



# Buy<sup>✓</sup>Aware

List of criteria

# 1. Structure

## 1.1. Categories and general organisation

Our BuyAware rating system is based on three pillars of sustainable consumption: “environment”, “human rights” and “company sincerity”. It was important to us that our rating is broad-based and not solely focused on one particular issue of this field. Many consumers told us that they felt confused in the face of the large number of different labels in the nutrition sector – the need for an all-in-one label is evident. Our rating system is completed by the fourth pillar “product characteristics”. We are fully aware of the fact that the technical performance of the product will nonetheless always be the most important sales argument for electronic devices. In the context of our goal to be the first all-in-one label for electronics, these aspects therefore were also included in our methodology.

Below these four pillars, we have six main categories: “climate and energy”, “ecology”, “conflict minerals”, “worker rights”, “transparency” and “performance”. In the end, the assessment process of every product leads to six values between zero and one-hundred percent. This data is then used to form our product specific BuyAware-spiderweb where each of the seven main categories is represented by an axis. This design allows the consumer to directly see where the strengths and weaknesses of a product lie.

If the consumer clicks on one of the seven axes of the BuyAware-spiderweb, multiple subcategories appear. They indicate the main issues which we address in the corresponding category (e.g. the main category “worker rights” which consists of the subcategories “code of conduct”, “toxic substances”, “supplier audits” and “initiatives”). Analogous to the main categories, the performance of the products in each subcategory is also graded by a percentage. This differentiation shows the consumer where the strengths and weaknesses of the product in one of the main categories lie. Also, a short in-text summary will appear next to the subcategory scores which describes the general performance of the product in this category in a few sentences.

At the bottom of our rating system we have 57 criteria which address one specific problem in the field of sustainable consumption. The performance of the product concerning one specific question is then again quantified with a value between zero and one-hundred percent. The required data for the product assessments are mainly gathered by the BuyAware-team itself via an in-depth online research effort. Concerning our sources, we both consider documents by the electronics companies themselves as well as reports by independent third-party organisations for our assessments. All criterion assessments on the BuyAware website also contain the link to the corresponding source in addition to the quantitative result. This allows interested users of our service to dig deeper and to read through the used reports themselves.



## 1.2 Criterion types

The list of criteria we use for our assessments consists of 57 criteria, which each belong to one of the following criterion types:

- **Type A:** Yes/No-criterion (e.g. does the company feature spare parts for this product in their online shop?) → Is this criterion answered with “yes” then it is graded with one-hundred percent. For a “no” it gets zero percent.
- **Type B:** Linear criterion with one variable X (e.g. what percentage of the companies smelters are certified as "conflict-free"?) → If X is larger than the criterion-specific upper barrier, the product scores one-hundred percent in this criterion. X-values smaller than the lower barrier on the other hand result in zero percent. If X lies between the two barriers, the resulting percentage is calculated using a linear scale.
- **Type C:** Linear criterion with two variables X and Y (e.g. how much e-waste (X) has the company recycled per capita (Y) during the last year?) → This criterion type works analogous as type B with the only difference that we here compare the ratio between the two variables with the barriers and not the individual variables by themselves.
- **Type D:** Checklist criterion (e.g. is the company a member of the following initiatives? –PPA, CFSI, TDI etc.) → In principle type D criteria are nothing else than multiple type A criteria which were merged to reduce the space-consumption on our website. The individual elements of the checklist can be weighted differently if they are not all considered equally important.
- **Type E:** Sweeping assessment (e.g. how ambitious are the company's plans concerning the use of renewable energy sources in their power mix?) → This criterion type is also assessed via a checklist. However, in the case of type E criteria, the checklist is too long and complicated to be visualised in a sensible way on the BuyAware-interface. That is why the quantitative result for these criteria will be accompanied by a short explanatory comment instead. The detailed checklist for these criteria is available to the user on a different part of our website.
- **Type AX:** Two-part criterion (e.g. has the company performed a life cycle analyses for this product and if so, how much CO<sub>2</sub> does the product produce during its entire life cycle?) → Criteria of this type consist of two merged criteria. The first part is always a type A criterion whereas the second part can have any of the five criterion types described above (in the case of the example criterion, we therefore have type AB). The assessment of the two sub-criteria is performed analogously to the descriptions above. The two scores are then combined with each other via a predefined weighting ratio to form the final criterion score.
- **Type X+:** Company-independent criterion (e.g. how energy efficient is the product?) → It is important to note that for all criterion types described above, the criteria are always graded with zero percent, if we cannot find the required datasets. However, for the criteria where we do not get the data from the companies themselves but from independent third-party organisations, it is not the company's fault if the data is not accessible. These criteria are therefore not considered for the calculation of the category scores if no corresponding dataset could be found.

In addition, there exists the possibility to overrule a criterion for cases where there is information available which answers the problem addressed in this particular criterion, the data however does not fit its “format”. If a criterion is overruled it automatically turns into a type E criterion so that a justified sweeping assessment can be made.

## 1.3 Weighting layers

In addition to the two parts of the AX criteria and the individual elements of the checklist criteria, there are two other layers where different weighting factors can be implemented. For one, these are the individual criteria of a subcategory which are weighted according to their importance relative to the other criteria of this group. Secondly, weighting factors can also be implemented for the different subcategories of one main category.

## 1.4 Normalisation

To ensure comparability of our product assessments, the seven percentages for the main categories are normalised. In other words, they are multiplied by a normalisation factor so that the average score in one main category over all products in our database always lies at fifty percent.

## 1.5 Justification

We have developed our list of criteria in close collaboration with a network of external experts, who either work in a field which is relevant to our purpose or have been following the development of our project from the beginning. From this resulted countless improvements on the content and formulation of our list as well as all the different weightings. In addition, we also let our list of criteria be reviewed by ordinary consumers who did not have any previous in-depth knowledge in the field of responsible consumption. Subsequently, we tried to implement all the feedback we had received in our list of criteria to the best of our ability.

## 2. List of criteria

### I. Environment



#### 1. Climate and Energy

Climate change is no longer just a speculation, it is a fact! In our opinion reducing our CO<sub>2</sub>-emissions is going to be one of the greatest challenges our civilisation has to face in the 21st century. That is why we believe that the corresponding criteria deserves its own category in our list. Additionally, from an economic point of view, it is desirable that we shift from fossil fuels and other non-renewable energy sources to clean, sustainable energy sources rather sooner than later.

Index	Criterion	Criterion type	Assessment variables	Weighting	Comment
Climate (50%)					
1	Has the company set itself (excluding suppliers) a CO <sub>2</sub> -reduction goal and if so, by how much do they want to reduce their emissions over the next five years?	AB (1:2)	Boundaries are determined empirically	20.7%	The formulation of a CO <sub>2</sub> reduction goal shows that the company wants to combat climate change.
2	By what percentage has the company (excluding suppliers) reduced its CO <sub>2</sub> -emissions over the past 5 years?	B	Boundaries are determined empirically	13.8%	Formulating a reduction goal is the easy part, actually reducing the CO <sub>2</sub> -footprint is more challenging and shows real determination.
3	Does the company also analyse the CO <sub>2</sub> -footprint of its suppliers?	A		6.9%	A large fraction of a company's CO <sub>2</sub> -emissions are released indirectly via their suppliers.
4	By what percentage has the company (including suppliers) reduced its CO <sub>2</sub> -emissions over the past 5 years?	B	Boundaries are determined empirically	13.8%	

Index	Criterion	Criterion type	Assessment variables	Weighting	Comment
5	Has the company performed a life cycle analysis for this product type during the last three years?	A		17.2%	The performance of life cycle assessments shows the determination of the company to reduce the impact of their products on the climate.
6	Has the company performed a life cycle analyses for this product and if so, how much CO <sub>2</sub> does the product produce during its entire life cycle?	AB (1:3)	Boundaries are determined empirically	13.8%	The smaller the CO <sub>2</sub> -footprint of the product, the better for the climate.
7	How ambitious are the company's plans concerning the use of renewable energy sources in their power mix?	E		13.8%	In order to successfully fight climate change in the long run, a transition to renewable energies is absolutely essential.
Initiatives (16.7%)					
8	How engaged is the company in initiatives addressing the issue of climate change?	D	- Global e-Sustainability Initiative (40%) - Climate Savers Program (60%)	100%	The membership in initiatives which try to unite companies to fight climate change together is another indicator that the protection of the climate is of importance to the company.
Energy (33.3%)					
9	How energy efficient is the product?	B+	Boundaries are determined empirically	33.3%	One possibility to reduce the CO <sub>2</sub> -footprint is to produce more energy-efficient devices.
10	How much energy has the company consumed per capita during the last year?	C	Boundaries are determined empirically	66.6%	The smaller the energy consumption of the company, the better for the climate.



## 2. Ecology

We added this category because electronic devices contain rare metals and many other non-renewable resources. Sometimes they are also used in the production phase. Therefore a responsible handling of these minerals is of high importance, especially when we take the future generations into consideration. On top of that many of the substances in electronic devices can pose a significant threat to people and their environment if safety measures are not maintained.

Index	Criterion	Criterion type	Assessment variables	Weighting	Comment
Toxic Substances (25%)					
11	How advanced are the company's efforts in eliminating toxic substances from their products?	D	<ul style="list-style-type: none"> <li>- Polyvinyl-chloride (14.3%)</li> <li>- Brominated flame retardants (14.3%)</li> <li>- Antimony (14.3%)</li> <li>- Beryllium (14.3%)</li> <li>- Phthalates (14.3%)</li> <li>- Mercury (14.3%)</li> <li>- Arsenic (14.3%)</li> </ul>	55.5%	If an electronic device is discarded improperly, substances which are contained in the product are released into the environment where they can cause severe damage to our ecosystem.
12	To what degree has the company banned the use of n-hexane?	D	<ul style="list-style-type: none"> <li>- Final assembly (33.3%)</li> <li>- Full production chain (66.6%)</li> </ul>	11.1%	
13	To what degree has the company banned the use of benzene?	D	<ul style="list-style-type: none"> <li>- Final assembly (33.3%)</li> <li>- Full production chain (66.6%)</li> </ul>	11.1%	

Index	Criterion	Criterion type	Assessment variables	Weighting	Comment
14	Does the company publish a list of the substances for which they have drawn up certain restrictions for the manufacturing process at their suppliers' facilities?	A		11.1%	The publication of such a list shows that the company is committed to enforce certain standards concerning use of potentially toxic substances on their suppliers.
15	Has the company set itself the clear goal to reduce the environmental impact of the substances they use?	A		11.1%	The public commitment to such a goal indicates that the company assumes responsibility for the environmental damage caused by their actions and want to do better in the future.
Waste Management (20%)					
16	How much e-waste has the company recycled per capita during the last year?	C	Boundaries are determined empirically	54.5%	An efficient take back program indicates that the company assumes responsibility for the e-waste which results from their activities and that they are determined to keep rare earth metals in the production cycle.
17	Is the charger excluded from the product package?	A		18.2%	Most of the consumers of electronics already have a fitting charger from a previous device at home and thus do not require the electronics company to provide them with a new charger when buying a new device.
18	Is the packaging of the product made of recycled material?	A		27.3%	The packaging of an electronic device is usually heavier than the product itself and is discarded directly after the purchase of the product.



Index	Criterion	Criterion type	Assessment variables	Weighting	Comment
Longevity (45%)					
19	To what degree can the product be considered modular?	E		28.6%	Modular devices allow the user to easily replace broken components, which reduces the temptation of buying a completely new product when it gets damaged.
20	Does the company provide an online repair manual?	A		10.7%	By making repair manuals and spare parts for the product easily accessible, the company shows its determination to combat throw-away habits.
21	Does the company feature spare parts for this product in their online shop?	A		14.3%	
22	Does the standard warranty offered by the company exceed the minimum duration demanded by local legislation?	A		7.1%	By providing a free warranty-extension to the consumer, the company signals that it wants to reduce the financial obstacles for smartphone repairs.
23	Can the company's customer support be contacted over multiple channels?	D	- telephonically (Hotline) (50%) - electronically (E-Mail, Webchat) (50%)	7.1%	If one's device suffers from a defect, we are interested in a quick and effective resolution of the problem so that we can get back online as fast as possible. That is why a good company customer service is crucial for the longevity of an electronic device.
24	How well is the company's online customer support equipped?	D	- E-Mail (12.5%) - Webchat (25.0%) - FAQ (12.5%) - Self-diagnosis tool (25.0%) - User forum (25.0%)	17.9%	
25	How long ago was the product predecessor launched?	B	Boundaries are determined empirically	14.3%	A low "refreshrate" indicates that the longevity of their devices is of importance to the company.

Index	Criterion	Criterion type	Assessment variables	Weighting	Comment
Radiation (10%)					
26	How high is the specific absorption rate (SAR) of the device?	B+	Boundaries are determined empirically	100%	We are still not completely sure how strongly (if at all) our health is affected by cell phone radiation. Therefore, we should try to reduce the amount of radiation produced by such devices to a minimum.

## II. Human Rights



### 3. Conflict Minerals

Some of the minerals contained in electronic devices predominantly occur in regions with an instable political situation. Therefore, it can happen that the revenue which is generated in the smelters does not end up in the pockets of the workers but finances the armed conflict in the region. Since the Dodd-Frank act was passed in 2010 (in particular, its section 1502), it is no longer allowed for American electronic companies to source such conflict minerals (gold, tantalum, tin and tungsten). However, the problem is a lot more complicated than that and cannot be reduced to solely the classical four conflict minerals. Also, a boycott of such smelters (which is essentially demanded by the Dodd-Frank act) does not help the affected people in any way.

Index	Criterion	Criterion type	Assessment variables	Weighting	Comment
Initiatives (30%)					
27	How engaged is the company in initiatives addressing the issue of conflict minerals?	D	<ul style="list-style-type: none"><li>- Conflict-free Sourcing Initiative (10%)</li><li>- Responsible Raw Minerals Initiative (10%)</li><li>- Public-Private Alliance for Responsible Minerals Trade (20%)</li><li>- IDH Tin Working Group (20%)</li><li>- The Dragonfly Initiative (20%)</li><li>- Fairtrade Gold (20%)</li></ul>	40%	One possibility for companies to help the people affected by the trade of conflict minerals is to get actively involved in initiatives and organisation which address this issue.

Index	Criterion	Criterion type	Assessment variables	Weighting	Comment
28	Does the company have an own program supporting communities in areas where conflict minerals are a problem?	A		60%	If a company has an own program to improve the conditions of the people living in conflict regions, this strongly indicates that they are committed to reduce the harm from conflict minerals.
<b>"Classical" Conflict Minerals (40%)</b>					
29	What percentage of the companies smelters (Gold, Tantalum, Tin and Tungsten) are certified as "conflict-free"?	B	Boundaries are determined empirically	60%	A boycott of conflict minerals does not help the affected people, but it still guarantees the consumer that the purchase of a device does not indirectly fund armed conflicts.
30	Does the company annually publish an updated list of smelters that are identified in the own supply chain?	A		20%	Analysing the own value chain until its origin is the first important step in addressing the issue of conflict minerals. In addition, the publication of such a document indicates that the company is aware of the problem.
31	Has the company sent own, internal employees to at least one of their smelters during the last two years to assess the situation concerning conflict mineral sourcing?	A		20%	By sending own people to regions where conflict minerals are a problem and by communicating this accordingly, the company strongly indicates that it is committed to tackling the issue of conflict minerals.

Other Problematic Minerals (30%)					
32	Does the company mention the issues of other problematic minerals (apart from gold, tantalum, tin and tungsten) on their website or in any published documents?	D	<ul style="list-style-type: none"> <li>- Aluminium (20%)</li> <li>- Cobalt (20%)</li> <li>- Copper (20%)</li> <li>- Nickel (20%)</li> <li>- Rare Earth Elements (20%)</li> </ul>	100%	Addressing the issues of these minerals in-writing shows that the company has realised that the term “conflict minerals” needs broadening.



## 4. Worker Rights

In our western civilisation we have a lot of rules and regulations concerning the employer-employee-relationship. They prevent the company from discriminating and exploiting their workers. Unfortunately, this is not the case in many of the countries an electronic device travels through during its entire production cycle. Companies which have set themselves the goal to enforce our western standards throughout their whole supply chain score higher in our assessments.

Index	Criterion	Criterion type	Assessment variables	Weighting	Comment
<b>Code of Conduct (35%)</b> (Note that all following criteria are based on the conventions of the International Labour Organisation (ILO))					
33	Does the company have a Supplier Code of Conduct (SCoC) which covers basic human rights?	D	- No forced labour (25%) - No child labour (25%) - No discrimination of any kind (25%) - Safe and hygienic workplace (25%)	8.7%	Most of the companies in the electronics sector formulate a code of conduct which they impose on their suppliers. A supplier code of conduct with high standards indicates that the welfare of their indirectly employed factory workers is of importance to them.
34	Does the company's SCoC restrict the maximum working week to 48 hours with voluntary paid overtime of 12 hours maximum?	A		13.0%	
35	Does the company's SCoC guarantee the workers a living wage?	A		17.4%	
36	Does the company's SCoC grant a premium rate of at least 125% of the regular rate of pay for served overtime?	A		13.0%	
37	Does the company's SCoC include the worker right to one day off in every seven day period?	A		13.0%	

Index	Criterion	Criterion type	Assessment variables	Weighting	Comment
38	Does the company's SCoC include the worker right to develop parallel means, when the right to join labour unions and bargain collectively is restricted under local legislation?	A		17.4%	
39	Does the company’s SCoC include the worker right to a formally registered employment relationship?	A		17.4%	
Toxic Substances (25%)					
40	To what degree has the company banned the use of n-hexane?	D	- Final assembly (33.3%) - Full production chain (66.6%)	20%	Both n-hexane and benzene are noxious and can have severe long-term consequences on the health of the affected factory workers.
41	To what degree has the company banned the use of benzene?	D	- Final assembly (33.3%) - Full production chain (66.6%)	20%	
42	Does the company publish a list of the substances for which they have drawn up certain restrictions for the manufacturing process at their suppliers’ facilities?	A		20%	The publication of such a list shows that the company is committed to enforce certain standards concerning use of potentially toxic substances on their suppliers.
43	Does the company offer its suppliers trainings where the factory workers learn about the correct handling of potentially toxic substances to both humans and the environment?	A		40%	By offering such trainings, the company shows that the correct use of dangerous substances is important to them. In addition, trainings like these also raise awareness for this issue.

Supplier Audits (40%)					
44	How many suppliers does the company audit annually per capita?	C	Boundaries are determined empirically	50%	The supplier code of conduct is only a sheet of paper which cannot guarantee that the contained standards are also upheld. Thus, it is essential that the company audits their suppliers on a regular basis.
45	Does the company perform surprise audits at their suppliers' facilities and if so how many suppliers are audited in that way annually per capita?	AC (2:3)	Boundaries are determined empirically	30%	Prescheduled factory visits are mostly not very effective as this gives the suppliers the possibility to prepare by brushing up their business before the audit takes place. Surprise visits on the other hand have a much higher probability to uncover violations of the supplier code of conduct.
46	Has the company let at least one of their suppliers be audited by an independent third-party organisation during the last year?	A		20%	Independent third-party audits are usually a lot more objective than ones which are performed by the contracting company itself.

### III. Company Sincerity



#### 5. Transparency

Not all companies publish an equal amount of information about their products, methods, sources, etc. on their websites. In our opinion it is of the upmost importance that a firm is transparent for the simple reason that a consumer has the right to know about the background of the product he is about to buy or has already bought.

Index	Criterion	Criterion type	Assessment variables	Weighting	Comment
47	Does the company publish its annual ecological footprint?	D	- CO <sub>2</sub> (33.3%) - Materials (33.3%) - Water (33.3%)	16.7%	All documents which are analysed in the criteria of this category served as information source for one or multiple criteria of the previous categories. Therefore, the importance of the accessibility of these documents directly follows from the importance of the criteria for which these sources were used. In a way, the company also accepts responsibility for the issues which are created by their behaviour on the global market by publishing this data.
48	Does the company publish ecological footprints of their products?	D	- CO <sub>2</sub> (33.3%) - Materials (33.3%) - Water (33.3%)	11.1%	
49	Does the company annually publish an updated list of smelters that are identified in the own supply chain?	A		22.2%	
50	Does the company have a published list of direct suppliers that have collectively contributed to more than 90% of the purchase volume?	A		16.7%	
51	Does the company annually report on the results of its labour conditions policy?	D	- Child labour (33.3%) - Conflict minerals (33.3%) - Supplier audits (33.3%)	22.2%	

Index	Criterion	Criterion type	Assessment variables	Weighting	Comment
52	Does the company publish a list of the substances for which they have drawn up certain restrictions for the manufacturing process at their suppliers' facilities?	A		11.1%	



## IV. Product Characteristics

### 6. Performance

It is our goal to be able to present product profiles to our customers which have a “green” touch but are nevertheless complete. This means that we also have to analyse our products in terms of their performance even though it cannot be fully ruled out that a good performance might stand in direct or at least indirect contradiction to some of the previous criteria.

Index	Criterion	Criterion type	Assessment variables	Weighting	Comment
Software (20%)					The German technology site CHIP has an own test centre where they analyse the performance of electronic devices professionally in five different categories.
53	How good does CHIP rate the performance of the product?	B+	Boundaries are determined empirically	100%	
Hardware (80%)					
54	How good does CHIP rate the battery of the product?	B+	Boundaries are determined empirically	25%	
55	How good does CHIP rate the camera of the product?	B+	Boundaries are determined empirically	25%	
56	How good does CHIP rate the display of the product?	B+	Boundaries are determined empirically	25%	
57	How good does CHIP rate the special features of the product?	B+	Boundaries are determined empirically	25%	