

MEASURING THE IMPACT OF INVESTMENT PROJECTS ON REGIONAL DEVELOPMENT: ARE PROJECTS ALWAYS GOOD?

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Abstract

The aim of this paper is to conceptualise an approach to analysing and valuating complex project effects through defining the project area and the stakeholder groups both within and outside the area and organising and mapping every effect of the project. Analysing ten investment projects revealed patterns in types, location, behaviour, interrelations of stakeholder groups and various effects caused by the project, which can be used to develop a versatile methodology. The methodology allows us to calculate the impact of a project on various ranges and sections of its stakeholders and environment. We distinguished not only the most commonly analysed effects associated with the project objectives but also displacement effects, which relate to the movement of the stakeholders in and out of the project area. We also took into account the substitution effect, in which one group of stakeholders replaces another, and multiplier effects, which involve changes in income, supply volume, land value and synergy. Notably, some effects, like pull or leakage, are detrimental to the stakeholders, but the impact depends on the study's area and scope.

Key words: additionality, evaluation, projects, project effects, regional development

JEL Code: H43, O22

Introduction

Today, regional development often occurs through project-based programmes and policies, especially in the European Union. Therefore, proper implementation of investment projects has become a crucial means of creating sufficient growth in regional economies (Barkovic, Sostar, & Pap, 2013). Although the literature contains many examples and evaluations of the impact these programmes have on regional development (see for example Coman & Coman, 2010), there is still a lack of analysis of the changes in the socio-economic environment the implementation of these projects cause, although some efforts have been made (Camagni, 2009). Also, the cost-benefit analysis proposed by the European Commission for the 2014–

2020 financial perspective focuses only on positive effects or effects influencing stakeholders in the project area alone (Catalano et al., 2014). Yet projects influence local communities and the environment in different ways and can also have a strong impact outside the project area. Their effects might be complementary, contradictory or even redundant. A project can impact not only its intended beneficiaries but also stakeholders not directly involved in the project. The effects of a project can be both positive and negative and direct or indirect; the same outcome can influence one group of stakeholders positively while harming another group.

The aim of this paper is to conceptualise a new approach to assessing complex project effects through defining the project area and the stakeholder groups both within and outside the area and organising and mapping every effect of the project. This technique will provide an assessment of a project's entire impact and facilitate the preparation of tools necessary for its valuation. The approach utilizes the author's experience in evaluating different investments projects and programmes and is based on numerous case studies.

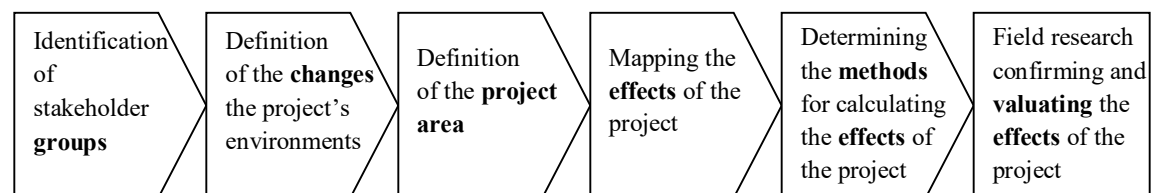
The paper is structured as follows. The next section describes the research design, including the general approach to assessing complex project effects and hypotheses. The second section presents and discusses the results of the analysis of ten case studies. Every sub-section clarifies each step of the assessment, including defining the stakeholder groups, changes the project's environments, then defining the project area and finally mapping every effect of the project. The third section offers a conclusion. Because the paper is conceptual, the literature review is used to support the findings of the analysis in section 2.

1 Research design

1.1 General approach to assessing complex project effects

This paper presents a new approach that can assess complex project effects that are difficult to capture because of the variety of stakeholders and their interrelations, the various events that may happen after implementing the project and the different sizes of project areas. Also, different perspectives on the calculation results may complicate the analysis.

Fig. 1: The multi-stage approach to analysing complex project effects



Source: self-elaboration

The analysis concerns different profiles of stakeholders, different areas, and different numbers of complementary projects or their parts. Thus, it requires a multi-stage approach, which is presented in Fig 1. The approach's logical framework is presented in the following sections, but in general, it is based on identifying every stakeholder group that may be involved in or affected by the project's effects (see section 2.1). Then, for every stakeholder group, we investigate the processes and events that change its location or behaviour (see section 2.2). The boundary between different locations or behaviours indicates the project area (see section 2.3) because stakeholders usually migrate or act inversely inside and outside the project area. Both a project's implementation and various subsequent events influence the positive and negative effects that influence stakeholders (see section 2.4), which can be described by precise equations. Because the effects are described quantitatively, they may be calculated with data from field research.

1.2 Hypotheses and data sources

The proposed approach to assessing complex project effects can significantly contribute to more effective implementation of regional policies through better adjustment of the analysis to effects generated by the project and thus higher impact of the project on the regional economy. Difficulties with cost-benefit analysis, described in the introduction and in section 1.1, lead us to two main hypotheses: *H.1. Projects may cause a variety of effects, some of which may have a negative impact on individual stakeholder groups, even those directly interested in implementing the project.* These negative effects may influence not only some of the stakeholder groups or their sub-sections but also the intended beneficiaries because of, for example, unexpected events or behaviour. *H.2. Making an unambiguous statement that a project is generally unfavourable for the social or economic environment depends on the scope of the analysis and the extent to which it is performed.* We assume that even if a project benefits stakeholders in the project area, it may deteriorate the conditions of stakeholders outside this area.

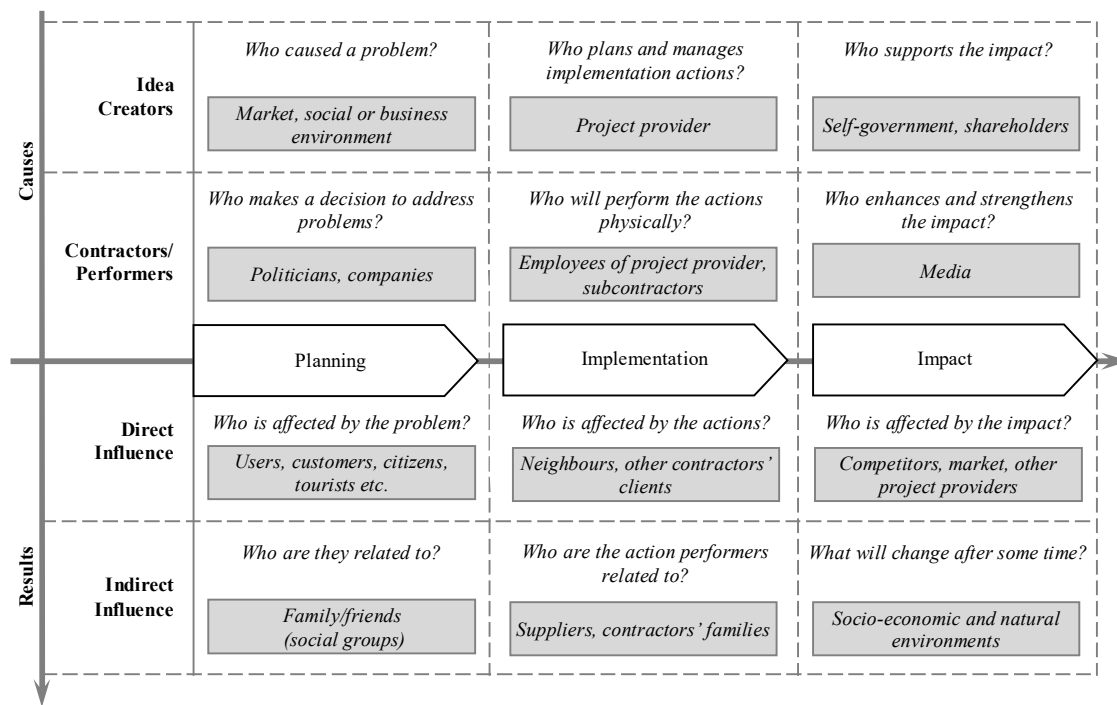
The approach discussed in this paper has been developed based on the analysis of ten case studies of infrastructural projects, which were examined using triangulation of research methods, including the analysis of secondary data and interviews with and questionnaires answered by stakeholders' representatives. The projects being studied cover the following infrastructure types: transport (road, bicycle path), educational and recreational (kindergarten, school gym), touristic (a new attraction, hotel), social (social centre against social exclusion), entrepreneur (producer with R&D centre) and energy (water plant, wind farm).

2 Findings of the research

2.1 Defining the stakeholder groups

According to the approach described above, the analysis begins with defining the stakeholder groups. Stakeholders are defined as individuals or organisations directly or indirectly involved in a project who influence it or are influenced by the project after its completion (Freeman, 1984, p. 46). We focus on stakeholders who affect or are affected by the results of the project, and we identify, characterise and classify stakeholders into groups (Jepsen & Eskerod, 2009).

Fig. 2: Grouping of stakeholders depending on project phase and stakeholder's causality



Source: self-elaboration

We use groupings consisting of primary and secondary stakeholders (Clarkson, 1995) because we are interested in finding direct and indirect relations between a project and its stakeholders. Primary stakeholders are not only employees and managers of the beneficiary institution but also individuals and institutions that are vitally necessary for the beneficiary institution to exist, like shareholders, investors, sponsors, customers, suppliers and even governments and communities providing infrastructure, services and regulations. Secondary stakeholders are affected by the beneficiary institution, but they do not carry out any transactions with the institution, and they are not crucial for the institution's survival, like

media and interest groups (Clarkson, 1995). According to this definition, competitor companies or companies that benefit indirectly from the project (for example, after the project attracts new visitors to the city) are also secondary stakeholders.

We also need to analyse stakeholders of the project in different phases of its life: the planning phase, implementation phase and impact phase (Muresan, Nistor, & Ilies, 2012). When analysing project effects, it is necessary to analyse their causes and the stakeholder responsible. Thus, we propose a tool for identifying groups of stakeholders based on two dimensions: 1) project lifetime and 2) the process of project influence. The matrix can be arranged as in Fig. 2, with supportive questions facilitating the indication of groups and examples of groups in grey boxes.

2.2 Defining the changing processes in the project's environments

After we define the project's stakeholder groups, we need to analyse each group's behaviour, intentions, interrelations and interests related to the project (Mushove & Vogel, 2005) which can be called the project's stakeholder environment (Aaltonen, 2011). The analysis is aimed at tracing the processes and mechanisms that change the project's stakeholder environment (Reed, 2008). To do so, we need to interpret the complex and uncertain stakeholder environment. Although the analysis may lead to different understandings of the mechanisms occurring in the project environment (Aaltonen, 2011), we use this approach only to identify the influence of project effects on stakeholders. We will then confirm this influence in practice through field research.

The analysis of case studies shows that each relationship between stakeholder groups can be described by at least one quantitative or qualitative relation out of a set of eight. The quantitative relations are: 1) the stakeholder group launches or supports the launching of a product or service (enables sales), 2) the stakeholder group affects sales of a product or service, 3) the stakeholder group changes staff members'/peoples' incomes and 4) the stakeholder group changes the margins, profits or incomes of entrepreneurs. The qualitative relations are: 5) the stakeholder group increases awareness of a product/service, encouraging or discouraging its use; 6) the stakeholder group changes the quality or the perception of a product/service; 7) the stakeholder group changes staff members' motivation to work/people's general satisfaction with their lives (or environments); 8) a product/service changes the satisfaction level of stakeholders' needs.

The assessment of the influence of the project on each group of stakeholders and vice versa can be described in a matrix with all groups of stakeholders using the eight

abovementioned interrelations. In addition to all the groups of stakeholders, we need to add the project to the matrix to describe its influence and dependence on each stakeholder groups.

Tab. 1: Mutual influence matrix for stakeholder groups—new touristic attraction

| Influence | on the project (<i>the new attraction</i>) | on group 1 (<i>tourists' organizations</i>) | on group 2 (<i>tourists</i>) | on group 3 (<i>citizens</i>) |
|---|---|---|---|--|
| of the project (<i>the new attraction</i>) | | (<i>not direct, through tourists and citizens</i>) | (8) attracts tourists who refrain from visiting other attractions (8) discourages tourists when quality of services deteriorates | (8) stimulates citizens to visit the new attraction and become tourists (1) stimulates citizens to begin to rent their rooms near the new attraction |
| of group 1 (<i>tourists' organizations</i>) | (1) launches the new attraction | | (5) encourages tourists to visit the new attraction (5) proposes other attractions to visit when the new one is sold out (5) attracts tourists to new services/products or competitors' updated attractions with higher quality than the new attraction | (3) employs citizens at the new attraction (5) encourages citizens to visit the new attraction (5) encourages citizens to visit updated competitors' attractions with higher quality than in the new attraction |
| of group 2 (<i>tourists</i>) | (2) visits the new attraction (6) uses infrastructure and deteriorates the quality of service, including by causing congestion (2) returns to old attractions when the quality of the new attractions drops or it is sold out | (4) increases income of tourist organization which runs the new attraction (1) stimulates other organisations to update their attractions and introduce new services (4) decreases income of project provider when tourists return to attractions they used to visit previously | | (3) enables citizens to earn money at the new attraction through the possibility of the employment or tips (4) increases incomes of citizens renting their rooms (7) causes congestion and disorder in the streets |
| of group 3 (<i>citizens</i>) | (1) enables launching of the new attraction by involvement as employees | (4) increases incomes of tourist organizations when becoming tourists | (5) influences perception of the new attraction by its work quality (5) attracts tourists to its rooms for rent | |

Source: self-elaboration. Numbers in brackets refer to the quantitative or qualitative relations described above.

Tab. 1 shows the matrix with an example of a new touristic attraction. Although this case study involves every kind of relationship, there are case studies that do not use every kind of interrelation. The type of interrelation indicated by the numbers 1 to 8 determines the nature of dependence, but the description differs in every case and is adapted to the specific interrelation. Notably, the matrix forces us to trace any possible interaction between every pair of stakeholder groups and with the project and to understand entire processes taking place after the project is launched. The matrix also outlines the events that take place after the new attraction begins to operate, like citizens' starting to rent rooms or competitors' improving services. Identifying these events is necessary for defining the project area.

2.3 Defining the project area

Determination of the project area is a crucial issue for effects assessment because it separates the various effects of the project influencing even the same group of stakeholders. This determination assumes in general that effects inside the project area are opposite of effects outside the project area even for one group of stakeholders, but this is not a rule.

The project area can be defined as the area where the implementation of the project takes place and the expected impact of the project will be. It is the area where the project's products are made and results occur and where the beneficiary envisages the impact of its project. Simultaneously, the area outside the project is the area that the project may affect but where the beneficiary has not envisaged an impact or is not concerned by it. Usually the impact of the project on the area outside the project is contrary to the impact of the project on the project area, which means that if one area is gaining, the other is often losing.

Fig. 3: Indication of the project area—school gym and students

| | | <i>Before the project</i> | | <i>After the project</i> | | <i>Negative change</i> <i>(congestion, destruction of equipment)</i> | | <i>Positive change</i> <i>(better organisation, repairs and purchase of new equipment)</i> | |
|-----------------|----------------------|---------------------------|---------------|--|---------------|---|--------------------------|---|--------------------------|
| | | <i>Behaviour</i> | | <i>Behaviour</i> | | <i>Behaviour</i> | | <i>Behaviour</i> | |
| | | <i>not active</i> | <i>active</i> | <i>not active</i> | <i>active</i> | <i>not active</i> | <i>active</i> | <i>not active</i> | <i>active</i> |
| Students | <i>Location</i> | <i>our school</i> | do not train | train on corridors or outside in parks | do not train | train in our new gym | train in our gym | do not train | train in our new gym |
| | <i>other schools</i> | do not train | do not train | do not train | do not train | do not train | part goes to other gyms | do not train | part goes back |
| | <i>Location</i> | <i>our school</i> | do not train | train in old school gyms | do not train | part goes to our new gym | train in old school gyms | do not train | new part goes to |
| | <i>other schools</i> | do not train | do not train | do not train | do not train | train in old school gyms | train in old school gyms | do not train | train in old school gyms |

Source: self-elaboration

Our goal in this section is to determine the project area by finding geographical or nonphysical boundaries between the project area and the area outside it. Analysis of the case studies revealed that the boundary may be drawn through analysing events that change the location or behaviour of the stakeholder groups (see section 2.2). Thus, we determined the period before the implementation of the project and after it. We also found it helpful for exploring the processes in the environments to determine the negative and positive changes in the stakeholders groups. The tool, using an example of a school gym, is presented in Fig. 3.

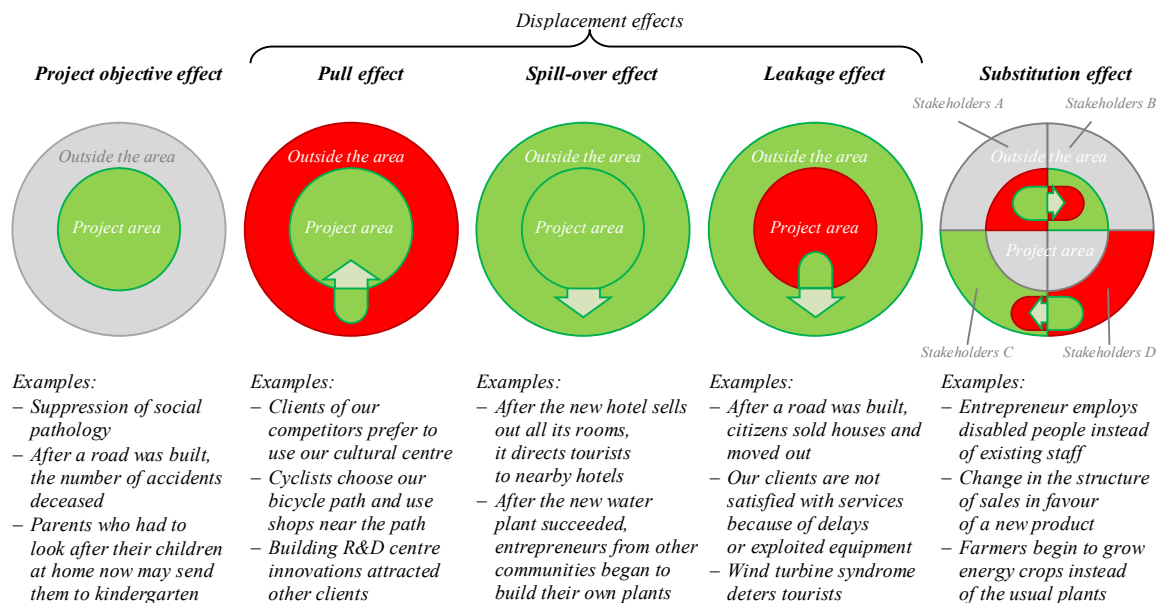
The analysis of location and behaviour of students before and after the building the school gym shows that location is crucial for indicating the project area. The green line determines the student migration caused by the project and the changes, and thus it indicates

the boundary of the project area for this particular stakeholder group, which is 'our school.' In turn, division due to behaviour is redundant in this case because it does not change the stakeholders' location or behaviour. Another issue would be if the project were to also change the attitudes of some inactive students who started to train because of the proximity of good quality sports infrastructure. In that case, the project area would be determined not only by our school but also by student activity; thus it would cover 'active students of our school.'

2.4 Mapping every effect of a project

The final stage is mapping the effects the project may cause. Based on the literature (Carr, O'Shaughnessy, Dancer, & Russell, 2008; McPherson, 2008), the case study analysis revealed frequent occurrence of five direct and four indirect effects. Fig. 4 shows the direct effects 4.

Fig. 4: Direct effects of a project—examples from case studies



Source: self-elaboration

The project objective effect is always positive (green in Fig. 4) for the project area and neutral for outside the area. The pull effect is beneficial to the project area at the expense of the area outside (red in Fig. 4); the inverse is true for the leakage effect. The spill-over effect is beneficial to both areas. Thus, if we considered only the project area, we would not see differences between objective, pull and spill-over effects. The substitution effect may relate to stakeholders, production or supplies and is always beneficial for one stakeholder group at the expense of another. On the other hand, indirect (multiplier) effects, involving

changes in income, supply volume, land value and synergy, always entirely take on the value (whether positive or negative) of the effects that induce them.

Conducting such a detailed analysis of the effects for every stakeholder group enables preparation of tools for gathering very precise data and directly calculating the value of each effect. Dividing the processes occurring in the project environment allows us to shape any scope and range of the analysis.

Conclusion

Investment projects significantly change the environments in which they are implemented, and they change the status quo of every stakeholder group. The described approach revealed that positive effects for the project's main beneficiary may harm other stakeholders and even be detrimental to the development of the area in general. Also, some events may cause difficulties and losses for the main stakeholders, which is reflected in the leakage effect.

Thus, the approach to assessing complex project effects involves detailed valuation of every influence the project has on its stakeholders and indicating processes occurring in the immediate and extended environments of the project. By breaking the effects down into their separate components, one can analyse not only the whole project's effects but also the effects on a chosen part of a stakeholder group or part of a geographical area or analyse only one or a few effects. The scope and range of the analysis affect one's assessment of the project's impact significantly.

Our approach is in line with the cost-benefit analysis proposed by the European Commission (Damart & Roy, 2009), but it goes far beyond the Commission's approach through the extension of the analysis to different geographical areas, groups of stakeholders, stakeholder roles and events. We distinguished not only the most commonly analysed effects associated with the project objectives but also displacement effects, which relate to the movement of the stakeholders in and out of the project area. We also took into account the substitution effect, in which one group of stakeholders replaces another, and multiplier effects, which involve changes in income, supply volume, land value and synergy.

Gaining knowledge of the holistic effects of a project is extremely important for regional authorities, who are creating evidence-based development policies and predicting all the consequences of the measures implemented in their regions. The utilization of our approach can be crucial for the evaluation of projects both before and after implementation

and may contribute to the selection and implementation of projects that will complement each other and meet stakeholders' needs, thereby having greater impact on regional growth.

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