15 that includes both individual and group meetings. The interviews were conducted in Swedish, which were later transcribed and finally translated to English by the researchers.

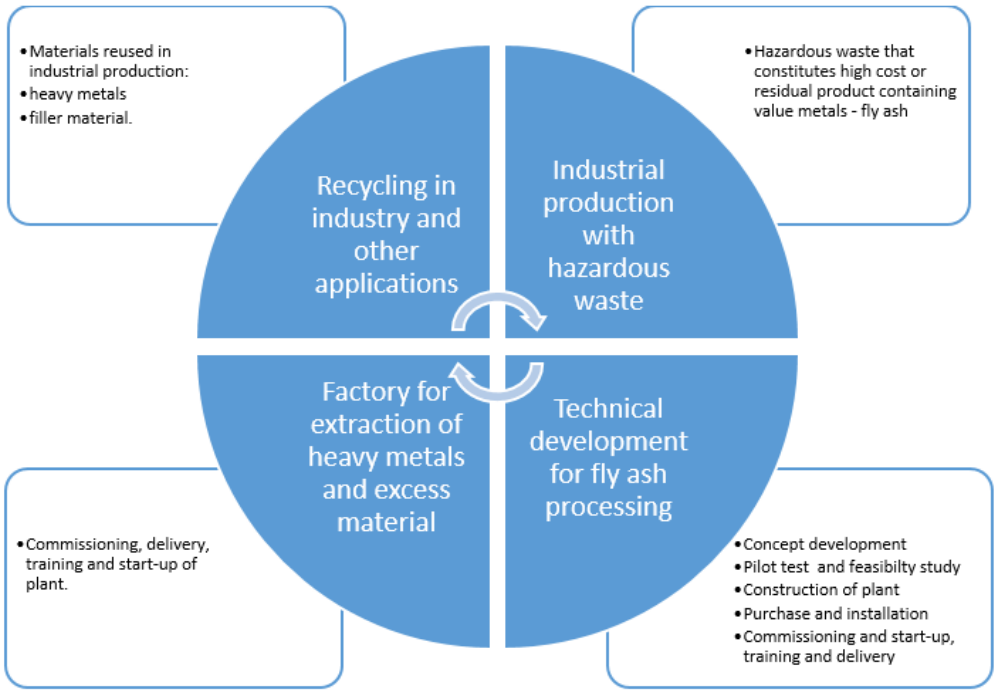
The workshops gave the firm important contacts with other firms and possibility to exchange ideas on common matters and problems the SME faces with the circular economy project. The investigated firm is a technology supplier that develops and delivers high temperature processes for the disposal of hazardous waste and the recovery of valuable metals and energy from industrial bi-products. The firm has 16 employees and has a turnover of 45 million Swedish crowns.

## THE CASE FINDINGS

The SME is a technology supplier in the field of metallurgy. It develops and delivers high temperature processes for disposal of hazardous waste and recovery of valuable metals and energy from industrial bi-products. One main area of their activities deals with fly ash from waste incineration that contains dioxins, mercury and other heavy metals dangerous for human and the environment. The concept is grounded on metallurgical treatment of fly ash in a process known as ArcFume. This is a metallurgical high temperature process where energy is supplied via a plasma generator. A plasma generator transfers electric energy to a very hot gas. The method is tested and found to provide satisfactory result in dealing with fly ash and using part of it for other purposes. The SME has discussed with a partner to use their special motors to generate high temperature at a lower cost. But it requires that the heat is effectively channeled to have the full effect. The SME product itself is not a cost-effective recycling process but it is an effective technological solution to neutralize the hazardous waste. The resulted bi-products

are glass other waste products generated as recycled minerals. The SME's argument is that cost-effectiveness is secondary, instead it must be measured against environmental gain, efficiency in neutralizing and managing toxic / hazardous waste. There are competitors in the market with other solutions. They competitors use old technology, which gives a residue in the form of toxic wash water, which needs to be cleaned. The other companies estimate the need to process 80,000 to 90,000 tons of fly ash per plant, to be financially sustainable. The process does not really do the recycling and generate by-products for other use. The SME focuses on minimizing effect of hazardous material and recycling of the waste products. Figure 1 illustrates how the SME recycling process is constructed.

Figure 1 Circular economy model for the SME




Around 200,000 tons fly ash is yearly produced in Sweden. 50% of the fly ash is exported to Norway for use of filling in lime breaking. There are altogether 32 combustion plants in Sweden that causes fly ash. To get the SME's concept accepted in the country is challenging as it requires a huge investment and combustion industry itself is looking to find the solution. As long as deposition of fly ash is permitted, motivation to find a better but a relatively expensive solution is fragile. The combustion industry however feels a pressure on them as they continue with deposition of fly ash, which damages the environment. The combustion industry faces lack of confidence due to their inability to find an alternative to landfilling. The industry has an energy perspective, which also makes it difficult for them to clean fly ash through further energy consumption. The situation is complex as they only look on energy consumption but don't see the gain from extracted material and value of bi-products. The SME has the technology to convert the ashes into resources, for which they seek legitimacy from the users and the stakeholders.

The SME had a series of discussion with the combustion industry who has become very interested in ArcFume method, which the company offers. The industry people want to deepen

the evaluation of a large-scale plant by considering cost, location and capacity. They see the strength of the SME offered method, which can handle the fly ash completely without disturbing the activities of the existing combustion plants and sale of energy. The combustion industry has an attitude that they are the ones who will solve their problem, and therefore they take the responsibility to organize themselves and arrange financing for continued development. The SME is thought to be a main partner in the development process and the technical competence, which the SME lacks is going to be hired.

However, the SME has to deal with several challenges in convincing the stakeholders and finally selling the technology. A major challenge is to continuously gain support from the combustion industry and have a strong position in the technology development network. The knowledge on metallurgical processes is low in the combustion industry, which makes it difficult for the SME to get a breakthrough and legitimize the concept. In this regard, several meetings were arranged with institutions like Energy authority, Swedish transport authority, Swedish Railway and Regional Recycling organizations. Another problem is technical, relating to the classification of mineral products. Solving this issue is crucial for the sustainability of the method. Due to the high cost of the plant and the long way to reach that point makes the financing as well as generating income uncertain. The challenge is also for it to use this opportunity as a springboard internationally; to use the Swedish reputation as a pioneer in its ambition to taking care of fly ash.

The SME participates in the Swedish ash network and takes part in all their activities including workshops, meetings and conferences. Together with the steel industry, it carries out development projects to tailor a technical solution. The regional cluster organization supports with information, contacts with other firms and penetrating into the users' and related institutional networks. There are several organizations such as environmental companies, purchasers, universities and researchers, government organizations and ministries are interested in the solution. The company has developed a network of relationships with many organizations and conducts a lobbying activity in support of the waste treatment method. In different seminars, the method is presented and the advantages of the method is highlighted. The SME holds regular internal meetings to update each other on progress in projects and marketing activities. Training days are arranged to teach each other skills that obtained elsewhere..

In the marketing process, the company identifies a number of activities relating to several outcomes: (1) total acceptance of the method for transmission of fly ash to harmless mineral products, (2) development of a steady process to extract valuable metals for market generation and commercialization and (3) financial support from different authorities connected to this field. Once the product is accepted in Sweden, the company believes that it will give them legitimacy to market the concept in the other European countries as they also experience a similar problem with fly ash. The SME is concentrated on extending its contacts and creating confidence among the networking partners.

## ANALYSIS AND CONCLUSION

The SME is engaged to organize networks with partners in acquiring necessary resources and getting acceptance by the users to market the new method dealing with fly ash. The combustion industry is in need of this technology and but does neither prioritize to develop it internally nor seek it seriously from the outside sources. One of the main reasons for this non-interest is that disposal of fly ash is stilly permitted. The SME is lobbying with environmental organizations and some other regulatory institutions to uplift the disadvantagesof the landfilling and gradually prohibit it. Mellahi et al (2016) and Narooz and Child (2017) has described lobbying as one of the main approaches to have impact on the political and decision making

community. However, considering the limited strength of the SME, it emphasizes to develop relationship with partners concerned on the environmental damage. There are also efforts in the EU to legally ban landfilling of hazardous waste.

Further it is not easy for the whole combustion industry to rely on a SME to solve the problem with fly ash. The solution offered by the SME is costly and it seems that muchdiscussion isnecessary to make a decision on plant establishment. Although the solution and opportunities of using waste as bi-products apparently hold as a part of circular economy, it is up to the SME to prove that it can really make it. To this end, the SME has so far attended different seminars and conferences with the stakeholders to convince them and get legitimated. Even internal legitimacy is sought by the company through internal discussion and acquaintance with improvement of the technology. Suchman (1995) has mentioned the need of external legitimacy when the product is new and involves a wide range of stakeholders. However, the study shows that the SME does not alone capable to advance the process of development and deliver the ultimate technology. Harris et al (2012) has highlighted the SME's resource constraints, particularly when the need is extensive and the product is a part of circular economy. SME is working to highlight the benefits of the stakeholders, particularly the combustion industry to ensure pragmatic legitimacy (Persson et al., 2011).

One disadvantage of the SME's solution is its expensiveness and the huge investment required for the establishment of the plant. Effort is needed from different stockholders to seek a permanent solution of the fly ash problem. The positive side is the growing voice for environmental protection and the value related to it. Additionally likelihood of finding land for the disposal of hazardous waste like fly ash is limited. This study contributes to circular economy research by showing how the SME organizes and take part in different networks to legitimize its activities to the stakeholders.

Although the SME is aware of pragmatic legitimacy, it is not much concerned about the social and cultural acceptance, which is an important part of circular economy. One limitation of the study is its focus on the close partners of the SME, which needs to be extended to the broader environment of the circular economy. Another additional research issue might concern how firms deal with waste material in other industry. A comparison of circular economy studies in different industries is required to increase the knowledge on how economic and social benefits are generated from environment focused ventures. As practical implication, this study suggests that SMEs need to design networks targeting institutions and other stakeholders who can provide critical resources and legitimacy to the circular economy projects.

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