Project Title:

THE EUROPEAN PLATFORM FOR CITIZEN INVESTMENT IN RENEWABLE ENERGY

Project Acronym:

CITIZENERGY

Contract Number:

IEE/13/403/SI2.675223- CITIZENERGY

Co-funded by the Intelligent Energy Europe
Programme of the European Union

Subject:

Work Package 2

Deliverable 2.2 – Handbook on citizen RES business models

Table of Contents

Executive Summary

This handbook provides definitions and typification of the most relevant business models (BMs) of citizen RES initiatives. These BMs could be used by both new and established companies, directly or through crowdfunding platforms, to finance RES projects. Financing models presented here can either be offered by crowdfunding platforms to RES promoters looking for funding through their portals or can be adopted directly by RES promoters themselves to raise capital on their own. Therefore, this handbook may become a practical tool to RES promoters and citizens.

This BM review has been done through both an inductive approach (real success cases in RES projects) and a deductive approach (models from other sectors or from a more theoretic point of view). After revising the most successful types of citizen RES business models, we divided them into different categories (Section 1) and defined their main features. A brief sheet was developed describing, among others aspects, the risk level, the term, and the main strengths and weaknesses of each BM (Section 2). However the risk within each model depends on various factors and also the different subtypes identified, so we explain a general risk level in each model. Finally, we provided a brief comparative analysis of the BMs and the major conclusions (Section 3).

Table 1 shows the most relevant BMs of citizen RES initiatives based on two criteria. Firstly, the motivation to invest on citizen RES initiatives, which can be guided by: economic reasons (money return), consumption reasons (energy) or a mere environmental consciousness. We think that even the investments due to economic or consumption reasons are to some extent environmentally engaged. Secondly, the type of funding adopted namely equity, debt and incomes.

Table 1: Typification of the most relevant BM of citizen RES initiatives

<table>
<tr><td colspan="2" rowspan="2"></td><th colspan="3">MOTIVATION</th></tr>
<tr><td>ECONOMIC/SOCIAL
(financial/social return)</td><td>CONSUMPTION/
SOCIAL
(energy/social return)</td><td>ENVIRONMENTAL
CONSCIOUSNESS</td></tr>
<tr><td rowspan="8">TYPES OF FUNDING</td><td rowspan="2">EQUITY</td><td>1. COOPERATIVE: EQUITY</td><td rowspan="2">3. COOPERATIVE: EQUITY/CUSTOMER</td><td rowspan="2"></td></tr>
<tr><td>2. LIMITED LIABILITY COMPANY: EQUITY</td></tr>
<tr><td rowspan="3">DEBT</td><td>4. MEZZANINE FINANCING</td><td rowspan="3"></td><td rowspan="3"></td></tr>
<tr><td>5. DEBT: BONDS</td></tr>
<tr><td>6. DEBT: LOANS</td></tr>
<tr><td rowspan="3">INCOMES</td><td rowspan="3"></td><td rowspan="3"></td><td>7. DONATION</td></tr>
<tr><td>8. REWARD</td></tr>
<tr><td>9. CROWDFUNDING THOUGH CROWSOURCING</td></tr>
</table>

In practice, there are also other financing forms which may be recognized as some of the BM shown in Table 1. Thus:

- **Project finance**: It is a long-term financing based on the projected cash flows (CF) of a RES project. Usually, it involves a number of equity investors, namely, RES promoters and “off-takers”, as well as debt. The most common debt is the loan of banks or other lending institutions that can account for 70% to 80% of the total funding needs. It may be a syndicated loan, i.e., it is arranged jointly by two or more lenders to share the risk involved. The RES project is accomplished and financed by a legally and financially standalone project company (SPV). Therefore, the investors are only exposed to the project credit risk, but not to the credit risk of the promoter. This structure is sometimes done in RES projects with an off-take agreement, i.e., an agreement between the project company and the off-taker (the party who is buying energy). So, in the platform, it could be recognized as equity for companies, because citizen investment would be done generally in equity.

- **Joint ownership model**: In this model, a government partner (usually local authorities) and a private partner team up to start a jointly-owned RES project. This is a public–private partnership that commonly benefits both sides: public sector allocates fewer funds to the project, while the private partner gains credibility with lenders and other investors. Therefore, in the platform, it should be recognized as equity or debt, once the agreement between public and private partners have been done.

- **Joint ventures**: It is a business agreement (usually long-term) in which the different undertakings (often private parties) agree to develop, for a finite time period, a new entity by contributing equity. So, in the platform, it should be considered as equity for companies. In practice, this new company can be also financed by debt, etc.

- **Venture capital** (VC): It is referred to a pooled investment vehicle that tends to focus on start-ups companies. Usually, it uses in convertible debt or equity.

Summary and description of business models

1. BM 1. COOPERATIVE: EQUITY

Name	COOPERATIVE: EQUITY
Description	Cooperatives are companies that are democratically owned and controlled by the people, who use their services and are operated collaboratively for their mission. There are different kinds of cooperatives (consumption, production etc.), so “co-op” model can be used by many types of organizations. Members could finance the cooperative mainly through: fees, share capital, individual member deposits or loans. Thus, cooperatives typically finance their needs with a combination of debt and equity from their members, but also from outsiders (bank loans, grants, etc.). In this BM (*Cooperative: equity*) we discuss about member share capital and similar products (some deposits). Cooperatives require the purchase of a share or “non-withdrawable deposit” to their membership, which entitles the members to vote and democratically participate in the cooperative. This stock/ deposit is generally redeemed at the original purchase price by the cooperative when a member leaves the co-op.
Geographical scope	Local / regional / national.
Term	A long-term investment, but members can leave the cooperative (common stock or deposit). Preferred stock usually has a target date for redemption.
Risk level	Medium. Buying stocks always involves the risk of losing money, but the amount of money invested in a normal stock or deposit is usually small, and the fact that this is refundable helps to reduce the risk level. Additionally, this risk level depends, among others, on: cooperative's credit quality, revenue model of the RES projects developed (feed-in-tariff or FIT, etc.), type of energy, priority of the stocks (preferred versus normal), etc.
Return Type	Financial and social. Equity may pay dividends (or interests in the case of deposits). Besides, there is a social component of the investment so we can also talk about a satisfaction return.
Subtypes	There are different types of stocks in a cooperative, mainly: - Normal or voting stock. Ownership of this kind of stock is limited to one per person and confers to the stockholder the membership and voting rights in the cooperative. - “Preferred” shares are a class of stock that receives priority over other classes in the event of dissolution of the cooperative and usually offers a dividend (fixed or not) to stockholders. Usually have a date or conditions for redemption. - Other non-voting classes of stock with different par values. Usually have a date or conditions for redemption, like preferred shares. Members of cooperatives can also subscribe deposits that are equity-like in nature (we call them “non-withdrawable deposits”). Such deposits may pay an interest rate, but cannot be withdrawn unless members quit the cooperative.
Investor/Citizen profile	Citizens involved in energy renovation process, CO_2 savings, etc. that want to participate democratically in a cooperative.

Success cases	Windvogel (http://www.windvogel.nl/) is a renewable energy non-profit cooperative from Netherlands that collectively produce sustainable energy. They have over 3,300 members and own wind turbines and solar fields. The amount to be a member of the co-op is a deposit of €50. SomEnergia is renewable energy non-profit cooperative (http://www.somenergia.coop) that operates in Spain. They have over 14,400 members and the condition to become a member of the cooperative is a €100 deposit.

	Advantages	**Disadvantages**
Investor	- Access to SME (small and medium companies). - Members of the cooperative can participate and have voting rights. - Stocks/deposits are usually refundable if a member quits the cooperative. - Projects with long-term contracts (feed-in-tariff), etc. can reduce risk of investment. - Promote RES projects (fulfil the own environmental consciousness). - Return on investment (dividends or interests in deposits). - In case of preferred stocks "predictable long-term returns". - Low-correlated with other investments (equity or commodity indexes, etc.) - Members of the cooperative are not personally liable for co-op debts.	- Some projects would not perform as planned (Bad apples). - Financial position of the cooperative (possibility of dissolution, no dividend, etc.). - Liquidity: there are no secondary stock markets for selling stocks. Generally, stocks will be redeemed when a member quits the cooperative, but this is subject to certain conditions. - Cooperative members must know and share responsibilities.
Promoter	- Tax advantages of cooperative figure. - Strengthen the cooperative movement by working through other co-ops (local, national, regional). - Cooperatives can offer new services not otherwise available (energy, etc.)	- If members are not satisfied, stocks or deposits may be refundable. - At least one person from the group has to have leadership and takes the initiative to represent the group. It is essential for the success of the cooperative. - Need of highly-motivated, experienced and dynamic managers able to plan the future of the cooperative.

2. BM 2. CORPORATE FIRMS OR COMPANIES: EQUITY

Name	CORPORATE FIRMS OR COMPANIES: EQUITY
Description	In this case, monetary resources available to RES projects are provided by the owners of the company, who buy different types of stocks. Stockholders expect to earn dividends and growth of capital invested from the stocks they bought (economic motivation). Raising equity financing can be achieved directly from investors (traditional model) or through crowdfunding platforms (new model). Equity crowdfunding is used by businesses to attract investment from a crowd or group of people. Crowdfunding platforms are based on electronic platforms that put in touch projects or companies with investors. Currently, equity crowdfunding is regulated in the EU by national laws, so it is partly restricted in terms as the funding amount. This fragmented regulation may be limiting the initiatives funded through crowdfunding[1]. Different kinds of corporate firms (or companies) can be distinguished according to their legal form: the corporation (public limited company or Plc), the limited liability company (private limited company or Ltd), the partnership, and the limited partnership, among others[2].
Geographical scope	Local / regional / national.
Term	Long-term investment
Risk level	High. Buying stocks always involves the risk of losing money (maximum loss of 100% of your investment amount). Thus, the risk is higher than cooperative investment since these stocks are not refundable. Similarly, the risk is higher than in debt financing due to the lesser priority of stocks in case of the company's bankrupt. Besides, the risk level depends on additional factors: type of stock, financial position of the company and its credit quality, revenue patterns of the RES projects, type of energy, etc.
Return Type	Dividends and growth of capital invested, and also satisfaction to promote RES projects.

Subtypes	There are different types of stocks:
	- Common stock: It represents ownership in a company, so the investor earns a portion of profits. If a company goes bankrupt and liquidates, the common shareholders would not receive any money until the creditors, bondholders and preferred shareholders are paid.
	- Preferred Stock: It represents ownership in a company, so the investor earns a portion of profits but usually doesn't have the same voting rights. In exchange, preferred stocks have priority over common stock in dividend payment. The dividend rate of these shares may be fixed or variable and it is set at the time they are issued. There are many types of preferred stock, some of them are:
	    - *Fixed-rate preferred stocks:* A type of preferred stock where the dividends are fixed.
	    - *Adjustable rate preferred stocks* (ARPS): A type of preferred stock whose dividends vary with a benchmark, most often a Treasury bill

[1]To "avoid" legal problems, some crowdfunding platforms organize their crowd as members of an investment club or through a SPV (Special Purpose Vehicle or Entity), as they were qualified investors.
[2] The national normative to regulate these entities slightly differs across countries.

	rate. Therefore, the amount of the dividend is set by a predetermined formula. Because of this flexibility, which allows ARPS compensate for increases in inflation, they would be less risky than fixed-rate preferred stocks. - *Convertible preferred stock*: A type of preferred stock that includes an option for the holder to convert the preferred stocks into common stocks.
Investor/Citizen profile	Mainly investors with long-term horizon planning. Minority investors should diversify their portfolio instead of investing high amounts of money in a single company. Citizens involved in energy renovation process, CO2 savings, etc.
Success cases	There are a lot of RES companies in Europe funding through equity, one of them is for example R.E.S. Renewable Energy Systems Limited (http://www.res-group.com/), a limited liability company registered in England and Wales. To our knowledge, there aren't successful platforms applying the exactly described equity crowdfunding model to RES projects. One of the most similar success cases is Microgenius. Microgenius is a crowdfunding web (http://www.microgenius.org.uk/) where ordinary people can buy shares in community benefit societies for sustainable energy projects in the UK. A community benefit society is run primarily for the benefit of the community at large, rather than just for memberships like a cooperative, so it cannot be considerate a corporate firm. Microgenius states that the sale of community shares is not regulated by the Financial Conduct Authority (FCA), because investors are deemed to be investing for social returns. One of their founders is Community Energy Warwickshire who installed solar panels on roofs at different hospitals. There are also several platforms (crowdfunding webs) around the world that puts in touch crowd with companies of other sectors through usually an investment club (for legal reason). One of most known is MicroVentures (http://www.microventures.com/). For legal reasons, the backers at these website are accredited investors and not yet "crowds", so this platform might not fit the typical definition of crowdfunding.

	Advantages	Disadvantages
Investor	- Access to SME (small and medium companies). - Promote RES projects (fulfil the own environmental consciousness). - Projects with long term contracts (feed-in-tariff), etc. can reduce risk of investment. - Return on investment (dividends and/or growth of capital invested). - In case of preferred stocks "predictable long-term returns". - Liability of shareholders is limited to the capital that they contributed. - Low-correlated with other investments (equity or commodity indexes, etc.).	- Some projects would not done as planned (Bad apples) - Setting a fair valuation of the company. - Dividend is risky because it depends on the income of the company. - Financial position of the business project (possibility of no dividend). - Liquidity: not secondary stock market for selling stocks. - Some shares, depend on the legal form of the company, are not easily transferable (the sale is regulated by the statutes and the law, the remaining partners may have priority, etc.)
Promoter	- Don't have to pay interest as in debt securities. - Companies have easier access to bank credit that cooperatives. - Different legal forms of companies that are appropriate modalities for small, medium or large businesses.	- Crowdfunding national laws (regulation). - Stockholders usually have voting rights. - Some legal forms affect financing mix (other financing sources). For example, in Spain a limited liability company cannot issue bonds. - Accounting and tax obligations. - It requires a minimum capital, but it depends on the legal form.

3. BM 3. COOPERATIVE: EQUITY/CUSTOMER

Name	COOPERATIVE: EQUITY/CUSTOMER
Description	Cooperatives can sell green energy to their members. This energy can be bought in the market or produced by the cooperative itself. The first option is more common. In this case, the cooperative sales only to its members renewable electricity. In this BM we are focused on the membership as synonym for consumption rather than for investment (*BM Cooperative: equity*). Members (customers) finance the cooperative with the price that they pay for to the consumed energy, which can be charged at the same price as normal electricity or at a higher price. If sales cover the costs, cooperatives will build up cash reserves by retaining profits. Unlike debt, equities or deposits, cooperatives do not have to pay interest or dividends for using retained profits.
Geographical scope	Local / regional / national.
Term	Usually a medium or long-term investment depending on the duration of the supply contract. For example, in Spain the duration of these contracts is generally annual, and is tacitly extended for annual periods.
Risk level	It depends on the price of the “green” electricity, the amount of money paid to be a cooperative member, and the duration of the supply contract. Generally, the level of risk is low because prices of green energy tend to be similar to those of the market price and citizens have to contribute to be a member of the cooperative, which is generally a small amount of money. This deposit or stock is also refundable if a member decides to leave the cooperative.
Return Type	There is no monetary return, only green energy. From a theoretical point of view, it could have savings (in the members’ electric bill) if the cooperative reduces the price of energy to costumers or returns this members dividends in energy. Satisfaction to promote RES projects.
Subtypes	Once citizens have become members of the cooperative, they are entitled to buy renewable energy, which, as we mentioned, can be: - Bought in the market (energy with Renewable Energy Certificate or Green Certificate) and sell it to their members. - Produce by the cooperative itself. Whatever the subtype of BM selected, the new cooperative projects should be financed from retained profits.
Investor/Citizen profile	Citizens involved in energy renovation process, CO2 savings, etc. who want to participate in a cooperative and have access to renewable energy.
Success cases	The first known case of this BM is Rural electric cooperatives (RECs) in the USA. They purchase wholesale electricity and deliver it directly to their customers, who have to be members of the cooperative. Actually, they are distribution cooperatives. In the cooperative has profits, these earnings are often returned as a deduction on their customers’ electric bill. (See http://reic.uwcc.wisc.edu/electric/) In Europe, SomEnergia is a renewable energy non-profit cooperative in Spain (http://www.somenergia.coop). Members of the cooperative have the opportunity to voluntary buy renewable energy. The first step is to become a member of the cooperative (there is a €100 deposit) and to complete a form. Actually, there are more than 14,000 members with supply contracts.

	Advantages	Disadvantages
Investor	- Consume green energy. - Members of the cooperative can participate and have voting rights. - Stocks/deposits are usually refundable if a member quits the cooperative. - Promote RES projects (directly or through green energy certificates).	- Some projects would not perform as planned (Bad apples) - Financial position of the cooperative (possibility of no recovering the deposit). - Cooperative members must know and share responsibilities.
Promoter	- Tax advantages of cooperative figure. - Strengthen the cooperative movement by working through other co-ops (local, national, regional). - Do not have to pay interest or dividends	- National laws (regulation). - If members are not satisfied with either the management of the cooperative or the supply contract, deposits/stocks may be refundable. - Operative problems (electric bills, marketer companies, etc.) - At least one person from the group has to have leadership and takes the initiative to represent the group. It is essential for the success of the cooperative. - Need of highly-motivated, experienced and dynamic managers who are able to plan the future of the cooperative.

4. BM 4. MEZZANINE FINANCING

Name	MEZZANINE FINANCING
Description	Mezzanine financing is a hybrid that combines features of debt and equity funding. The term mezzanine (mezzanine debt, mezzanine equity or mezzanine financing) refers to a financial instrument that is placed between the debt and the capital in the company's balance sheet. The basic forms of mezzanine financings are subordinated debt (bonds or loans) and, less frequently, preferred stocks. For example, mezzanine debt incorporates equity-based options with a lower-priority and frequently unsecured debt, so it usually bears interest at a higher rate than other priority or secured bonds.
Geographical scope	Local / regional / national / European.
Term	Usually a medium-term investment (typical mezzanine financing is for 5 to 10 years).
Risk level	Medium - high. It is high-yield debt or convertible equity. However, the risk level depends on several factors: type of stock or bond, financial position of the company and its credit quality, revenue patterns of the RES projects, maturity in case of bonds, etc.
Return Type	Coupons (interests) from debt securities and the option to convert them into stocks. This equity kicker or equity incentive allows the lender improve their return by participating in the future in the capital without assuming the high initial risk of shareholders. Dividend from preferred stock and also the option to convert into ordinary stocks. Finally, satisfaction to promote RES projects.
Subtypes	There are different types of mezzanine financing. In practice, most mezzanine financing takes the form of subordinated, unsecured debt. They are commonly characterized by the inclusion of an equity participation (warrant, option, conversion features, etc) Mezzanine financings also could be on preferred stocks. There are typically structured with a high fixed-rate dividend and usually have an optional or mandatory conversion into common equity.
Investor/Citizen profile	The mezzanine financing is privately negotiated and presents terms with a high degree of specialization, which make it suitable for specialist mezzanine investment funds.
Success cases	European Investment Bank (EIB) finance innovative bio energy projects through mezzanine financing, among other instruments.

	Advantages	Disadvantages
Investor	- Access to SME (small and medium companies). - Promote RES projects (fulfil the own environmental consciousness). - Return on investment: (interest or dividend, as well as the option to convert into stocks). - Projects with long term contracts (feed-in-tariff), etc. can reduce risk of investment.	- Some projects would not perform as planned (Bad apples) - Financial position (possibility of no interest or dividend). - Setting a fair valuation for the company. - Mezzanine investments have limited liquidity. - Only adequate for financially literate investors.
Promoter	- Flexible financing. - Compared to equity, lesser financing cost due to the conversion option.	- In the future, new ordinary stockholders with their voting rights.

5. BM 5. DEBT: BONDS

Name	DEBT: BONDS.
Description	In this case, monetary resources available to RES projects are provided by debtholders of the company. Debtholders expect to earn an interest for their funds (economic motivation). Similarly to BM Companies: Equity, Companies can raise equity and debt through crowdfunding. Debt crowdfunding is used by businesses that borrow money from a crowd or group of people, instead from a bank. There are two main types of debt: bonds or loans. In this BM we describe bonds. Bonds are securities that incorporate an aliquot part of a collective credit constituted by a corporation. They are also known as fixed-income securities, because investors previously know the amount of cash they will get back in case of holding the bond until maturity (if there is not a default). Companies, but also co-op can issue some types of bonds[3].
Geographical scope	Local / regional / national.
Term	It depends on the maturity of the bonds. Typically they are classified into short-term bonds (up to 1-2 years), medium-term bonds (2 years to 10 years) and long-term bonds (more than 10 years). There are also perpetual bonds (with no maturity date) that are not redeemable but pay a steady stream of interest forever. Most of them are callable.
Risk level	Medium. Owning bonds is less risky than in owning stocks because bondholders are paid before stockholders (annual return and in case of bankruptcy). In any case, bondholders always take the risk of default and lose their money. The risk level will depend on: - Bond Issuer and RES project. Company's credit quality is as important as difficult to assess in RES projects. It depends on aspects as the quality of management or the corporation's ability to pay its obligations (changes in regulatory environment). In addition, the risk level is strongly linked to the revenue patterns of the RES project (type of energy, feed-in-tariff or FIT, etc.). Issuers with higher risk would have higher yields. - Collateral. Secured debt is a type of corporate bonds that has some form of collateral. In case of secured bonds, maximum loss would depend of collateral's value. - Priority. If a company defaults, the priority indicates the "position" of debt respect other securities. Senior (unsubordinated) bonds take priority over junior (subordinate) bonds that are repayable only after other debts have been paid. - Options. The most important option for a bondholder is a convertible bond, which may be redeemed for a predetermined amount of the company's equity at certain times during its life. Callable bonds can be redeemed by the issuer prior to its maturity, which makes them riskier than non-callable bonds.
Return Type	Coupons (interest) and also satisfaction to promote RES projects.

[3] The regulations differ across countries. For example, in Spain while a corporation (public limited company) can issue bonds, a limited liability company (private limited company) cannot do that.

Subtypes	Bonds can be classified attending to different criteria most of which have been previously mentioned. Thus:
	- Collateral: secured bonds vs. unsecured bonds. Unsecured bonds are riskier than secured bonds.
	- Priority: Senior (unsubordinated) bonds vs. junior (subordinate) bonds. Subordinated bonds are riskier than unsubordinated bonds.
	- Maturity: short, medium, long-term and perpetual bonds. Bonds with longer maturities are most sensitive to change in interest changes and maybe less creditworthy. Therefore, the longer maturity, the riskier bonds.
	- Options: Convertible bonds, callable bonds, etc.
	- Return:
	  - Fixed Return Bonds or Fixed Bonds. They pay a fixed rate of interest at regular intervals (for example, monthly or yearly).
	  - Floating or Variable Return Bonds. They pay a variable rate of interest over a specific time period. One of the types of variable return bonds is Inflation-linked Bonds, which is adequate for investor who would beat inflation.
	- In some bonds the interest may be conditioned to the existence of profits. Thus, we can distinguish into:
	  - Participating bond: It pays the bondholder guaranteed interests plus extra coupon payments if the issuer achieves a level of profit. Special and important cases of participating debt used by cooperatives are participation certificates. For example, in Spain the law allows these certificates to be represented by securities (which facilitate its transmissibility) and to grant certain rights in the cooperative.
	  - Income Bonds: Their coupons are paid only if the issuer has enough earnings.
	In general, the risk of bonds depends mainly of future movements of interest rates. If interest rate increases, variable return bonds perform better than fixed bonds and vice versa. Also, bonds in which the interest may be conditioned dare riskier than bonds that offer non- conditional coupons.

Investor/Citizen profile	Citizens involved in energy renovation process, CO_2 savings, etc. Since the extremely wide range of subtypes of bonds, they are suitable for all investors: with a short, medium or long-term horizon planning, with low or high risk aversion. Instead of investing high amounts of money in a single company, bondholders should diversify their portfolio to reduce risk, since different projects tend not to be perfectly correlated.
Success cases	Abundance Generation (www.abundancegeneration.com) is a crowdfunding property of Abundance NRG Ltd web for financing RES projects with debentures. Abundance NRG Ltd is authorised and regulated by the Financial Conduct Authority (FCA) of the UK. Across the web, several projects had been financed like the project Solar power for schools for the company Brighter Schools. This is not an exclusive BM for the crowdfunding platforms. Cooperatives could also finance their projects through bonds. SomEnergia is a renewable energy non-profit cooperative (http://www.somenergia.coop). Members of the cooperative have the opportunity to participate

	financially through participation certificates in the investment projects being developed. SomEnergia had issued 5-year participation certificates of an amount of € 1.5 million (€ 1,000 titles each) to finance different RES projects.

	Advantages	Disadvantages
Investor	- Access to SME (small and medium companies). - Promote RES projects (fulfil the own environmental consciousness). - Return on investment (interest). - "Predictable long-term returns". - Solar panels, wind turbines, etc. could serve as collateral for bonds. - Projects with long-term contracts (feed-in-tariff), etc. can reduce risk of investment. - Low-correlated with other investments (equity or commodity indices, etc.).	- Financial position of the business project (possibility of no payment). - Liquidity: there are not secondary markets for selling bonds. - No voting rights.
Promoter	- Debtholders don't have voting rights like stockholders. - Interest payments are deductible business expenses. - Provides leverage for equity owners.	- National laws (regulation). - Higher financial risk, compared to equity finance. Company has to obtain enough cash for paying the interests and principal of the bonds. - Debt is accounted as a liability, so it worsens the company's solvency.

6. BM 6. DEBT: LOANS

Name	DEBT: LOANS.
Description	Loans are an agreement in which borrower makes payments to lenders according to the loan's amortization schedule. In the cooperatives, the typical capital structure includes both equity and debt. Therefore, this BM will be used for raising funds through the loans of their members, which are typically subordinated to loans by non-members.
Geographical scope	Local / regional / national.
Term	Similarly to *BM Debt: Bonds*, we can classify it into: short, medium and long-term loans. Short-term loans provide funds to RES projects that have a temporary need for capital (up to 1-2 years). More frequently, we find medium-term (2 to 10 years) and long-term loans (more than 10 years).
Risk level	Low-medium. There is less risk in lending money through loans than in owning stocks because loans are debt, whereas stocks are equity. In case of bankruptcy, a lender will get paid before a stockholder. The exact level of risk will depend on various factors such as: - RES project: quality of management, corporation's ability to pay its obligations (changes in regulatory environment), revenue patterns of the RES project (type of energy, feed-in-tariff or FIT, etc.). - Collateral. - Priority.
Return Type	Interests and also satisfaction to promote RES projects.

Subtypes	Loans can be classified attending to different criteria. Thus:
	- Collateral: secured loans vs. unsecured loans. In the former some assets of the company are charged in favour of the loan. Unsecured loans are riskier than secured loans.
	- Priority: Senior (unsubordinated) loans vs. junior (subordinate) loans. Subordinated loans are riskier than unsubordinated loans.
	- Maturity: short, medium, long-term loans.
	- Options: Convertible loans that entitle the lender to convert the loan to stocks, etc.
	- Return:
	    - Fixed rate loans. They pay a fixed rate of interest at regular intervals (for example monthly or yearly).
	    - Variable-rate loans. They pay a variable rate of interest over a specific time period.
	    - Also, there are loans in which the interest may be conditional on the existence of a certain level of benefits on the projects. The main type is the participating loan. It includes conditions under which the lender participates in the revenues of the project. It is a type of debt with priority over shareholders but not over ordinary debt so it is riskier.
	- Amortization systems: the most common are called the French System, German System and American System, these systems affects the payment series. Also, loans can be repaid in a series of annual, semi-annual or monthly payments.

Investor/Citizen profile	Since the extremely quite wide range of subtypes of loans, they are suitable for all investors: with a short, medium or long-term horizon planning, with

	low or high risk aversion. Instead of investing high amounts of money in a single company, lenders should diversify their portfolio to reduce risk, since different projects tend not to be perfectly correlated.
Success cases	There are several crowdfunding platforms that put in touch small credits on a peer-to-peer (P2P) basis or through an investment club or a SPV. One of most known in Europe is Funding Circle Limited, which is a company incorporated in England and Wales (www.fundingcircle.com) and regulated by the Financial Conduct Authority (FCA). Across their website, people may become a member of Funding Circle as a lender. The web act as an online marketplace where lender (investors) and businesses are connected. In RES sector, SunFunder (http://sunfunder.com/) is a crowdfunding platform focused on developing economies. It has been used to finance a lot of projects. For example, it has funded a $25,000 loan to purchase 100 solar home systems in Uganda. Once a project is fully funded, SunFunder facilitates low-cost financing to the solar partner to fund the implementation of the project. SunFunder does not currently provide interest to investors due to regulatory reasons. Cooperatives can also use this model. Windvogel (http://www.windvogel.nl/) is a renewable energy non-profit cooperative that collectively produces sustainable energy in the Netherlands. Members of Windvogel may lend money to finance their wind and solar energy. The amount of money for loans is €50 or a multiple. Annually, the interest rate is determined by the General Assembly, so it depends on the financial performance and indirectly on the wind in that year. According to Windvogel web, over the past few years around of a 5% interest rate was paid.

	Advantages	Disadvantages
Investor	- Access to SME (small and medium companies). - Promote RES projects (fulfil the own environmental consciousness). - Return on investment (interest). - “Predictable long-term returns”. - Solar panels, wind turbines, etc. could serve as collateral for bonds. - Projects with long-term contracts (feed-in-tariff), etc. can reduce risk of investment. - Low-correlated with other investments (equity or commodity indexes, etc.)	- Financial position of the business project (possibility of no payment). - Liquidity: there are not secondary markets for selling loans. - No voting rights.
Promoter	- People with company’s debt don’t have voting rights like stockholders. - Interest payments are deductible business expenses. - Provides leverage for equity owners.	- National laws (regulation). - Higher financial risk, compared to equity finance. Company has to obtain enough cash for paying the interests and principal of the bonds. - Debt is accounted as a liability, so it worsens the company’s solvency.

7. BM 7. DONATION

Name	DONATION
Description	There have been several projects in different fields that were financed by donations from the Internet community (films, etc.). Therefore, donation could also be a way to finance RES projects, especially local or social RES projects. Donations could be defined as the investment of money provided by individuals who do not expect any material reward. Of course, non-material rewards are allowed, namely gratitude emails or mentions on the project web (acknowledgements). The donation must be done in a donation contract and the motivation of the crowd would be intrinsic or social motivation (CO_2 savings, etc.)
Geographical scope	Local / regional / national / European
Term	Short or medium, long-term
Risk level	Negligible. Since donations tend to involve low amounts of money and the donors have no expectations about a financial return, the only risk is that the project does not develop and the donor do not recover
Return Type	Personal satisfaction and maybe a non-material reward (gratitude email or acknowledgment, etc.)
Subtypes	There are mainly two subtypes of this model. Thus, there are platforms where contributions involve: - Medium / long-term (for example €1amonth). - Unique contribution.
Investor/Citizen profile	Citizens involved in energy renovation process, CO_2 savings, etc. with a strong environmental consciousness and/or social motivation. More useful for local projects, in which local society is stronger sensitive, or projects with high social component.
Success cases	To our knowledge, there is no an actual case of this BM in RES, but there are a lot of successful cases in other industries. For instance, many films and artists have been financed through donations, and even President Barack Obama's election campaign, among others examples.

	Advantages	Disadvantages
Investor	- Promote RES projects (fulfil the own environmental consciousness). - From a theoretical point of view, tax advantages by allowing tax deductions for financing certain projects.	- Some projects would not perform as planned (Bad apples)
Promoter	- Donations are not considered debt in the company's balance sheet.	- Low levels of money could be raised through donations. - Tax effect of donations. - Donations are not considered capital in the company's balance sheet.

8. BM 8. REWARD

Name	REWARD
Description	This BM is a variation of the *BM Donation* in which donors receive a material reward. This material reward has a lower value than the amount of money provided by the donor. Although typical rewards are exclusive items, like t-shirts, pens, CDs, etc., they also could be services. This finance is usually organized by a crowdfunding platform that usually only puts in touch donors with the company that makes the "gift". Legally this type of crowdfunding must be done in a product-service contract.
Geographical scope	Local / regional / national / European
Term	Short, because usually there is a unique contribution.
Risk level	Negligible. Since investments for rewards tend to involve low amounts of money, the risk is that donors never receive their "gift".
Return Type	Personal satisfaction and a material reward (normally exclusive items).
Subtypes	We don't know different subtypes of this model.
Investor/Citizen profile	Citizens involved in energy renovation process, CO2 savings, etc. with a strong environmental consciousness and/or social motivation. More useful for local projects, in which local society is stronger sensitive, or projects with high social component.
Success cases	To our knowledge, there is no an actual case of this BM in RES, but there are a lot of successful cases in other industries. The most well-known of the crowdfunding websites, Kickstarter (https://www.kickstarter.com/), uses this kind of crowdfunding. .

	Advantages	Disadvantages
Investor	- Promote RES projects (fulfil the own environmental consciousness). - Get "exclusive items".	- Some projects would not perform as planned (Bad apples)
Promoter	- Rewards are not considered debt in the company's balance sheet.	- Low levels of money could be raised through rewards. - Tax effect of reward due to the product-service contract (legally purchase with VAT). - Donations are not considered capital in the company's balance sheet.

9. BM 9.CROWDFUNDING THROUGH CROWSOURCING

Name	CROWDFUNDING THROUGH CROWDSOURCING
Description	Crowdsourcing is a type of participatory activity in which a person or organization proposes to a group of individuals the voluntary completion of a task. There are lots of possibilities for social RES projects to funding through hybrid models of crowdfunding/crowdsourcing. The most widely known could be traditional voluntary contributions to collect bottle caps, pens, mobile phones, etc. Significantly innovator is “Playfunding”. It is a new way to finance projects and it may be classified as hybrid between “crowdfunding”, although the crowd does not invest money, and "crowdsourcing", although there is not a process of outsourcing tasks to a large, anonymous number of individuals. Instead, the crowd do click on a web (platform) and watch the advertisement of a sponsor. The sponsor provides the RES project with money for each view or package of views. Besides, people could receive gifts for clicking on projects and watching their advertisements. There are four actors in playfunding: - A platform of crowdfunding that puts in touch crowd with RES projects and sponsors. - A RES project to finance. - The sponsors’ spots of the initiatives that they like and associate their videos to them. - The crowd play in the projects they want to support. When people like a project, they watch the advertisement video of the sponsor. The RES project obtains the money directly from the sponsor.
Geographical scope	Local, other (only if there is a social interest of crowd)
Term	Usually short-term (the term of the tasks)
Risk level	Negligible, because people don’t spend money (input from users is not economic), only spend their time.
Return Type	Satisfaction and maybe a material or non-material reward (acknowledgment, prize, etc.)
Subtypes	It is difficult to distinguish different types of crowdfunding through crowdsourcing activities. We suggest that in future new funding formulas will exist. In the description of this BM we mainly explain “playfunding”, because it is new and based on web crowdsourcing. This could be understood as a class of crowdsourcing to finance RES projects by watching advertisements. But there are other alternatives such: the collection of bottle caps, pens, mobile phones, etc. already done in other sectors. It seems appropriate to fund social RES projects and local actions where there are companies interested in.
Investor/Citizen profile	Citizens involved in energy renovation process, CO_2 savings, etc. with a strong environmental consciousness and/or social motivation.
Success cases	To our knowledge, there is no an actual case of this BM in RES. There is a platform (crowdfunding web) in Spain called Helplays (http://helplays.com/es/) that uses playfunding model to finance projects through views of advertisements by users.

	Advantages	Disadvantages
Investor	- Crowd do not have to spend money. - Maybe crowdsourcing activities offer a prize.	- This type of crowdfunding is time-consumer. - Some projects would not perform as planned (Bad apples)
Promoter	- Money from bottle caps, phones, etc. or from sponsors is recorded as income. Therefore it is not considered debt in the company' balance sheet. - The possibility of new funding formulas currently unknown	- Difficult to get high levels of funds. - Risks associated with the idea (no companies interested in financing the specific project, etc.) - Money from bottle caps, phones, etc. or from sponsor sis recorded as income. Therefore it is not considered capital in the company's balance sheet.

Comparative analysis

To sum up, the aforementioned BMs could be compared attending to different criteria:

1. The individuals' motivation to invest on citizen RES projects:

More social and less investor	⟷	**More investor and less social**
- Donation - Reward - Crowdsourcing	- Equity or debt instruments of cooperatives. - Cooperatives costumer	- Equity investor or Debt investor through crowdfunding projects - Mezzanine financing

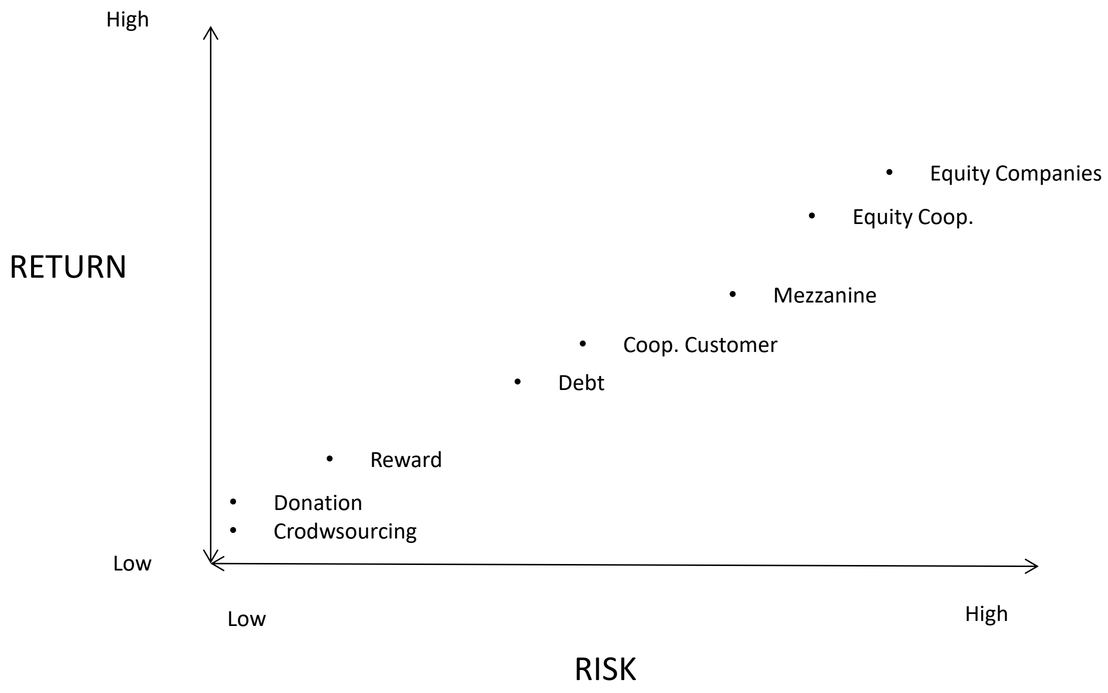
2. The term or period of engagement in RES projects:

Short	⟷	**Long**
- Donation (usually) - Reward - Crowdsourcing - Debt with short maturity (not typically).	- Donation (if collaboration involves medium-term) - Debt instruments with medium maturity. - Cooperatives costumer. - Mezzanine financing	- Debt instruments with long maturity. - Equity - Cooperatives costumer - Mezzanine financing

3. The ability to raise large amounts of money:

Low amounts	⟷	**High amounts**
- Donation (usually) - Reward (usually) - Crowdsourcing	- Cooperatives costumer (because customers have to be members and not all members have to be customers)	- Debt instruments (loans or bonds) for cooperatives or companies. - Equity for cooperatives or companies. - Mezzanine financing

4. The level risk and the return of the individuals' investment



In conclusion:

- There are BMs to finance RES projects like project finance or joint ownership that should be enter in the platform as equity or debt (from the point of view of citizens' investment).
- Other BMs (crowdsourcing, reward or donation) are not purely investment models because there is not a financial reward.
- We have identified different cooperative models. In this case, citizens would be members of the co-op and the co-op is financed by different types of debt, equity and by incomes from customers.
- Finally, there is also the possibility to finance RES projects through direct investment or with crowdfunding companies. In these cases, there are again different classes of debt or equity.