ACRN Journal of Finance and Risk Perspectives
Special Issue of Social and Sustainable Finance,Vol.4 Issue 3, July 2015, p. 102-134
ISSN 2305-7394

CALCULATION OF SOCIAL RETURN ON INVESTMENT (SROI) RATIO OF A LOCAL ECOLOGICAL INITIATIVE

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***Abstract**: To create a reporting system that illustrates the social results of an ecological initiative and that this represents a substantial challenge, especially when it has an extremely small budget and is new. The study shows that it is, nevertheless, possible to develop such a system using Social Return on Investment (SROI) methodology. The Russian ecological movement "Razdelniy sbor" ("Separate collection") from the city of St. Petersburg has been used for the evaluative (retrospective) SROI case study.*

The study contains a quick overview of SROI methodology with links to relevant articles and guidelines. It touches on aspects of identifying stakeholders and building a theory of change. A system of indicators has been developed for the purpose of estimating social impact, while financial proxies for outcomes have been corrected for attribution and deadweight.

The study may therefore be of interest from both the theoretical and practical standpoint. It can be used as an example for estimating the social value of a similar initiative, and additionally, addresses several important issues concerning SROI methodology.

It argues for using the prudence concept in evaluating resources and outcomes, calls for detailed analysis of negative outcomes, emphasizes the importance of choosing appropriate discounting methods. Taking these steps prevents SROI ratio from being overestimated and ensures the transparency of SROI reports. The study also shows possible reasons for low SROI ratios (below 1) and proposes ways to increase social efficiency.

***Suggested Citation**: ACRN Oxford Journal of Finance and Risk Perspectives, 4(3). July 2015, from http://www.acrn-journals.eu/jofrp/jofrp0403.html*

Introduction

The chapter below is a formal case study in retrospective social efficiency evaluation of an ecological movement for separate collection.

Separate waste collection is the important step in the history of waste disposal. Different countries, including Russia, used refuse dumps inside or outside the country. It is not ecological and is dangerous for people, who are live nearby. Refuse dumps take up a lot of space (W. Rees, M. Wackernagel). There are two ways to dispose of waste – incinerate it or separate it for recycling and reuse it. Using incinerators is not ecological, but some types of the waste we can only burn. However there are many types of waste that can be reused. Therefore, separate collection is a way to reduce the waste amount ecologically.

Separate collection exists in a number of different countries. Many of them have already implemented laws and created infrastructure as part of waste disposal programmes. In some of them (like Russia) Separate collection is only a civil initiative.

It is possible to assign several models (or key concepts) of separate collection and waste management.

1. Zero Waste focuses on restructuring production and distribution systems to reduce waste – it is more than eliminating waste through recycling and reuse (C.Y. Young et al., 2010). It requires the full involvement of industry (primarily). (Connett & Sheehan, 2001). Philosophical references: Snow & Dickinson (2001), Spiegelman (2006), Townend (2010).

2. Cradle-to-Cradle / Cradle-to-Grave

Cradle-to-grave (C2G) is a term used to describe the linear, one-way flow of materials from raw resources into waste that require disposal. Cradle-to-cradle (C2C) focuses on designing industrial systems so that materials flow in closed loop cycles; meaning that waste is minimized, and waste products can be recycled and reused (McDonough et al., 2003). For reference on the system: El-Haggar (2007), Anastas & Zimmerman (2003); Vallero & Brasier (2008).

3. Eco-Efficiency – the framework focuses on integrating environmental and economic dimensions of certain developments, activities or processes (Hellweg et al., 2005), encouraging the creation of value with less impact, and showing how economic activity deals with nature (Schoer & Seibel, 2002). Eco-efficiency can be described mathematically (Bohne et al., 2008)

4. Industrial Ecology (IE) is defined as "an approach to the design of industrial products and processes that evaluates such activities through the dual perspectives of product competitiveness and environmental interactions" (Graedel & Allenby, 2010, p. 391). Other references to the concept include Côté (1998), Chertow (2007), and Ehrenfeld & Gertler (1997).

Ecological projects and initiatives operating in St. Petersburg, Russia

In general, Russian people understand the necessity of protecting the environment. According to recent polls, 64% of the country's population is concerned about ecological issues. In the St. Petersburg region, several local, national and international ecological projects and initiatives operate:

- **Ecological initiatives,** whose operations address a particular (or several), ecological issues.

- **Eco-political movements**, whose goal is to influence the policy-making process in the ecological field on a city level.

- **Scientific and research organizations** who are monitoring the environment, providing analysis and ecological consulting.

- **Ecological education and training centers**, whose main goal is to promote a "green" way of life by explaining to people what they can do to protect the environment.

No statistics are available concerning the exact count of ecological initiatives in St. Petersburg, or the number of people taking part in them.

The current state of ecological activities in St. Petersburg.

Most of the ecological organizations in St. Petersburg can be categorized 'small' (permanent staff under 100 employees, with a total budget below 60 mln. RUR.) or 'very small' (less than 15 permanent staff, with a total budget of below 40 mln. RUR.) The activities are mostly uncoordinated and generally concentrate on a municipal or district level. For a local ecological initiative to achieve city-wide or regional status is a rare accomplishment. This may be why the majority of the population is totally unaware of any local ecological projects. Recent polls indicate that only 4% of Russians can name any ecological initiative except Greenpeace Russia.

City government is quite indifferent to civic ecological initiatives. Despite a noticeable increase in the interest of initiatives (2014-2015), de-facto city government spending on ecological issues is only 0.56% of the total city budget.

Separate waste collection as a part of a city-wide ecological programme in St. Petersburg.

Separate collection is recognized worldwide as one of the best ways to collect garbage for recycling or utilization. Recyclable materials like paper, glass, metal or plastics can be easily separated from other waste and reused.

Several projects for separate collection currently operate in St. Petersburg, including the ones sponsored by governmental programmes. These include one or several of the following kinds of activities:

1 Popularization of separate collection and recycling («Musora.Bolshe.Net», Greenpeace Russia).

2 Providing infrastructure for separate collection, for example stationary and mobile collecting points («Sobirator», «Container Spb»)

3 Different activities (one-time, periodical or permanent) engaging in collection of one type of salvage. For example, «Ecomobil» for dangerous waste, «Peremolka» for rags. Different city districts have a number of collection points for specific types of salvage (usually glass bottles or metals).

The movement for separate collection has operated in St. Petersburg, Russia since 2011 and has recently expanded to include other cities of the North-Western Region. Activists help by maintaining and developing infrastructure for separate collection, provide free ecological training and organize salvage collection events in various city districts.

Areas of work: The "Separate collection" initiative is mostly an educational project. Volunteers tell residents about the advantages of separate collection and provide "learning-by-doing" opportunities during city-wide separate collection campaigns. The main beneficiaries are people who take part in separate collection activities and receive ecological training, and volunteers within the movement.

However, members of the "Separate collection" movement are taking part in city politics as well, by (lobbying the necessary local laws) and consulting the city administration on ecological issues. That is why city, district and local authorities can also be considered beneficiaries of the project.

Organizational form and financing model. The "Separate collection" movement is a civic initiative that has not been officially registered. It allows for higher flexibility, and has a greater ability to meet quickly changing circumstances On the other hand, the list of

volunteers and participants is not constant, and this is a handicap for the project's development.

The financing model of the "Separate collection" movement is that of an NGO. 75% of the revenues come from grants and donations, and only 25% from actual sales of collected waste.

Number of activists and scale of activities. Activists' numbers have already reached 3000. This represents a growth of 4 times as many activists in the last 3 years. The average number of volunteers taking part in the city-wide campaign of 2014 was 94, while the total number of participants was 2145. By the end of 2014, online followers on social networks reached more than 17 000.

Social networks are the main channel of communication between the movement and its followers and potential participants. The "Separate collection" ecological movement is represented on Vk.com (https://vk.com/rsbor), Facebook (https://www.facebook.com/EcoSbor), Instagram (https://instagram.com/rsbor/), and YouTube (http://www.youtube.com/channel/UCE_M_jLdlFB929baPtFttUg).

The relevance of issue

Is a formalized social effectiveness report a competitive advantage in modern Russia? Investors are often prone to opportunistic behavior, but such a report indicates transparency and accountability which are valuable qualities for a startup. This may be the deciding factor for an investor in times of crisis when resources – not only financial, but technical and human as well – are limited.

There are several reasons why this case study may be of interest:

1. It pertains to a startup initiative. This case study illustrates The Ecological movement at work, represented as a comparatively small project with an extremely limited budget. It could be called a "startup" among the civic initiatives of St. Petersburg. Initiatives of that size do not usually measure social impact, at least not in Russia. Even in the UK 50% of organizations with budgets totaling less than 10 000 GBP never do that (Gorshkova I., Evolution & Philanthropy, 2014). The very fact that stakeholders are willing to demonstrate the social impact of their initiative is a good example for every other small NGO, social entrepreneur or civic initiative.

2. Social effect measurement is new to Russian projects. While various ecological movements that exist in modern Russia are gradually becoming interested in evaluating their effectiveness, up until now, almost no effort has been made to bring social impact measurement into the picture. According to recent research, only 25% of Russian NGOs issue reports concerning social effect, of which no more than half contain any measurements that can be verified (Martishenko S., Evolution & Philanthropy, 2015). As of today, we know of no Russian ecological movement which has successfully calculated its social impact.

3. The project has strategic value. While the movement itself is small, its tasks and goals are ambitious, and its economies of scale can already be seen. Separate collection activities in Russia are unique because the recycling industry they are catering to is almost nonexistent and needs development. Furthermore, the necessary legislature in many cases isn't working well or doesn't exist at all. To succeed, this small initiative has to influence its environment not only in the direct ecological sense, but on a much wider scale.

The following chapter consists of two parts. The first part is a quick overview of Social Return On Investment (SROI) methodology as applied to ecological initiatives. The second part is a step-by-step SROI case study for the "Separate collection" ecological movement. Appendixes contain tables with detailed data for every step of the case study.

Methodology of the case study

Methodological basis

SROI methodology is based on an assumption that the social effect of an investment can and should be calculated in monetary terms. Thus the ability to achieve comparable results is evidenced. Currently, SROI methodology is just beginning to get noticed by Russian NGOs and social entrepreneurs.

Our decision to use SROI methodology was predominantly influenced by the following paper: «Measuring and/or Estimating Social Value Creation: Insights into Eight Integrated Cost Approaches» (Tuan M., 2008), which gives brief descriptions of several available methodologies and then compares the strengths and weaknesses of each one of them. Several other papers, like «Recent Approaches to Measuring Social Impact in the Third sector: An Overview» (Zappala & Lyons, 2009) and « Measuring and Improving Social Impacts: A Guide for Nonprofits, Companies, and Impact Investors» (Epstein & Yuthas, 2014) provide more detailed analysis of these methodologies. These papers convinced us that SROI is one of the most appropriate methods in evaluating social effect of an ecological initiative.

However, there is no single approved universal guideline for SROI ratio calculation. The guidelines that exist either partly contradict each other or do not cover particular aspects that our ecological movement happens to possess. In fact, we had to use several guidelines: SROI Framework (2005), Measuring value: a guide to Social Return on Investment (2008), Social Return On Investment: a practical guide for the development cooperation sector (2010), A guide to Social Return on Investment (2012).

The necessary steps to estimate social value

After much consideration the following plan of action for the case study was developed:

Step 1. Identify goals and stakeholders. The first thing to do is to determine what the goals of the project are, and secondly, to identify the parties interested in these goals. Short-term (current) and long-term goals should be identified. Groups of stakeholders also need to be identified and either included or excluded from social effectiveness evaluation.

Step 2. Build a theory of change. This is the crucial step where goals of an ecological project should be connected with inputs (resources), actions taken and social results achieved. To find and evaluate social results, we first create a system of indicators, and then collect data needed to calculate these indicators.

Building a theory of change is a special part of the case study. The basic description of a theory of change is given in the papers «Theory of change: A thinking and action approach to navigate in the complexity of social change processes» and «Theories of Change and Logic Models: Telling Them Apart» (Clark H. & Anderson A. A., 2004). The draft was presented to stakeholders and led to meaningful dialogue. The final structure that was agreed upon was based on work, «Making Connections. Using a theory of change to develop planning and evaluation» (Ellis J., Parkinson D., & Wadia, A., 2011). The only deviation from the guidelines is in the absence of textual description. In the case study the theory of change appears as a table chart, and for the stakeholders it was described in infographics.

To design the system of outcomes and indicators we used the experience from several published SROI cases: Cadder Environmental Improvement Project (Durie S., 2007), Green space Scotland's SROI programmes and projects (Greenpeace Scotland SROI publications), SAVE JAPAN Project (Sompo Japan Nipponkoa, 2014). Numerical data for the calculations was obtained by interviews and polls of the stakeholders of the "Separate collection" movement in Nov.14 – Jan.15. Activity statistics were provided by the movement or taken from open sources.

Step 3. Assign financial proxies for resources and social results. We designed methods by which resources and social results of an ecological movement can be given monetary value. Special attention was paid to the evaluation and analysis of negative results.

Step 4. Determine impact. We need to correctly interpret our results, find attribution and deadweight to calculate social impact.

Step 5. Calculate SROI ratio and follow it with strategic analysis. After SROI ratio is calculated, strategic analysis necessarily follows. The conclusions may influence future activities of the movement as well as the current ones.

Polling methodology

The main method of data collection was questionnaires. We also analyzed internal documents of the movement, information from social networks and the market of ecological initiatives in Saint-Petersburg.

Questionnaire design

1. Three groups of respondents

- Stakeholders, who get the main outcomes from the project – volunteers and participants of "Separate collection" events;

- Coordinators, who work with volunteers – to clarify the data.

2. Semi-structured interviews with three main parts:

- Questions, to get information about outcomes:

- Questions, to get information for attribution and deadweight calculation;

- Demographic questions.

3. Electronic form

Sample size and time length

1. Participants of events – 850 persons from September – December, 2014.
2. Volunteers

- 57 from September –October, 2014.
  - 92 from March-April, 2015 (new questionnaire, including people from the first step)

3. Coordinators – 10 persons during April, 2015

There are about 150 volunteers and 20 coordinators in the movement "Separate collection"

Representativeness (sample error)

1. Participants

The sample is relatively representative. We used a free electronic form, allowing everyone (from the participants) to answer. Some participants do not use the internet and social networks. However, there was enough data from different districts, ages and other parameters to produce a wide enough response. Additional verification came from the analysis of photos from different points of waste collection from one event.

2. Volunteers

The first sample was non-representative. The second time we used special rules, e.g. the number of volunteers from each active group of events, proportionally the separate collection event size (time of event, number of participants, waste collection size). The additional verification gave coordinator's answers.

Assumptions

In this case study we made several assumptions which greatly influenced the results:

1. We use the prudence concept, like an accounting principle, in SROI ratio calculations. Otherwise the ratio tends to inflate, usually for the following reasons:

- Inputs are deliberately or mistakenly underestimated (usually by excluding from calculation some kinds of resources that are actually used).
- Project outcomes (social effects) are overestimated.
- Negative results are excluded from calculations.

SROI ratio can also be mistakenly underestimated, which happens when some resources are counted twice, or when some measurable positive social results pass unnoticed.

Generally it means that wrong choice of data sources, incorrect monetary evaluation, or inconsistent analysis may bring about faulty SROI ratio calculation.

In creating our system for resources and social results evaluation we applied the prudence concept that meant using the highest possible value for resources, and the lowest value – for social results. So, when there are several ways to assess monetary value of the same resource, we calculate the value using all of them and then choose the way that gives the highest value for this resource. In the case study the most interesting example of this principle can be found in evaluating volunteer help for the project.

Stakeholders tend to object when minimum values are used in estimating social results. The economic validity of each indicator should be discussed with stakeholders. In some cases it may be feasible to calculate different SROI ratios (or indicator values) using conservative, realistic and optimistic estimations.

No existing guideline covers all practical issues of monetary evaluation (financial proxies) for social results. There are two ways to go: 1. use one universal method of

estimation or 2. create suitable methods for every indicator. Each way has its own pros and cons.

Some online SROI libraries, like The Global Value Exchange (http://globalvaluexchange.org/), offer financial proxies for particular outcomes and impacts. The use of such proxies should be welcomed because:

1. Their calculation is based on scientific theories as well as practical experience.
2. Methods that include inflation and currency rates can be used to get comparable results even in different countries.

But not every indicator important for the project is listed in such libraries, or has a financial proxy. Besides, the evaluations have to be made in comparable prices, which is not always convenient or even possible.

Using your own system for evaluation of outcomes and impacts lets you make your calculations more exact, but the analysis is harder, and the results are more prone to errors. For now we believe it more convenient, but in the future some generally accepted evaluation methods should be developed.

The prudence concept should also be applied to the choice of data sources. To get valid results the choice of data sources should be justified, and then these sources should be used consistently. Any exceptions to this rule should be explained in SROI reports.

2. No monetary evaluation should be used for outcomes that reflect changes in the psychological state or human capital of the stakeholders. In our opinion, such an evaluation is not always possible or acceptable, though some case studies use it on the basis of opportunity costs. In our case study we divide the social outcomes into 2 groups: outcomes that reflect changes in psychological state or human capital (Outcomes 1) and outcomes for correlating measurable changes in behavior of the stakeholders (Outcomes 2). We devised financial proxies only for Outcomes 2, because we believe that only these outcomes truly reflect the social value of the project – that is to say "how the project affects society, not individuals".

3. Negative results must be evaluated. In real life social projects usually bring about not only positive but negative consequences. It is hard (both technically and psychologically,) but necessary, to evaluate them. Many case studies omit negative results, consequently producing inflated SROI ratios.

Finding and evaluating negative results is a step towards making the project more efficient and producing realistic SROI value. Monetary evaluation for positive and negative social results should be based on a common method. For SROI ratio calculation the total sum of negative results should be extracted from the Total Present Value.

4. No discounting. As is customary in financial management for ROI calculations, SROI ratios for future periods should also be discounted to include the time factor. In such cases discount rates usually reflect alternative investment costs, inter-temporal preferences of the beneficiaries etc., (Arhipov V.M. & Emelianov A.M., 2006) (Sheluntsova M.A. , 2010).

We do not use discounting in this case study because only one period has been examined so far.

However, the project is ongoing and there will be results in the years to come. Besides that, due to increasing returns of the scale, the most noticeable results (such as improvements in city ecology) are expected in the distant future. That is why, not only the discount rate, but the whole concept of discounting for this case study, is debatable. When speaking in terms of

financial investments, value of future results tends to decrease, and so, we use discounting to compare future results of investment projects in current values.

In ecological projects every result has value of its own, and this value is highest in the period when a result can be achieved. If we discount these results, it may lead to investors turning to other projects with results lying in the nearer future. But with no investment in ecological projects there will be no results at all, discount or no discount, and the environment will suffer.

There are three ways to include this factor in the calculations for distant future results of ecological projects and initiatives:

1. Never to use discounting and to evaluate results exactly how they will be evaluated in future.

2. Discount results with differential scale (up to zero for the most distant), depending on the period in which the result is achieved, and on the period to which the result is most important (Weitzman, 2001).

3. Discount not by bringing future results to present values, but by bringing all results to future values fixed to some chosen point in the future (reversed discounting).

The most suitable way of discounting to use later in a forecasted SROI case study still has to be determined. We believe that the ecological impact becomes more important to society as time passes, so probably using a reversed discount rate would be a good idea for ecological initiatives.

SROI case study for the "Separate collection" ecological movement

The case study is based on the methodology discussed above and should be considered a model that uses sample data and statistics for the "Separate collection" movement operations in 2014. The field study aims to get reliable first-hand data and is now in progress. The results of the field study may lead to recalculation of SROI ratio in order to include the new and the corrected data.

Step 1. Identifying goals and stakeholders

Goals of the project

Stakeholders identify three groups of goals: short-term (current), mid-term and long-term. The most important current goals1 are:

1. Informing the public on the benefits of separate collection (in general, not restricted to the current movement)

2. More volunteers and activists, generally more participants

3. Increasing the range and frequency of ecological activities and events

The mid-term and long-term goals are more expansive and require the movement to spread to city level and further, to regional level by means of:

1 For the full list of goals see Appendix A.

1. Creating a social network of agents (people and organizations) interested in separate collection;
2. Creating a network of separate collection points and processing plants on a local (municipal) level;
3. Creating an infrastructure to meet the needs of ecologically conscious citizens;
4. Achieving a noticeable improvement in ecological conditions city-wide;
5. Ensuring the constant processing of (very) large amounts of waste collected with no loss of quality;
6. Establishing a separate collection culture.

Our research indicates that stakeholders frequently tend to concentrate exclusively either on short-term, or on mid-term and long-term goals. For instance, some stakeholders are mostly interested in ecological education and building a separate collection infrastructure, while others are interested in strategic goals like making an ecological impact, city-wide. Sometimes this results in a conflict of interest, even within a group of stakeholders.

We should admit that up to now, real ecological impact by the initiative has been negligible, since the results are only noticeable when more than 10% of the city population participates. To reach that level the "Separate collection" movement must have 700 times the number of activists it has now. Not every stakeholder believes this is possible.

For that reason the short-term goals are mostly social and aim to make the residents of St.Petersburg aware of ecological problems. At the same time, the improvement of ecological conditions themselves is a strategic goal and is included in the theory of change as a main reference point.

Stakeholders

Stakeholders for the "Separate collection" movement and reasons for their inclusion or exclusion from social effectiveness evaluation are listed in Table 1.

Table 1 Stakeholders (source: authors)

Stakeholders (groups involved in the project)	**Included in SROI analysis (yes/no)**	**Reasons for inclusion or exclusion from social effectiveness evaluation**
Internal environment		
Volunteers	Yes	Main beneficiaries
Micro-environment		
Donors (individuals)	No	Not beneficiaries, unless they participate as well (but should be provided with a SROI report)
Donors (organizations)	No	Not beneficiaries (but should be provided with a SROI report)
Participants ("Separate collection" events)	Yes	Main beneficiaries

Stakeholders (groups involved in the project)	**Included in SROI analysis (yes/no)**	**Reasons for inclusion or exclusion from social effectiveness evaluation**
Participants (Ecological education programs)	Yes	Main beneficiaries
Suppliers and contractors, buyers for the salvage collected	No	No immediate social effect on this group (as yet)
Macro-environment		
Local communities (in metropolitan districts)	Yes	Beneficiaries
Other ecological movements in St.Petersburg	No	No immediate social effect on this group
Municipal officials	Yes	Beneficiaries
District and city officials	No	No immediate social effect on this group (as yet)

At further stages of the project 'Separate Collection' will reach district and city level, so district and city officials will be included in the analysis as stakeholders-beneficiaries. At each stage of the project, surveys and interviews were the main instruments used to obtain information from the stakeholders. Polling methodology has been described earlier in the first part of this chapter.

Step 2. Building a theory of change

Prerequisites

The prerequisites for a theory of change indicate the conditions that must be met so that project goals can be achieved. Currently these factors are the most important:

1. People must rapidly become interested in separate collection. A minimum of 10% of the city population (about 500 000 people) must be practicing separate collection so that the ecological effects become noticeable. That means, people must be ready and willing to use their resources first to learn the reasons for, and the techniques of separate collection, and next to change their established behavioral patterns.

2. City legislation must improve. Currently there are several draft laws concerning separate collection, but they must be passed and come into action. First, these laws must address the issue of creating and maintaining a separate collection infrastructure on a city level. There should also be subsidies for local communities for implementing separate collection.

3. Civil activists, NGOs and government officials need to collaborate where separate collection issues are concerned. For such collaboration to be effective a city headquarters should be established from where all ecological work and activities would be coordinated and methodology issues would be addressed.

Since most of these prerequisites are currently out of reach of the movement, there is always the possibility of failure in achieving its strategic goals. The activists understand the situation and plan accordingly: they are counting on expanding interaction with residents, NGOs and city officials to maximize the effect of the project.

Inputs, activities and outputs

Given the understanding of the prerequisites, the theory of change should then include inputs, activities and outputs for the "Separate collection" movement. Our current SROI case is evaluative (retrospective), so we use data for year 2014 only – see Table 2:

Table 2 Theory of change: inputs, activities and outputs (source: authors)

Inputs	**Activities**	**Outputs**
Volunteer help Partner companies' support Citizens' donations Reinvestment (resources, that were received from the project)	Organizing separate collection events	Number of city level events - 15 Number of district level events – 244 Number of participants – 27 00 New active groups in other cities – 4 cities New active groups in St. Petersburg - 8 Number of volunteers – 150
	Ecological education for adult population Ecological education for schoolchildren Providing ecological information a simple and accessible way	Number of educational lectures and reports - 23 Amount of people in social network groups – 17 000 persons Number of articles (posts) in mass-media and social nets – 440
	Providing assistance in establishing an infrastructure for separate collection in certain districts / households	Number of new places for separate salvage collection – 12
	Cooperation with local authorities and administrations of the districts	Number of cooperation agreements signed – 3 Number of working meetings – 10

Direct quantitative outputs of a project should be easy to obtain, but it is not always so. Informal movements are not required by law to keep books. Designing a reporting system and making volunteers understand it and abide by it is not an easy task. The fact that data is going to be needed for SROI analysis becomes an additional motivating factor for volunteers and management of the project.

Outcomes

Social results (outcomes) of a project describe changes brought forth by the project. They are separated into 2 groups. First group (Outcomes 1) holds results concerning human capital

and psychological state of the stakeholders, of which the most important are the following outcomes:

1. **Volunteers acquired additional professional qualities and skills.** This outcome is strategically important because project development largely depends on the quality of volunteers. This outcome must be consistently high to permit expansion to the city and regional level.

2. **Level of knowledge and awareness among other stakeholders.** This outcome is also important for the project, influencing not current but future activities.

3. **Psychological state of stakeholders, their level of involvement in ecological practices.** This group of outcomes is one of the most difficult to analyze. Psychological states change constantly for a variety of reasons, but positive psychological changes like increased self-esteem or job satisfaction are good indicators of project effectiveness.

Social results of the second group (Outcomes 2) describe changes in the lives of stakeholders and society as a whole that can be attributed to the project. The most important of them are:

1. Increased effectiveness of volunteer work. This is probably the most important factor in the development of the movement. When the motivation and effectiveness of volunteers increase, it generally effects not only the "Separate collection" movement, but other ecological movements and initiatives, because volunteers usually take part in several such movements. However, for the purposes of this case study financial proxy will be calculated for the "Separate collection" movement only.

2. Project expansion because of changes in stakeholder behavior patterns. When stakeholders noticeably change their behavior as a result of training received, or, after taking part in project activities, the social effect can be measured in additional resources (money or volunteer work) that come to the project.

3. Economical results. Direct economic results from donors and from selling the waste collected are side issues for the project, but are high motivational factors and as such. are extremely important. Lots of stakeholders are attracted by potential financial gains and savings resulting from separate collection. Besides this, the results are stable, recurring and easily measurable.

4. Infrastructural outcomes. Such outcomes lead to a higher level of competence and awareness in government officials, which in turn leads to better laws and government, including grants and funding for separate collection projects.

We should note that getting outcomes1 does not always lead to getting outcomes2, particularly not in this case study2. For instance, a person may have received ecological training but has not changed his or her social behavior. We may assume that the movement was insufficiently effective even though personal gain in the form of human capital is measurable (this person probably knows more now than before training), because no socially important result was achieved. Outcome 2 in ecological projects can remain unseen for years or sometimes even decades.

2 Outcomes of types 1 and 2 and interconnections between them are described in detail in Appendix C.

Negative outcomes

The "Separate collection" movement has the following negative outcomes:

1. **Volunteers deciding to leave the project or to do less volunteer work.** Various external factors can influence such decisions, the current economic crisis among the most powerful of them. However, one should not underestimate the internal factors influencing volunteers: attitude towards them from the staff members, working conditions, opportunities for personal and professional growth etc.

2. **Other stakeholders leaving the project.** When stakeholders knowingly decide to stop practicing separate collection or to stop participating in ecological activities, such negative results are of strategic importance. Even though they happen rarely, every such case must be thoroughly analyzed and appropriate measures must be taken.

3. **Negative economic results that happen when donors withdraw their support.** This negative result is socially important because it indicates an outflow of resources from a socially important issue, i.e. city ecology.

Indicators

A special indicator system has been created for this case study to measure social results of the project. We have used metrics by IRIS (https://iris.thegiin.org/metrics) and The Global Value Exchange (http://globalvaluexchange.org/).

The "Separate collection" movement is limited in financial and human resources, so the task was to effectively describe social results with the minimum number of indicators used. This measure allowed the SROI analysis to take place at all, because otherwise costs of field study and data collection would have been prohibitively high.

The system currently consists of 23 indicators3. Interestingly, four of them describe negative results that happen when stakeholders leave the project:

1. Number of former volunteers who left the project.

2. Number of former participants who stopped taking part in the movement's activities.

3. Number of people who received ecological training but decided not to take part in ecological practices.

4. Number of former donors who stopped funding the movement

3 See Appendix D for the full list of indicators with descriptions.

Results and future perspectives

Building a theory of change allowed stakeholders to:

1. Make a presentation of their ecological movement for other people, potential investors among them. A proper theory of change is a powerful PR tool for any project, which also helps to attract new participants and volunteers.

2. Evaluate the results of current activities. The theory of change describes results in such detail that these results can later be used for efficiency analysis.

3. Make corrections for future activities by extrapolating analysis results for current activities.

Undoubtedly, the existing theory of change does not yet have all the signs of a proper theory and must be refined. Several steps should be taken in that direction:

1. To increase reliability by making stakeholders more familiar with this instrument and underlying theory.

2. To enhance the indicator system for result monitoring. It requires more indicators, which means more resources for field study and for training the volunteers.

3. To obtain the full consent of stakeholders concerning the theory of change. Currently there are still some differences of opinion among stakeholders which should be settled.

Step 3. Financial proxies for resources and social results

Financial proxies for inputs

The current case study is special in that it indicates how financial proxies may not always be obvious. There are some kinds of "hidden costs" which ecological activists usually fail to recognize as inputs. Such "hidden costs" consist of volunteer work, the cost of donated goods and special discounts on prices of goods and services purchased. Another big task is to evaluate the so-called "administrative resource" which is necessary for the initiative's survival and development.

We have developed the following financial proxies for such cases:

Volunteer work. There are currently three major groups of volunteers taking part in the project:

- Event planners (for separate collection activities) – ISCO-08 #3332
- Teacher's aides (for ecological training) – ISCO-08 #5312
- Volunteers providing liaison with government officials – ISCO-08 #1222

There are several approaches to estimating volunteer work: by minimal wages in the region, by average wages in the region, by the alternative (replacement) cost of hiring professionals for the same jobs etc., (Manual on the measurement of volunteer work, 2011).

Since the "Separate collection" movement is not registered as an organization and a taxpayer, it has no legal right to employ specialists. By reverting to other methods and applying the prudence concept we chose the method by which the cost of volunteer work is highest (see Table 3):

Table 3 Estimation of volunteer work (source: authors)

Working hours	
Total working hours	3742
among them:	
Organizers of the events (salvage collection)	2245
Trainers (ecological education programs)	1122
Government relations	375
Average number of working hours per month	165
Average salary in the region by professions, RUR/month	
Organizers of the events	27000
Trainers	24000
Government relations managers	80000
Average wages in the region, RUR/month	
Average wages in the region	42000
Minimal wages in the region	8868
Estimate for volunteer work, RUR	
Alternative (replacement) cost	713584
Average wages method	954476
Minimal wages method	201531

As the average wages method indicates the highest cost of volunteer work that is the method we have chosen.

Cost of donated goods and services. When a supplier sympathizes with the movement and provides goods or services for free or with substantial discount, the movement receives a non-monetary gain. The prudence concept again tells us to add the full price of such "free" goods and services for SROI analysis, because it is possible that some other social project elsewhere did not receive these goods for free and had to pay the full price.

Cost of "administrative resource". The quality of governing institutions in modern Russia remains comparatively low (Country Data Report for Russian Federation, 1996-2013). Certain government officials may greatly influence the project in either negative or positive ways, despite the fact that the "Separate collection" movement is not a registered organization but a civic initiative. Every street activity requires consent from the local or city government, which it can be difficult to obtain. The lobbying of certain ecological laws in city legislature is also necessary. There follows the necessity of hiring a professional government relations specialist. If the services of such a specialist are in fact performed by qualified volunteers, the cost of their work should be calculated on a replacement basis from the average salary of a GR specialist.

Costs of resources (including "hidden costs")4 for year 2014 are stated in Table 4:

Table 4 Financial proxies for inputs in 2014 by stakeholder groups (source: authors)

Stakeholders	**Inputs**	**Financial Proxy, RUR**
Volunteers	Cost of volunteer work (see Table 3)	954 476
Donors (individuals)	Donations (money)	72 974
Donors (organizations)	Donations (money)	247 500
	Discounts for necessary goods and services	35 385
Participants	Salvage collected (selling price)	134 983
Local authorities	Free articles in local newspapers (alternative costs)	227 664
Total inputs 2014:		1 672 982

Financial proxies for outcomes (social effects)

This case study evaluates social effects that result from changes in stakeholders' behavioral patterns. Every change either attracts resources to the project or reduces them (if the change was negative).

In meeting with the stakeholders it was decided to use financial proxies for outcomes according to the cost of resources attracted to the project, whenever possible. Such an approach has positive effects:

- Direct, reliable economic estimation is possible
- It complies with the prudence concept
- It provides consistency between financial proxies for inputs and for outcomes by using one estimation methodology for both kinds of proxies.

There are also negative factors that must be taken into consideration:

- It employs statistical averaging of results with no way to analyze each result separately
- Some results are left without financial proxies

Negative outcomes are given financial proxies in the same way as positive outcomes. **5**

4 For the list of average values for inputs see Appendix E

5 For the full list of financial proxies see Appendix F.

For financial proxies of outcomes see Table 5:

Table 5 Financial proxies for outcomes in 2014, by stakeholder groups (source: authors)

Stakeholders	**Financial Proxy, RUR**
Volunteers	205 862
Participants	770 338
Students	190 540
Local community (in metropolitan districts)	275
Municipal officials	290 000
Negative results	-519302
Total outcomes in 2014	937 713

Step 4. Establishing impact

Sometimes the social effect is a combined effort of several similar projects and initiatives (attribution) or would have happened even if the project had been inactive (deadweight). In case of attribution and/or deadweight the impact must be corrected. Some effects in separate collection and recycling could be expected in St. Petersburg even without the "Separate collection" movement. Environmental education, in particular, depends mostly on other projects. But in the field of separate collection the movement is really the biggest, most widespread and systematic.

Other projects and movements influence the outcomes of the "Separate collection" movement by telling people about it while providing ecological training. Sometimes the projects combine their forces during city-wide events.

Attribution and deadweight are calculated as a percentage for each outcome6.

Percentages are obtained either by surveying the stakeholders, analyzing public statistics, or from the media and social networks.

Therefore, impact is calculated by the following formula:

Impact = quantity*value*(1 – deadweight percent)*(1 – attribution percent)

6 For attribution and deadweight figures for outcomes see Appendix G.

For calculated impact see Table 6:

Table 6. Impact in 2014, by stakeholder groups (source: authors)

Stakeholders	**Impact, RUR**
Volunteers	165 432
Participants	701 811
Students	184 105
Local community (in metropolitan districts)	195
Municipal officials	281 358
Negative results	-467 372
Total impact in 2014 (Total Present Value)	865 529

Step 5. SROI ratio calculation and strategic analysis

Social return on investment is calculated by the following formula:

SROI ratio= Total Present Value / Total Input

In our case study SROI ratio= 865 529 / 1 672 982 = 0.52

Needless to say, the result is meaningless without further analysis and correct interpretation. After consulting with the stakeholders and careful examination of all data we came to the following conclusions:

1. A "snapshot" of a one-year evaluative SROI analysis does not show the long-term social effects of the project that will become noticeable only in the future. For that reason an effort must be made next time to come up with a forecasted SROI.

2. The theory of change needs refinement, specifically concerning indicators and financial proxies.

3. The project has other effects beside social ones. The overall effectiveness of the project should not be judged only by its social effect.

4. Special attention should be paid to some groups of stakeholders.

Volunteers are most important for getting social results, as their contribution is the most valuable resource of the project. Besides, volunteers do the most for getting new participants for the events and educational programmes. Currently there is no support programme for volunteers, but in order to get high social outcomes, volunteers need to be regularly trained and carefully supported (otherwise they may become dissatisfied and leave the project).

Another important group of stakeholders are citizens who can effectively save money on garbage collection fees by separate collection. Currently there is no special training for such groups, but they should probably be provided in the future.

5. Social effectiveness of the project depends on the scale effect. Special effort should be made to explain the necessity of separate collection to the largest possible number of people, by ecological training or through volunteers.

Findings and conclusions

Evaluation of socio-economic efficiency of the socially significant projects, especially civic initiatives, represents an important challenge to the current Russian realities. Proper use of SROI methodology helps with cost-effectiveness analysis which, in turn, helps the stakeholders to correctly evaluate the project. Such an evaluation we believe crucial for any project, but especially for those in the phase of active growth and development. It allows to make the necessary corrections in time, and to increase the return on invested resources.

This study turned out to be a bit more than just a formal SROI case study of an ecological initiative. Some of the findings, we believe, have an effect on the SROI methodology in general:

The study demonstrates that creating a system for social effect evaluation is possible even for small projects with tightly limited budgets. Small scale and scarcity of resources is not necessarily a no-go for a SROI case study, if there is enthusiasm and willingness to try something new on the part of the stakeholders.

An important part of this study is dedicated to analysis of the costs of performing SROI evaluation. It is necessary to understand that building a theory of change and receiving data on the real social effect of the project should lead to certain changes within the organization and to finding new resources. Otherwise the relatively high costs of SROI analysis will become losses for the project. In time the costs of SROI analysis are going to decrease as the SROI methodology will become better known in Russia and consulting agencies will start offering their services in this field on a competitive basis.

We applied the concept of prudence to financial proxies. When several methods of estimation are possible, we used the one that gave the highest estimate for resources, and the one that gave the lowest estimate – for outcomes. As a result SROI ratio would stay realistic. Even though such an approach may be debatable, this way SROI reports helps to avoid distortion.

Since people are prone to opportunistic behavior, the use of the prudence concept will naturally meet some resistance from within the socially oriented organizations, whose employees would object to their efforts being evaluated on minimal grade. This leads us to propose the creation of a universal guideline for SROI analysis on the city and/or regional level. This guideline would be used not by the socially-oriented initiatives themselves, but by professional valuation organizations with serious reputations, like social exchanges, crowdfunding platforms or even state committees.

The study shows how "hidden" resources influence the estimation of inputs. Finding hidden resources used by the project is an important part of every SROI case study. In Russia it is crucial not to underestimate the so-called "administrative resource" that influences the development of the project.

When the quality of administration is low and the judicial system is weak, administrative resources can become crucial for socially important initiatives.

For example, in the last several months local authorities have frequently denied permission to organize the separate collection events, which led to direct economical and reputational losses for the "Separate collection" movement.

Perfecting the methodology of hidden cost evaluation is an important way of future development for this study. Finding the correct financial proxies for hidden resources also helps to avoid overestimation of SROI ratio.

The study led to the creation of metrics (indicators) describing the social effect of an ecological movement. These indicators and their financial proxies may be added to the databases of public SROI portals like IRIS, The Global Value Exchange etc.

Negative outcomes (and their financial proxies) have been estimated. Negative outcomes are frequently omitted from effective analysis of a socially important initiative. But these outcomes also describe the project and should be taken into consideration. The study provides indicators and financial proxies for such outcomes.

While the positive outcomes are evaluated by minimum values, the prudence concept calls for the evaluation of negative outcomes by maximum values. That way we minimize the natural tendency to diminish and underestimate the negative outcomes.

We believe negative outcome analysis as being crucial to a socially-oriented initiative as a positive outcome evaluation. However, only a small part of ecology projects show negative social effects data in their reports.

We also believe that experience of constant monitoring and sharing the data on identified negative outcomes between socially-oriented initiatives can lead to significant increase in their efficiency, which should be mentioned in the theory of change and in the SROI methodology.

This case study shows how to deal with SROI ratio below 1. The analysis shows that SROI ratio of the "Separate collection" ecological movement is below 1, which means that inputs exceed social effect. Such a difficult situation is rarely seen in public case studies (probably because no one really wants to tell the public that their project is inefficient). But there may be good reasons why a long-term ecological project shows signs of social inefficiency in the beginning. The study demonstrates ways to analyze the situation, and enumerates possible courses of action.

References

A Guide to Social Return on Investment. (2012). Retrieved from The SROI Network: http://www.thesroinetwork.org/publications/doc_details/241-a-guide-to-social-return-on-investment-2012

Anastas, P., & Zimmerman, J. (2003). Design through the 12 principles of green engineering. *Environmental Science & Technology*, 37(5), 94A-101A. doi: 10.1021/es032373g

Arhipov V.M., & Emelianov A.M. (2006). Evaluation of the social discount rate. *Finance and Credit*, pp. 49-55.

Bohne, R. A., Brattebø, H., & Bergsdal, H. (2008). Dynamic Eco-Efficiency Projections for Construction and Demolition Waste Recycling Strategies at the City Level. *Journal of Industrial Ecology*, 12(1), 52-68. doi: 10.1111/j.1530-9290.2008.00013.x

Chertow, M. R. (2007). "Uncovering" industrial symbiosis. *Journal of Industrial Ecology*, 11(1), 11-30. doi: 10.1162/jiec.0.1110. Concordia University. (n.d.). R4: Rethink, Reduce/Reuse, Recycle. Sustainable Concordia. Retrieved from http://sustainable.concordia.ca/ourinitiatives/r4/

Clark H., & Anderson A. A. (2004). Theories of Change and Logic Models:Telling Them Apart. Paper presented at the Evaluation'2004 Conference of the American Evaluation Association Atlanta, Georgia.

Connett, P., & Sheehan, B. (2001). A citizen's agenda for zero waste. Retrieved from http://www.grrn.org/zerowaste/community/activist/citizens_adenda_4_print.pdf

Côté, R. (1998). Designing eco-industrial parks: a synthesis of some experiences. Journal of Cleaner Production, 6(3- 4), 181-188. doi: 10.1016/S0959-6526(98)00029-8.

Country Data Report for Russian Federation, 1996-2013. (n.d.). Retrieved from The Worldwide Governance Indicators (WGI) project: http://info.worldbank.org/governance/wgi/index.aspx#countryReports

Durie S. (2007). The Wise Group Cadder Environmental Improvement Project Social Return on Investment Report. Edinburgh. Communities Scotland.

Ehrenfeld, J., & Gertler, N. (1997). Industrial Ecology in Practice: The Evolution of Interdependence at Kalundborg. *Journal of Industrial Ecology*, 1(1), 67-79. doi: 10.1162/jiec.1997.1.1.67

El-Haggar, S. M. (2007). Sustainable industrial design and waste management: Cradle-to-cradle for sustainable development (p. 424). *Oxford: Elsevier/Academic Press*.

Ellis J., Parkinson D., & Wadia, A. (2011). *Making Connections. Using a theory of change to develop planning and evaluation.* Charities Evaluation Services.

Epstein, M., & Yuthas, K. (2014). *Measuring and Improving Social Impacts : A Guide for Nonprofits, Companies, and Impact Investors.* Berrett-Koehler Publishers, Incorporated.

Graedel, T., & Allenby, B. (2010). Industrial Ecology and Sustainable Engineering (p. 352). *Upper Saddle River*, NJ: Pearson. 43

Gorshkova I., Evolution & Philanthropy. (2014). *On evaluation of social and charity programmes.* Retrieved December 02, 2014, from http://www.slideshare.net/evd_oa/ss-34032925?related=2

Greenpeace Scotland SROI publications. (б.д.). Получено из Greenpeace Scotland: http://www.greenspacescotland.org.uk/sroi.aspx

Hellweg, S., Doka, G., Finnveden, G., & Hungerbühler, K. (2005). Assessing the Eco-efficiency of End-of-Pipe Technologies with the Environmental Cost Efficiency Indicator A Case Study of Solid Waste Management. *Journal of Industrial Ecology*, 9(4)

Iñigo Retolaza Eguren. (2011). *Theory of change: A thinking and action approach to navigate in the complexity of social change processes.* HIVOS and the Crisis Prevention and Recovery Practice Area of the Regional Centre for Latin America and the Caribbean, UNDP.

Manual on the measurement of volunteer work. (2011). International Labour Office. – Geneva

Martishenko S., Evolution & Philanthropy. (2015). *Why and how to estimate NGO's effectiveness.* Retrieved January 20, 2015, from http://www.slideshare.net/evd_oa/ss-44485759?qid=2d45d847-430d-42ad-b453-0fbe37b61753&v=qf1&b=&from_search=1

Measuring value: a guide to Social Return on Investment. (2008). Retrieved from New Economics Foundation (nef): http://www.sroi-uk.org/component/docman/cat_view/29-the-sroi-guide/229-the-guide-in-english-us-edition?Itemid=138

Nicholls J. et al. (2005). *A framework for approaches to SROI analysis. SROI Framework.*

SCOPE: How Much Should a Good Theory Account For? (2003). Retrieved from http://www.theoryofchange.org: http://www.theoryofchange.org/pdf/scope.pdf

Sheluntsova M.A. . (2010). Problems and questions in the analysis of costs and benefits. *Problems of modern economics*(№3), pp. 237-240.

Schoer, K., & Seibel, S. (2002). Eco-efficiency indicators in German Environmental Economic Accounting. *Statistical Journal of the United Nations*, 19, 41-52.

Snow, W., & Dickinson, J. (2001). The end of waste: Zero waste by 2020. Retrieved from http://www.zerowaste.co.nz/assets/Reports/TheEndofWaste.pdf Solid Waste-Resource Management Regulations, N.S. Reg. 25/96.

Social Return On Investment: a practical guide for the development cooperation sector. (2010). Context, international cooperation, Utrecht.

Sompo Japan Nipponkoa. (2014, July 2). *Social Value of Environmental Conservation Program Calculated for First Time in Japan Visualizing the results of three years of "SAVE JAPAN Project" activities*. Retrieved from Sompo Japan Nipponkoa website: http://www.sjnk.co.jp/~/media/SJNK/files/english/news/sj/2014/e_20140702_2_image.pdf

Spiegelman, H. (2006). Transitioning to zero waste - What can local governments do now? Retrieved from http://rcbc.bc.ca/files/u3/PPI_Zero_Waste_and_Local_Govt.pdf

Townend, W. K. (2010). Editorial. Zero waste: an aspiration or an oxymoron? Waste *management & research*, 28(1), 1-3. doi: 10.1177/0734242X09356145

Tuan M. (2008). *Measuring and/or Estimating Social Value Creation: Insights Into Eight Integrated Cost Approaches.* Bill & Melinda Gates Foundation.

Vallero, D., & Brasier, C. (2008). Sustainable design: the science of sustainability and green engineering. Hoboken, NJ: John Wiley & Sons, Ltd.

Weitzman, M. (2001, March). Gamma Discounting. *THE AMERICAN ECONOMIC REVIEW, 91*(I), pp. 260-271.

Zappala, G., & Lyons, M. (2009). *Recent Approaches to Measuring Social Impact in the Third sector: An Overview.* The Centre for Social Impact Background Paper No. 5.

Young, C.-Y., Ni, S.-P., & Fan, K.-S. (2010). Working towards a zero waste environment in Taiwan. *Waste management & research : the journal of the International Solid Wastes and Public Cleansing Association, ISWA*, 28(3), 236-44. doi: 10.1177/0734242X09337659

(n.d.). Retrieved from The Global Value Exchange: http://globalvaluexchange.org/

(n.d.). Retrieved from "Sobirator": http://sobirator.com/

(n.d.). Retrieved from "Musora.Bolshe.Net": http://musora.bolshe.net/

(n.d.). Retrieved from "Ecomobile": http://www.infoeco.ru/ecomobile/

(n.d.). Retrieved from "Peremolka": http://peremolka.ru/

(n.d.). Retrieved from Greenpeace Russia: http://www.greenpeace.org/russia/en/

(n.d.). Retrieved from IRIS: https://iris.thegiin.org/metrics

Appendixes

Appendix A. Goals of the "Separate collection" ecological movement

Short-term (1-3 years)	**Mid-term (3-5 years)**	**Long-term (5+ years)**
More participants More salvage collected	Still more participants by viral growth: trained people in turn teach separate collection to their families and friends	Separate collection culture established Rational and conscious behavior concerning needless waste of natural resources
More volunteers and activists	Education and inspiration for new ecological activists and project leaders	"Separate collection" becoming a nation-wide movement
Informing the public on the benefits of separate collection (in general, not restricted to the current movement)	Informing the public based on scientifically processed data	Obtain level of media coverage and information accessibility to maximize public awareness of separate collection practices
Increasing range and frequency of ecological activities and events	Creating infrastructure to meet the needs of ecologically conscious citizens	Achieve a noticeable improvement in ecological conditions city-wide
Creating public interest in separate collection, more media coverage	Creating a social network of agents (people and organizations) interested in separate collection	Establish an educational center to provide ecological education
Regular participation on a day-today basis made possible by accessible separate collection infrastructure within walking distance	Creating a network of separate collection points and processing plants on local (municipal) level	Ensure constant processing of (very) large amounts of waste collected with no loss of quality.
Creating guidelines for separate collection	Legislation concerning separate collection being developed in coordination with the movement	Development of Quality standards for this sector of ecology.

Appendix B. Sources of information

Stakeholders **(Groups involved in the project)**	**Source of information**	**Number of respondents**
Internal environment		
Volunteers	questionnaire	56
Micro-environment		
Participants ("Separate collection" events)	questionnaire	115
Participants (Ecological education programs) - Students	questionnaire	32

Stakeholders **(Groups involved in the project)**	**Source of information**	**Number of respondents**
Macro-environment		
Local community (in metropolitan districts)	questionnaire	in progress
Municipal officials	interview mass-media materials	2 different

Appendix C. Outcomes by categories

Outcomes 1 **(How would we describe the change in human capital and mental condition?)**	**Outcomes 2** **(How would we describe the change of behavior patterns?)**
Volunteers	
Volunteers gained knowledge and improved their skills while working for the project	Qualifications of the volunteers increased. Their work became more efficient.
Volunteers improved their knowledge of ecological issues	
Volunteers have advanced their management skills	
Volunteers have more social contacts and are now more confident and take part in new experiences	Motivation of volunteers increased.
Volunteers are satisfied by their work	
Volunteers feel respect and approval from other people in connection with their role in the project	
Participants	
Participants have gained social contacts. They are now more confident and have more interest in new experiences	Motivation of participants increased. They are more active in ecological events.
Participants are satisfied because of participating in the project	
Participants feel respect and approval from other people in connection with their role in the project	
Participants improved their knowledge of separate collection practices	Participants saved money by practicing separate collection

<table>
<tr><th>Outcomes 1

(How would we describe the change in human capital and mental condition?)</th><th>Outcomes 2

(How would we describe the change of behavior patterns?)</th></tr>
<tr><td colspan="2">Students</td></tr>
<tr><td>Students started paying more attention to ecology</td><td>Students take part in the events (as participants)</td></tr>
<tr><td rowspan="2">Students decided to take part in ecological initiatives</td><td>Students decided to take part in the movement as volunteers (after education)</td></tr>
<tr><td>Students became donors to the project</td></tr>
<tr><td>Students improved their knowledge of separate collection practices</td><td>Students saved money by practicing separate collection</td></tr>
<tr><td>Students have gained social contacts. They are now more confident and have more interest in new experiences</td><td rowspan="3">Students are motivated for future education and professional development</td></tr>
<tr><td>Students are satisfied because of participating in the project</td></tr>
<tr><td>Students feel respect and approval from other people in connection with their role in the project</td></tr>
<tr><td colspan="2">Local Communities</td></tr>
<tr><td rowspan="4">Citizens improved their understanding of ecological problems on the district/city level.</td><td>Citizens participated in the events</td></tr>
<tr><td>Citizens became volunteers of the movement</td></tr>
<tr><td>Citizens became donors of the project</td></tr>
<tr><td>Citizens saved money by practicing separate collection</td></tr>
<tr><td colspan="2">Local authorities</td></tr>
<tr><td>Officials understood more about ecological problems of the cities / districts</td><td>New legislation concerning ecology</td></tr>
<tr><td rowspan="2">Officials learned how to deal with ecological problems of the cities / districts</td><td>Legal structure in the ecological field improved</td></tr>
<tr><td>Government funds allocated for ecological education and infrastructure for separate collection</td></tr>
</table>

Appendix D. Indicators

Outcomes 2 **(What changes happened in the stakeholders' lives?)**	**Indicators** **(How would we measure it?)**
Volunteers	
Qualification of the volunteers increased. Their work became more efficient.	Number of volunteers whose quality of work increased
	Number of volunteers who started taking on more work
	Number of volunteers who started taking on more complex and responsible tasks
Motivation of volunteers increased.	Number of volunteers who started their own initiative group for separate collection (within the movement)
	Number of volunteers who gained new qualifications (for instance, started giving ecology trainings)
Participants	
Motivation of participants increased. They are more active at ecological events.	Number of participants who became volunteers of the project
	Number of participants who started participating more frequently
	Number of participants who started collecting more salvage
	Number of participants who became donors of the project
Participants saved money because of salvage collection	Number of participants who started saving money on garbage removal because of separate collection
Students	
Students take part in the events (as participants)	Number of students who became participants
Students decided to take part in the movement as volunteers (after education)	Number of students who became volunteers
Students became donors of the project	Number of students who became donors of the project
Students saved money because of salvage collection	Number of students who started saving money on garbage removal because of separate collection
Students are motivated for future education and	Number of students who want to continue their

Outcomes 2 **(What changes happened in the** **stakeholders' lives?)**	**Indicators** **(How would we measure it?)**
professional development	ecological education with the movement
Local Community	
Citizens take part in the events as participants	Number of citizens who became participants
Citizens take part in the events as volunteers of the movement	Number of citizens who became volunteers
Citizens became donors of the project	Number of citizens who became donors of the project
Citizens saved money because of salvage collection	Number of citizens who started saving money on garbage removal because of separate collection
Local authorities	
New legislation concerning ecology	Delayed effect (beyond the scope of this case study)
Legal structure in the ecological field improved	Delayed effect (beyond the scope of this case study)
Government funds allocated for ecological education and infrastructure for separate collection	Total government funds spent in 2014 for ecological education and infrastructure for separate collection
Negative results	
Stakeholders who left the project	Number of former volunteers who left the project
	Number of former participants who stopped taking part in separate collection events
	Number of donors who stopped investing in the project

Appendix E. Average annual costs of inputs

Inputs	**Average cost, RUR**
Average cost of resources attracted by one volunteer (per year)	9185
Average annual donation	1258
Average cost of resources attracted by one participant (per year)	69
Average cost of resources coming from one salvage collection point	7363
Average annual savings on garbage removal (per person)	13872

Appendix F. Financial proxies

Indicators	**Source**	**Value**	**Financial Proxy**	**Basis for the financial proxy (see Appendix E)**
Volunteers				
Number of volunteers whose quality of work increased	survey results	44	40414	10% of average cost of resources attracted by one volunteer (per year)
Number of volunteers who started taking on more work	survey results	67	61540	10% of average cost of resources attracted by one volunteer (per year)
Number of volunteers who started taking on more complex and responsible tasks	survey results	28	25718	10% of average cost of resources attracted by one volunteer (per year)
Number of volunteers who started their own initiative group for separate collection (within the movement)	survey results	8	58902	Average cost of resources coming from one salvage collection point
Number of volunteers who acquired new qualifications (for instance, started giving ecology trainings)	survey results	21	19289	10% of average cost of resources attracted by one volunteer (per year)
Participants				
Number of participants who became volunteers of the project	survey results	54	495991	Average cost of resources attracted by one volunteer (per year)
Number of participants who started participating more frequently	survey results	260	1784	10% of average cost of resources attracted by one participant (per year)
Number of participants who started collecting more salvage	survey results	200	1784	10% of average cost of resources attracted by one participant (per year)
Number of participants who became donors of the project	survey results	34	42778	Average annual donation
Number of participants who started saving money on garbage removal because of separate collection	survey results	19	228000	Average annual savings on garbage removal
Students				
Number of students who became participants	survey results	17	1167	Average cost of resources attracted by one participant (per year)
Number of students who became volunteers	survey results	2	18370	Average cost of resources attracted by one volunteer (per year)
Number of students who became donors of the project	survey results	31	39004	Average annual donation

Indicators	**Source**	**Value**	**Financial Proxy**	**Basis for the financial proxy (see Appendix E)**
Number of students who started saving money on garbage removal because of separate collection	survey results	11	132000	Average annual savings on garbage removal
Number of students who want to continue their ecological education with the movement	survey results	39	-	No immediate financial gain to the project
Local community				
Number of citizens who became participants	survey results	4	275	Average cost of resources attracted by one participant (per year)
Number of citizens who became volunteers	survey results	0	0	-
Number of citizens who became donors of the project	survey results	0	0	-
Number of citizens who started saving money on garbage removal because of separate collection	survey results	0	0	-
Local authorities				
Total government funds spent in 2014 for ecological education and infrastructure for separate collection	survey results	Non applicable	290000	
Negative results of the project				
Number of former volunteers who left the project	survey results	56	-514361	Average cost of resources attracted by one volunteer (per year)
Number of former participants who stopped taking part in separate collection events	survey results	72	-4942	Average cost of resources attracted by one participant (per year)
Number of donors who stopped investing in the project	survey results	0	0	-

Appendix G. Attribution, Deadweight and Impact

Indicator	**Attribution**	**Att. %**	**Deadweight**	**Dw. %**	**Impact**
Volunteers					
Number of volunteers whose quality of work increased	ecological education, information from other sources	23%	Ecological projects (including new projects)	14%	26 762
Number of volunteers who started taking on more work	No known attribution		No known deadweight		61 540
Number of volunteers who started taking on more complex and responsible tasks	information from other sources, self-development	35%	Ecological projects (including new projects)	16%	14 042
Number of volunteers who started their own initiative group for separate collection (within the movement)	information from other sources, location (absence of salvage collection points in their districts)	6%	in other projects; theoretically – in their own projects or events	9%	50 384
Number of volunteers who gained new qualifications (for instance, started giving ecology trainings)	ecological education, information from other sources	26%	in other projects; theoretically – in their own projects	11%	12 703
Participants					
Number of participants who became volunteers of the project	Popularization of volunteering	7%	in other projects	4%	442 821
Number of participants who started participating more frequently	information from other sources, cooperation with other projects	12%	Infrastructure of salvage collection outside the project (drop-off stations; other activities)	6%	1 476
Number of participants who started collecting more salvage	information from other sources, cooperation with other projects	11%	Infrastructure of salvage collection outside the project (drop-off stations; other activities)	5%	1 509
Number of participants who became donors of the project	information from other sources	1%	in other projects	2%	41 503
Number of participants who started saving money on garbage removal because of separate collection	local infrastructure, information from other sources	2%	self-organization	4%	214 502

Indicator	**Attribution**	**Att. %**	**Deadweight**	**Dw. %**	**Impact**
Students					
Number of students who became participants	ecological education, information from other sources	10%	in other projects	4%	1 008
Number of students who became volunteers	ecological education, information from other sources; other projects	5%	in other projects; theoretically – in their own projects	1%	17 277
Number of students who became donors of the project	information from other sources	1%	in other projects	0,5%	38 420
Number of students who started saving money on garbage removal because of separate collection	ecological education, local infrastructure	3%	self-organization	0,5%	127 400
Number of students who want to continue their ecological education with the movement					
Local community					
Number of citizens who became participants	ecological education, information from other sources	22%	in other projects	9%	195
Number of citizens who became volunteers	ecological education, information from other sources, location	12%	in other projects	8%	0
Number of citizens who became donors of the project	ecological education, information from other sources	7%	in other projects	4%	0
Number of citizens who started saving money on garbage removal because of separate collection	local infrastructure, information from other sources	2%	self-organization	2%	0
Local authorities					
Total government funds spent in 2014 for ecological education and infrastructure for separate collection	Other educational programs, ecological projects; local infrastructure unrelated to the project	2%	Government and municipal programs; maintenance costs	1%	281 358

Indicator	**Attribution**	**Att. %**	**Deadweight**	**Dw. %**	**Impact**
Negative results of the project					
Number of former volunteers who left the project	External factors	10%	-	-	-462 925
Number of former participants who stopped taking part in separate collection events	External factors	10%	-	-	-4 447
Number of donors who stopped investing in the project	External factors	10%	-	-	0