Chapter 10
Sustainable Tourism Production and Consumption as Constituents of Sustainable Tourism GDP: Lessons from a Typical Index of Sustainable Economic Welfare (ISEW)

Angeliki N. Menegaki

Abstract Based on the New Economics trend, only sustainable income should be regarded as a genuine income. The conventionally measured income through GDP is neither sustainable nor genuine. The Index of Sustainable Economic Welfare (ISEW) incorporates all aspects of income generation and or income destruction in a triple-level consideration: economy, environment and society. In this chapter, I propose transferring this logic to the measurement of tourism income, as part of national GDP. Many countries boast high percentages of tourism GDP, with subsequent direct, indirect and induced effects. However, there is a question of how much of that income is sustainable and genuine and how much cost that income incurs during the process of its generation and consumption. This chapter attempts transferring the paradigm of the ISEW as a proxy for sustainable GDP into a tourism ISEW as a proxy for sustainable tourism GDP.

Keywords Defensive tourism expenses · Genuine tourism generated welfare · Sustainable income · Sustainable tourism · Tourism ISEW

10.1 Introduction

This chapter aims to conceptualize tourism ISEW. Before presenting that, it is useful to provide some background knowledge on how we got from GDP to the ISEW in mainstream economics. GDP was invented after the Great Depression, and up to date has been widely used as a smart policy tool by economists and politicians. However, it does not distinguish welfare improving activity from welfare reducing activity (Talbreth et al. 2007). To explain this phrase, I provide an example: Fast food chains sales increase GDP, but they create obesity which reduces our quality of life.

A. N. Menegaki (✉)
Department of Economics and Management of Tourist Units, Agricultural University of Athens, 75 Iera Odos st, Athens, Greece
e-mail: amenegaki@aua.gr

Open University of Cyprus, Latsia, Nicosia, Cyprus

© The Author(s), under exclusive license to Springer Nature Switzerland AG 2021
D. Balsalobre-Lorente et al. (eds.), Strategies in Sustainable Tourism, Economic Growth and Clean Energy, https://doi.org/10.1007/978-3-030-59675-0_10
Moreover, GDP does not include, for example, the positive value created from “Do-it-yourself” activities. It can include only official financial or marketed transactions. With the way GDP has been used up to date, it has confounded growth with development (Costanza et al. 2009), or prosperity with growth (Jackson 2012). Bergh (2009) evaluates the reasons why researchers acknowledge the criticism against GDP but do not accept its relevance, and therefore, continue to use in their analyses. This is a paradox described in his paper. Moreover, green accounting has been first applied by Costanza et al. (1997). These authors stressed the importance of incorporation of ecosystem values in conventional economic accounting. Nevertheless, sustainability concepts had been expressed and defined in much earlier bibliography. For example, Kuznet (1934), had first objected to the welfare of a nation being decided only by its GDP, because the latter measures together assets and consumer goods, using values that are based on the existing distribution of income, while also failing to include intangibles such as negative or positive externalities. Referring to the same value of intangibles, Nordhaus and Tobin (1972), had reported the existence of activities beyond market transaction that also affected human and economic welfare and developed the Measure of Economic Welfare (MEW) as the forerunner of later measures of sustainable GDP, namely the ISEW, the GPI or others. Daly and Cobb (1989) had warned that national accounting treated the planet as a business in liquidation, to stress the fact that countries and people did not care about building new values, but only liquidating the existing resources. Daly and Cobb were also the fathers of the Index of sustainable economic welfare index (ISEW), whose tourism counterpart I will present in this chapter.

Therefore, the need to replace or complement GDP (with environmental and social indicators) was born. Using different measures of economic progress can have a profound impact on any policy. This need is particularly felt during turbulent economic times, such as the current ones due to the COVID-19 pandemic outbreak. Goossens et al. (2007) divide the GDP indicators into three groups: those replacing, those supplementing and those adjusting GDP. Also, Boyd (2007), suggests a green GDP which will account only for the nonmarket benefits of nature excluded the services and goods measured in common GDP. Next, Fig. 10.1 shows the difference between current GDP from other more comprehensive progress measures which are discussed next.

(i) GDP comprises (a) personal consumption (durables, non-durables and services), (b) investment (business investments, construction, changes in business inventories), government spending (without transfer payments) and net exports of goods and services.

(ii) GPI—another measure of economic well-being that accounts for both the benefits and costs of economic production- is an improved version of ISEW, that started appearing interchangeably with ISEW, mostly in the 1990s (Lawn 2013). Besides all the economic constituents described in GDP, it also includes social and environmental constituents. Social constituents for the ISEW or GPI are divided to those that add positive value (like assets in a balance sheet) and those which add negative value (like liabilities in a balance sheet). In the
first group belong household labour or volunteer labour, while in the second group, namely with a negative nuance, belong vehicle crashes, commuting, lost leisure, underemployment, crime and family breakdown. Eleven years after Lawn’s work (2003), who had provided a list of all the items used to calculate the GPI for the USA, Bagstad et al. (2014), suggest that an improvement of GPI should be made, and this is what is called GPI2 by them. In GPI2 they suggest the inclusion of underemployment with a negative sign.

(iii) Environmental constituents for the ISEW or GPI on the other hand, encompass wetland ecosystem services, forest services and farmland services, all with a positive sign. With a negative sign, the following parameters are suggested: pollution abatement, water pollution, air pollution, noise pollution, climate change, ozone depletion and non-renewable resource use. For GPI2 Bagstad et al. (2014), also suggest the inclusion of the cost of extreme events, cost of replacing conventional energies with renewable energies, cost of water scarcity, depletion of mining materials and groundwater, importation of hazardous materials, as well as with a negative sign within the environmental constituents. They also suggest eliminating the ozone depletion parameter and provide for both quality and quantity dimensions in services from wetlands, forests and farmland.
(iv) Last, the economic parameters in the ISEW and the GPI also include income inequalities, while the inventors of GPI2 also suggest some transfer payments with particular care though to avoid double counting. Needless to mention that there are dozens of additional economic, social and environmental parameters and variations of them that can form different variations of the ISEW type indexes. Suppose we could include all of them in one Index that could form the Human Progress all-inclusive Index (HPAII).

(v) The most significant hindrance for the implementation of the above-presented progress indexes is that the data required to build them remain at a theoretic level for the majority of countries. Namely, most national statistical agencies have not compiled such datasets yet. In addition to this, different countries and regions, depending on the particular conditions in them, estimate modified social and environmental parameters depending on local issues of relevance. Bagstad et al. (2014) recognize that a more formal process is required through which to incorporate the Genuine Progress Index (GPI) into mainstream economic policy, and this will not affect comparability across countries. Also, most GDP accounting will stop relying on ad hoc measures. Last but not least, Lawn (2013), beware that both the ISEW and GPI are destined to measure welfare but not sustainability. To achieve the latter, we need to include biophysical indicators.

Tourism causes many positive and negative externalities that should be taken into account when calculating the income and welfare generated by tourism activities. The most important aspects pertinent to this situation are the allocation of benefits and income generated from tourism that is not equal and fair for all social groups. The damages of the natural environment are most of the times irreversible. The damages of the social environment may sometimes take significant dimensions, and they may cause a perpetual alienation of local societies. All these aspects may require defensive expenditures which should be derived from the generated income. Particularly the environmental damages require allowances that compensate for them. Net investment should be taken into consideration because tourism infrastructure becomes old and needs to be renewed. Household work and volunteer work should not be underestimated particularly when many tourism businesses are family ones and its members may not be paid with money and proper transactions.

The rest of this chapter is structured as follows: After this introduction which motivates the paper and explains the conceptualization of the ISEW and other relevant indexes, I continue with part 2 which adds to the background material that is useful for a better understanding of the concept and its history, as well as other supplementary material, that can be used in ISEW accounting and sustainability accounting. Part 3 presents the detailed ISEW methodology and Part 4 explains the parallels to tourism GDP. Last, Part 5 offers some concluding remarks.
10.2 Some Stylized Facts for High-Income Countries

10.2.1 More on Sustainable Wealth Indexes

This section adds to the supplementary background material which strengthens the understanding of readers about the ISEW, the reasons why it was born and some basic sustainability accounting tools and concepts that go together. The section also provides a historical overview of all relevant indexes together with a summary of values for statistical life which, strictly speaking, should be perused in sustainability accounting and cases of cost-benefit analysis. To start with, there is a misunderstanding that rich countries are rich in all aspects. There is also a common belief that in rich countries the consumption needs of all or most people are covered and everybody is leading a happy life. The facts, however, show a different reality: For example, rich Scandinavian countries have the highest suicide rates (Szalavitz 2011). Alexander (2011) attributes the high suicide rates in the USA to the materialism which reigns in American society. Young people are not taught the principles of hard work and ethics. They have been accustomed to model lives shown on TV (which for most Americans would mean to live beyond their means) and they wish to have wealthy lives with little personal effort. As far as divorce rates are concerned, Sweden is the 3rd country with the highest divorce rates worldwide, Belgium is 7th, Finland is 8th, the UK is 10th and the USA is 12th (Divorce.com 2014). Income inequality is an aspect that is usually overseen when one is using GDP accounting and following statements about the wealth of a country’s citizens. Inequality hurts health and consequently, on economic growth. A plausible explanation for that is that it increases people’s stress and anxiety to reach a certain status in society (Rowlingson 2011). Overall, income inequality is dysfunctional because it slows economic growth; it results in both health and social problems, generates political instability and leads to severe inequalities, particularly among children (Ortiz and Cummins 2011). Some of the richest countries host some of the poorest people. USA was reported with the highest poverty rate in households with children, Italy 3rd and UK 4th followed by Canada, Germany and Belgium (Smeeding 2006). However, given the orientation of the so-called “New Economics” on genuine progress and sustainable economic welfare, we suggest that the concept of tourism GDP is myopic because it does not tell us what the genuine effect and contribution of tourism on sustainable economic welfare is. To further elaborate this crucial rationale, we mean to suggest that: The GDP of each economy has a different structure and has been produced with ways that may bear different repercussions on human well-being. For example, a highly industrialized country may have produced too much pollution, may have induced extreme urban sprawling with low quality of life, family disintegration caused by the increased working hours of the labour force and the list of the negative consequences is endless. On the other hand, a less developed country, probably with a lower GDP per capita may enjoy a cleaner environment, tighter human bonds, less family breakdown and overall may consist of happier people. Moreover, an industrialized country produces more harm to the environment than a country that produces...
services. Construction, petrochemical activities or agriculture are typically the most polluting activities in an economy. Correspondence to the above can also be made about tourism GDP. In some countries, tourism is of all-inclusive type and in some others, it is of alternative form, ecological, slow or it generally adopts forms which are more environmental and socially friendly. This kind of tourism attracts high-quality clients with more respectful attitudes towards local societies and cultures. Life satisfaction trend is well below GDP/capita trend in major European countries such as France, Ireland, Greece and Portugal. While until the 90s, both in Greece and Portugal, life satisfaction exceeded the GDP/capita trend, after the 90s, life satisfaction has fallen dramatically (Heinz-Herbert 2006). According to a research by Nolan and Whelan (2009), household deprivation was divided into three types: consumption, housing facilities and neighbourhood environment. While in consumption the most deprived countries seemed to be Hungary, Lithuania, Poland, Latvia and Slovakia, the top housing deprived countries were Estonia, Lithuania and Latvia, while most surprisingly, the top deprived of a neighbourhood environment point of view were Latvia, Cyprus and Germany followed by UK, Portugal, Netherlands, Italy, Spain, Belgium and Estonia. The least deprived on this parameter appeared to be Sweden. To further stress the importance of psychological, non-material wealth, UNICEF (2007), in a study that assesses children’s well-being, ranks Sweden and Finland among the highest total scores. However, the score consists of several parameters: material well-being, health and safety, educational well-being, family and peer relationships, behaviours and risks and subjective well-being. As regards family and peer relationships, Sweden and Finland achieve the lowest ranks, while Italy (with a middle total rank) and Portugal (with one of the lowest total ranks) achieve the highest scores, thus revealing that well-being is not a single-dimensional thing, but rather a multi-faceted situation where a country should aim to achieve the highest score in all dimensions. Life expectancy was found to be unrelated to spending on health care in rich countries. Homicides and longer working hours are more common in countries with higher inequalities. Countries with less inequality are more innovative and recycle their waste more (Wilkinson and Pickett 2006).

Posner and Costanza (2011) provide a summary-review of studies till 2008, that use the ISEW and GPI measure and the interested reader should turn to that for an overview. The following table shows the latest studies, namely from 2009 onwards.

Based on Table 10.1, we observe that there are several studies available for specific years or data-spans. For example, with an interest in Portugal and the USA, Beça and Santos (2014a), compare both the GDP and ISEW measures of economic welfare and show that the ISEW is more enlightening when it comes to aspects such as resource use intensity and decoupling. Their results were not insensitive to the measure used each time. Another example could be provided by Kubiszewski et al. (2013), who find GPI to be a far better approximation of economic welfare than GDP, although GPI itself is not the perfect economic welfare indicator. Particularly they find that while global GDP has tripled since 1950, GPI has decreased since 1978. Also, Li and Fang (2014), peruse an integrated method with geographic information systems and a comprehensive dataset and create a synthetic global and national green GDP maps. For reasons of space consideration in this chapter, we will not describe in more
Table 10.1 Studies from 2009 onwards with countries for which ISEW, GPI or other measures of sustainable GDP have been estimated

| Study                               | Countries                          | Method                              | Years       |
|-------------------------------------|------------------------------------|-------------------------------------|-------------|
| 1 Greasley et al. (2014)            | UK                                 | Genuine savings                     | 1760        |
| 2 Condon and Tsigaris (2003)        | Canada                             | Genuine wealth growth rates          | 1997–2009   |
| 3 Mota and Domingos (2013)          | Portugal                           | Genuine savings and green net national income | 1990–2005   |
| 4 Kubiszewski et al. (2013)         | 17 countries (meta-analysis)       | GPI                                 | 1950–2003   |
| 5 Bagstad and Shammin (2012)        | Northeast Ohio                     | GPI                                 | 1990–2005   |
| 6 Packard and Chapman (2012)        | Wellington region, N. Zealand      | GPI                                 | 2001–2008   |
| 7 Danilishin and Veklich (2010)     | Ukraine                            | GPI                                 | 2000–2007   |
| 8 Beça and Santos (2014)            | Portugal & USA                     | ISEW                                | 1960–2010   |
| 9 Gigliarano et al. (2014)          | Regional Italy                     | ISEW                                | 1999–2009   |
| 10 Bagstad et al. (2014)            | USA state level                    | GPI                                 | Various     |
| 11 Bleys (2013)                     | Flanders, Belgium                  | ISEW                                | 1990–2009   |
| 12 Pulselli et al. (2012)           | Tuscany, Italy                     | ISEW                                | 1971–2006   |
| 13 Li and Fang (2014)               | Global                             | Green GDP                           | 2009        |
| 14 Ferreira and Moro (201)          | Ireland                            | Genuine savings                     | 1995–2005   |
| 15 Xu et al. (2010)                 | Wuyishau, China                    | Green GDP                           | 2005        |

Source: Author’s compilation

detail what each study does. The interested reader can get a good idea of the content of the study if he or she refers to the original papers, but Table 10.1, suffices to know what they are about.

### 10.2.2 The Value of Statistical Life

When lives are lost in a country, due to an unsuccessful structure of an economy, this should also be taken into account for the calculation of its sustainable wealth. As we will see next, there are many components in the social part of the ISEW which take into account deaths and regard that as a negative aspect of the economy which is causing them. Below, I give a summarized overview of how the value of life is handled and accounted for in economic literature (Table 10.1). This should also be taken into account when we come to the calculation of the sustainable GDP for tourism.
There are many methods used to calculate the value of statistical life (Boiteux and Baumstark 2001) by which we mean the amount a representative sample of the population is willing to pay for a policy to save human life and reduce the annual risk of dying from 3 in 10,000 to 2 in 10,000 (World Health Organization 2014). Miller (2000) in a meta-analysis of about 68 studies on 13 countries, uses a model to calculate the value of statistical life for many countries among which 23 European ones for the years 1995 and 1998. He concludes that the values of statistical life are about 120 times higher than the GDP/capita corresponding to each country. At the year of this publication, Miller had found out that there were only 13 countries in which this type of WTP studies had been performed. The European default value for the statistical life is 2,487 m (for the WHO European region), 3,387 m (EU-27 countries) or 3,371 m for EU-countries plus Croatia (World Health Organization 2014).

There are mainly two groups of countries for which we do not have the value of statistical life (Table 10.2 and 10.3). One group is the Balkan countries (Bosnia, Bulgaria, Kosovo, FYROM, Romania, Serbia, Slovakia and Slovenia). The other group is former Soviet Union countries (Estonia, Latvia, Lithuania, Ukraine and Croatia). For those countries, we could make some ad hoc assumptions. For example, if we divide the $GDP/capita in 1997, for each country with the calculated VSL, then we get about 0.14. I will multiply this amount with the 1997 GDP/capita of all the countries with missing VSL, to get an ad hoc estimation of that.

10.3 The Methodology of the Tourism ISEW Based on the Conventional ISEW

This section describes the three parts of the construction of the conventional ISEW and draws the parallels to the compilation of the tourism ISEW.

Welfare is an ambiguous and multi-faceted concept. Therefore, a composite indicator is needed to reflect it. Understandably, some of the welfare dimensions are tangible, and some are intangible. Intangible ones are mainly psychological parameters that eventually contribute to happiness and well-being. Intangible ones are more difficult to calculate than tangible ones. There are means to calculate intangibles, such as revealed or stated preference techniques. But even if they have been calculated in one country, there is not any institutional framework to oblige or enable other countries to calculate them too. Hence, unless commonly accepted calculation means are established, cross country comparisons cannot be made, neither in the conventional ISEW nor in the tourism ISEW. This makes difficult the calculation of a complete ISEW which can host all possible parameters affecting the well-being. However, depending on the degree of institutional progress of the country, some countries have had more progress in sophisticated statistical data keeping, while others have not. The first ISEW was produced by Daly and Cobb in 1989, for the US and then was improved in 1994. The ISEW conception has many supporters and many opponents.
Table 10.2 The values of statistical life in Europe

| Country       | $1997 GDP/capita | Best estimate of VSL (000 $) | Values from new studies (2000 onwards, €) |
|---------------|------------------|------------------------------|------------------------------------------|
| EU mean       | 20,714           | 2,730                        |                                          |
| Austria       | 24,418           | 2,680                        | 3,021,948 (Leiter and Pruckner 2009)     |
| Belgium       | 22,824           | 3,000                        |                                          |
| Czech Republic| 4,839            | 680                          |                                          |
| Denmark       | 30,834           | 3,990                        | 2,651,682 (Desaigues et al. 2007)        |
| Finland       | 22,340           | 2,930                        |                                          |
| France        | 22,795           | 2,990                        |                                          |
| Germany       | 24,406           | 3,190                        |                                          |
| Greece        | 10,950           | 1,490                        |                                          |
| Hungary       | 4,275            | 610                          |                                          |
| Ireland       | 19,194           | 2,540                        |                                          |
| Italy         | 19,081           | 2,520                        | 3,598,485 (Alberini and Chiabai 2007)    |
| NRL           | 22,307           | 2,930                        |                                          |
| Norway        | 33,360           | 4,300                        |                                          |
| Poland        | 3,362            | 480                          | 795,082 (Giergiczny 2008)                |
| Portugal      | 9,758            | 1,330                        |                                          |
| Russia        | 2,556            | 370                          |                                          |
| Spain         | 12,965           | 1,750                        |                                          |
| Sweden        | 24,670           | 3,230                        | 7,693,884 (Svensson 2009)                |
| Switzerland   | 34,397           | 4,430                        | 4,362,827 (Rheinberger 2009)             |
| UK            | 28,206           | 3,670                        |                                          |

Source Adapted from Miller (2000) and OECD (2012)

The Index has been criticized for the fact that it measures welfare and sustainability together (Neumayer 2000), and for the methodological treatment of flows and stocks (Beça and Santos 2010). Responses to the former criticism support that the ISEW indicator is an aggregate indicator for both current and future well-being. Future well-being is an aspect of utility for the current generation, because of the satisfaction they receive from knowing they will not damage the utility of their offspring (Cobb and Cobb 1994). This is further elaborated by Lawn (2003), who draws principles from Irving Fisher’s “net psychic income” and thus supports why each item in the ISEW contributes to the psychic income. Regardless of the hesitations posed by the ISEW opposers, the current ISEW is better than nothing (Lawn and Clarke 2008), in the sense that it does a good job but not a perfect one. Or as reported in Posner and Costanza (2011), it is better to be approximately right than perfectly wrong.
Table 10.3 Countries with missing VSL

| Country   | GDP/capita $ current (1) | GDP/capita 1997$ (2) | Best estimate of VSL (000 $) | VSL $ |
|-----------|--------------------------|----------------------|-------------------------------|-------|
| Bosnia    | 1038 (*0.93)             | 965 (*0.14)          | 135,1                         | 135,100 |
| Bulgaria  | 1210                     | 1125                 | 157,5                         | 157,500 |
| Kosovo    | –                        | –                    | –                             | –     |
| FYROM     | 1875                     | 1743                 | 244,02                        | 244,020 |
| Romania   | 1565                     | 1455                 | 203,7                         | 203,700 |
| Serbia    | 2738                     | 2546                 | 356,44                        | 356,440 |
| Slovakia  | 5023                     | 4671                 | 653,94                        | 653,940 |
| Slovenia  | 10282                    | 9562                 | 1342                          | 1,342,000 |
| Cyprus    | 13277                    | 12347                | 1,728,58                      | 1,728,580 |
| Croatia   | 5140                     | 4780                 | 669,84                        | 669,840 |
| Estonia   | 3609                     | 3356                 | 469,84                        | 469,840 |
| Hungary   | 4522                     | 4205                 | 588,7                         | 588,700 |
| Iceland   | 27378                    | 25461                | 3,564,54                      | 3,564,540 |
| Latvia    | 2521                     | 2344                 | 328,16                        | 328,160 |
| Lithuania | 2833                     | 2634                 | 368,76                        | 368,760 |
| Ukraine   | 991                      | 9216                 | 1,290,24                      | 1,290,240 |
| Malta     | 9683                     | 9005                 | 1,260,7                       | 1,260,700 |
| LXB       | 44140                    | 41050                | 5,747                         | 5,747,000 |

Source Authors calculation based on Miller (2000)

The GPI and the ISEW have minor differences between then and this is the reason they are often used interchangeably (Fig. 10.2). Figure 10.1 shows the components of the GPI with a sign in front of them. The Index is divided into three major parts (economic, environmental and social) similarly to the ISEW. Then, Table 10.4, shows the components of the ISEW.

10.3.1 A Simplified ISEW Version Upon Data Availability

Given the fact that the ISEW as suggested theoretically, consists of many components (Table 10.3), that may not be directly available from statistical agencies across the different countries, a simplified version of the ISEW has been recommended in literature and has been used in many applications (Menegaki and Tugcu 2017; Menegaki and Tiwari 2016; Menegaki et al. 2017; Menegaki and Tsagarakis 2015; Menegaki 2018). The formal expression of the ISEW is described in Eq. 10.1.

\[
ISEW = C_w + G_{eh} + K_n + S - N - C_s
\]  

(10.1)
where $C_w$ is the weighted consumption, $Geh$ stands for non-defensive public expenditure, $K_n$ is the net capital growth, $S$ is the unpaid work benefit, $N$ is the depletion of the natural environment and $C_s$ is the cost from social problems, which has not been measured in the current calculations due to lack of data. We understand that environmental or ecological degradation involves many more problems, for which, few data are available which are not comparable across countries. For example, the cost of water pollution or the cost of the loss of land and wetlands is not available in the publicly available official databases such as Eurostat, OECD and World Bank. The same applies to the lack of social data. The inability to include costs from social problems leads to a simplification of Eq. 10.1 into Eq. 10.2

$$ISEW = C_w + Geh + K_n + S - N \quad (10.2)$$

The approach in Eqs. 10.1 and 10.2, is also suggested in Pulselli et al. (2012), Gigliarano et al. (2014), Menegaki and Tsagarakis (2015) and other literature as aforementioned (Tables 10.5 and 10.6).

Tourism is one of the sectors that build the GDP and equivalently one of the sectors that build the ISEW. One part of the ISEW that is attributed solely to tourism,
| Item and Impact                                      | Description/ Brief methodology                                                                                                                                 |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| +Adjusted private consumption expenditures          | Private consumption adjusted to take account of income inequality (Gini) and poverty (headcount ratio). Formula: \((\text{Private consumption expenditures}) \times (\text{adjustment index})\)   |
| +Services from domestic labor                        | Value of unpaid domestic work. Formula: \((\text{domestic labor hours}) \times (\text{categories of population in labor age}) \times (\text{household labor estimated wage})\) |
| +Services from durable consumer goods                | Value of the services provided annually by the durable goods, net of the expenditure for their purchase. The service is estimated from total stock of durables, annual depreciation and real interest rates. |
| +Public expenditures on health and education         | Part of public expenditure useful to increase well-being (health, education) and not to restore a deteriorated situation (defensive expenditure)                  |
| −Costs of commuting                                  | Cost of time-use and transport expenses for repeated travel for work. Direct cost of transport and opportunity cost of time spent                                 |
| −Costs of car accidents                              | Material costs, moral costs and costs due to the loss of production caused by car accidents                                                                  |
| −Costs of water pollution                            | Costs caused by human pressure on the water. Depuration for each equivalent inhabitant                                                                      |
| −Costs of air pollution                              | Costs arising from the emission of each pollutant. Formula: \((\text{economic value per pollutant unit}) \times (\text{annual pollutant emission})\)              |
| −Costs of noise pollution                            | Costs due to noise pollution (willingness to pay for reduction of noise)                                                                                      |
| −Loss of natural and agricultural land               | Costs due to the loss of natural areas. Formula: \((\text{economic value per area unit}) \times (\text{annual pollutant emission})\)                     |
| −Depletion of non-renewable resources                | Depletion of non-renewable resource. Formula: \((\text{fossil fuel consumption}) \times (\text{substitution cost})\)                                          |
| Long-term environmental damage                       | Costs arising from environmental damage with long-term consequences. Formula: \((\text{greenhouse gas emissions}) \times (\text{marginal abatement cost})\)          |
| +Net capital growth                                  | Change in the stock of capital net of the budget needed for the new workers                                                                               |
| +Net balance of payments                             | Export-Import Balance                                                                                                                                          |

Source: Adapted from Gigliarano et al. (2014)
**Table 10.5** The construction of a simplified ISEW for Greece based upon data availability

| Type of component     | Variables                                      | Computation                                                                                                                                 |
|-----------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Benefits              | (+) Adjusted private consumption               | Personal consumption adjusted for income inequality. It is also adjusted for the value of durable products                                     |
|                       | (+) Public expenditure on education and health | Since some of this expenditure is defensive, we follow Jackson and Stymne (1996) and include only half of this amount                             |
|                       | (+) Services from unpaid family workers        | We multiply the percentage of unpaid employment with total employment and then with the basic annual wages (Eurostat 2014)                          |
| Benefits/Costs        | (±) Net capital growth                         | We use gross capital minus the consumption of fixed capital and calculate its growth rate                                                   |
| Costs (environmental) | (−) Mineral depletion                          | Is the ratio of the stock of mineral resources to the remaining reserve lifetime (capped at 25 years)                                         |
|                       | (−) Energy depletion                            | Is the ratio of the stock of mineral resources to the remaining reserve lifetime (capped at 25 years)                                         |
|                       | (−) Long-term environmental damage from carbon emissions | The number of tons of emitted carbon is multiplied with $20 per ton (This is the unit damage in 1995 US$)                                    |
|                       | (−) Cost of local pollution                    | It is estimated as WTP to avoid mortality attributable to particulate emissions Pandey (2014)                                               |
| Costs (social)        | (−) Cost of divorces                           | We multiply the divorce number per 10,000 inhabitants and then by the price of consensual divorce, i.e. 800 € (Kathimerini 2014). I have also used the British annual cost of family dissolution (http://www.centreforsocialjustice.org.uk/policy/paths-to-poverty/family-breakdown) adapted for Greece and the final consumption expenditure as done in (2008) |
|                       | (−) Cost of road fatalities                    | We multiply the number of road fatalities per million inhabitants with the value of statistical life (Rackwitz 2006; Giannopoulos 2010)            |
|                       | (−) Cost of suicides                            | We multiply the number of suicides per 100,000 population with the value of statistical life (Rackwitz 2006; Giannopoulos 2010)                  |

(continued)
Table 10.5 (continued)

| Type of component | Variables | Computation |
|-------------------|-----------|-------------|
| (−) Cost of noise pollution | | We multiply the percentage of total population who state that suffer from noise from neighbors or from streets with the population and I multiply the suffering population with 137.2 € per person Caulfield and O’Mahony (2007) adapted by the final consumption expenditure increase, as done in Noury (2008) |

Source Menegaki and Tsagarakis (2015)

Note All data series come from WDI (2014), except for noise pollution: codeilc_mddw01 (Eurostat 2014), suicides and road fatalities (OECD 2013). Note Social costs that have not been estimated specifically for this application for Greece in Table 5. For example, the cost of family dissolution has been adapted from other countries where this cost has been estimated. The same was done for the price of statistical life where the price was calculated by Giannopoulos (2010) and adapted for all the time span of our analysis as indicated in Rackwitz (2006) and Giannopoulos (2010)

Table 10.6 The suggested construction of a basic tourism ISEW

| Type of component | Variables |
|-------------------|-----------|
| Benefits          | (+) Adjusted private consumption |
|                   | (+) Public expenditure on education and health |
|                   | (+) Services from unpaid family workers |
| Benefits/Costs    | (±) Net capital growth |
| Costs (environmental) | (−) Mineral depletion |
|                   | (−) Energy depletion |
|                   | (−) Long-term environmental damage from carbon emissions |
|                   | (−) Cost of local pollution |
| Costs (social)    | (−) Cost of divorces |
|                   | (−) Cost of worker burn-out* |
|                   | (−) Cost of road fatalities |
|                   | (−) Cost of cultural alienation* |
|                   | (−) Cost of suicides |
|                   | (−) Cost of commuting and traffic congestion** |
|                   | (−) Cost of noise pollution |

Source Author’s compilation. Notes One asterisk denotes components that do not exist in the conventional ISEW. Two asterisks denote that this magnitude exists in the conventional ISEW but in a slightly different form
could be regarded as the tourism ISEW. The total economic contribution of tourism to GDP can be identified through the tourism satellite account and with the aid of input-output analysis. Analogous calculations can be made for the calculation of the economic component of the ISEW to reach the amount that corresponds solely to tourism contributions. The environmental and social parts of the tourism ISEW will be the most difficult to calculate for the same reasons they are difficult to calculate for the conventional ISEW. Environmental data are difficult to get, but social data are the hardest. Therefore, when a magnitude has been already calculated for the total conventional ISEW, it is convenient (based on sound assumptions) to end up to the contributing share of tourism and transfer that amount to the tourism ISEW. However, if these magnitudes are not used in the calculation of the total conventional ISEW, or they have never before been calculated for the total conventional ISEW, then they should be directly and exclusively sought for the tourism ISEW.

The cost of workers’ burn down is a situation that is due to the seasonality that characterizes the tourism sector. Also, it is since the tourism sector is one of labour intensity and low productivity rate. The fact that wages in tourism follow the general pattern of the ones in the rest of the economy, combined with the lower productivity though leads to the Baumol disease or Baumol effect. Workers in the tourism sector must work hard during the tourism season and this leads to their exhaustion (burn-out). This has a serious effect on workers’ health and future capability to work. Thus, it may have an impact on the labour capacity of the sector and the incurred medical costs which are covered by taxpayers.

As far as the cultural alienation is concerned, tourists bring with them habits and behaviours which may not be beneficial for a local community. There are destinations popular among young tourists who become drunk and adopt violent or criminal behaviours. Local people may also adopt these behaviours and become used to types of entertainment and pastimes which were previously unknown. These are not beneficial for the destination and the latter gradually loses its reputation for the rest of the tourist groups. The valuation of cultural alienation is not an easy task and one of the ways it can take place is through stated or revealed preference techniques.

Regarding commuting time, this is included in the ISEW but not in the form of congestion time. These are the two different situations, but commuting time sometimes become longer due to congestion. However, congestion does not presuppose commuting. Congestion can occur in touristic areas and can worsen the lives of local people.

10.4 Conclusion

Nowadays when humanity has reached a critical point of the earth’s sustainability, it is high time we considered measures of sustainable income for the measurement and comparison of our well-being with others. The ISEW is a big step forwards, albeit not free of theoretical and more of applied nature problems. The allocation of the
total conventional ISEW into the various sectors that constitute the economy, is a major challenge. Tourism is one of these sectors.

Currently ISEW studies, except for the fact that they expand as national applications of acceptable measures of sustainable welfare for different countries, they aim to enrich the ISEW aggregate indicator with more sophisticated variables and measurements. The challenge lies in agreeing upon common measurements across nations even on the most objectively measured components of the ISEW, such as the social variables. Tourism causes many positive and negative externalities that should be taken into account when calculating the income and welfare generated by tourism activities. The most important aspects pertinent to this situation is the allocation of benefits and income generated from tourism is not equal and fair for all social groups. The damages of the natural environment are most of the times irreversible. The damages of the social environment may sometimes take significant dimensions and they may cause a perpetual alienation of local societies. All these aspects may require defensive expenditures which should be derived from the generated income. Particularly the environmental damages require allowances that compensate for them. Net investment should be taken into consideration because tourism infrastructure becomes old and needs to be renewed. Household work and volunteer work should not be underestimated particularly when many tourism businesses are family ones, and its members may not be paid with money and proper transactions. Therefore, different sectors may have to address particular caveats in specific unique components.

We need to place great care for any measure of welfare or sustainability. We must not add together measurements components that are underpinned one by weak and one by strong sustainability. For example, we cannot assume that the same value amount of human capital depreciation equals natural capital depreciation, because the value of human life is different from the value of natural resources. This field of the construction and continuous improvement of the ISEW, as well as its sectoral disaggregation, promises much additional future research.

References

Alberini, A., & Chiabai, A. (2007). Urban environmental health and sensitive populations: How much are the Italians willing to pay to reduce their risks? Regional Science and Urban Economics, 37, 239–258.

Alexander, R. (2011). Why are suicides so high in the wealthiest country in the world?, Townhall 27/10/2011. Retrieved 8 Feb 2014, from http://townhall.Com/columnists/rachelalexander/2011/10/27/why_are_suicides_so_high_in_the_wealthiest_country_in_the_world/page/full.

Bagstad, K. J., Berik, G., & Gaddis, E. J. B. (2014). Methodological developments in US state-level genuine progress indicators: Toward GPI 2.0. Ecological Indicators, 45, 474–485.

Bagstad, K. J., & Shammin, M. R. (2012). Can the genuine progress indicator better inform sustainable regional progress?—A case study for Northeast Ohio. Ecological Indicators, 18, 330–341.

Beça, P., & Santos, R. (2014). A comparison between GDP and ISEW in decoupling analysis. Ecological Indicators, 46, 167–176.
Beça, P., & Santos, R. (2010). Measuring sustainable welfare: A new approach to the ISEW. *Ecological Economics, 69*, 810–819.

Bergh, Jeroen C. J. M. van den. (2009). The GDP paradox. *Journal of Economic Psychology* 30, 117–135.

Berik, G., Gaddis, E. (2011). The Utah Genuine Progress Indicator (GPI), 1990–2007: A Report to the People of Utah, Executive Summary. Retrieves 13, June 2020, from https://utahpopulation.org/wp-content/uploads/2014/11/Utah_GPL_Exec_Summary.pdf.

Bleys, B. (2013). The regional Index of sustainable economic welfare for Flanders, Belgium. *Sustainability (Switzerland)*, 5, 496–523.

Boiteux, M., & Baumstark, L. (2001). Transports: choix de investissements et cout des nuisances. Mimeo, Commissariat General du Plan.

Boyd, J. (2007). Nonmarket benefits of nature: What should be counted in green GDP? *Ecological Economics, 61*, 716–723.

Caulfield, B., & O’Mahony, M. M. (2007). An examination of the public transit information requirements of users. *Intelligent Transportation Systems. IEEE Transactions, 8*(1), 21–30.

Cobb, C. W., & Cobb, B. (1994). *The Green National Product: a Proposed Index of Sustainable Economic Welfare*. Lanham: University Press of America.

Condon, A. O., & Tsigaris, P. (2013). Genuine wealth growth rates across Canada from 1997 to 2008. *International Journal of Sustainability Policy and Practice, 9*, 34–45.

Costanza, R., D’Arge, R., De Groot, R., Farber, S., Grasso, M., Hannon, B., et al. (1997). The value of the world’s ecosystem services and natural capital. *Nature*, 387, 253–260.

Costanza, R., Hart, M., Posner, S., Talberth, J. (2009). Beyond GDP: The need for new measures of progress, the pardee papers, no.4, January. Retrieved 26, July 2014, from http://www.Bu.Edu/pardee/files/documents/pp-004-gdp.Pdf.

Daly, H. E., & Cobb, J. B. J. (1989). *For the common good: Redirecting the economy toward community, the environment and a sustainable future*. Boston: Beacon Press.

Danilishin, B. M., & Veklich, O. A. (2010). Genuine progress indicator as an adequate macroeconomic indicator of public welfare. *Studies on Russian Economic Development, 21*, 644–650.

Desaigues, B., Rabl, A., Ami, D., Kene, B. M., Masson, S., Salomon, M. A., et al. (2007). Monetary value of a life expectancy gain due to reduced air pollution: Lessons from a contingent valuation in France. *Revue d’Economie Politique, 117*, 674–698.

Divorce.com. (2014). Worldwide divorce statistics. Retrieved 2, Aug 2014 http://divorce.Com/worldwide-divorce-statistics/.

Eurostat. (2014). Eurostat database. Retrieved 30, July 2014, from http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database.

Ferreira, S., & Moro, M. (2011). Constructing genuine savings indicators for Ireland, 1995-2005. *Journal of Environmental Management, 92*, 542–553.

Giannopoulos, G. (2010). Εκτίμηση και αξιολόγηση κομμωτικού ρύσκου στη ναυτιλία (in Greek). Dissertation, National Metsovio Technical University, School of marine architect engineering, Section of ship studies and transport. Retrieved 1, Aug 2014, from http://dspace.lib.ntua.gr/bitstream/123456789/3657/3/giannopoulosi_riskassessment.pdf.

Giergiczny, M. (2008). Value of a statistical life—the case of Poland. *Environmental & Resource Economics, 41*, 209–221.

Gigliarano, C., Balducci, F., Ciommi, M., & Chelli, F. (2014). Going regional: An index of sustainable economic welfare for Italy. Computers. *Environment and Urban Systems, 45*, 63–77.

Goossens, Y., Makipaa, A., Schepelmann, P., van de Sand, I., Kuhnadtan, M., Herrndorf, M., (2007). Alternative progress indicators to gross domestic progress (GDP) as a means towards sustainable development. Ip/a/envi/st/2007-10.Brussel, Belgium: Policy department, economic and scientific policy (European Parliament). Retrieved 26, July 2014, from http://www.Pedz.Uni-mannheim.De/daten/edz-ma/ep/07/est19990.Pdf.

Greasley, D., Hanley, N., Kunnas, J., McLaughlin, E., Oxley, L., & Warde, P. (2014). Testing genuine savings as a forward-looking indicator of future wellbeing over the (very) long-run. *Journal of Environmental Economics and Management, 67*, 171–188.
Heinz-Herbert, N., (2006). European survey data: Rich countries for quality of life research, Zuma centre for survey research and methodology, Mannheim, 7th ISQOLS conference “prospects for quality of life in the new millennium” Rhodes University, Crahamstown, 17–20 Juli 2006. Retrieved 2, Aug 2014, from http://www.Gesis.Org/fileadmin/upload/institut/wiss_arbeitsberichte/soz_indikatoren/publikationen/noll-european-qualityoflife-survey-data.Pdf.

Jackson, T. (2012). Prosperity without growth: Economics for a finite planet. London: Routledge.

Jackson, T., & Stymne, S. (1996). Sustainable economic welfare in Sweden-A pilot index 1950–1990. Retrieved 25, July 2014, from http://www.sei-international.org/mediamanager/documents/Publications/Policy-institutions/sustainable_economic_welfare_sweden.pdf.

Kathimerini. (2014). Διαζύγια λόγω διαθεσιμότητας (in Greek). Retrieved 11, Aug 2014, from:https://www.kathimerini.gr/49069/article/epikairothta/ellada/diazygia-logw-diaSes imothtas.

Kubiszewski, I., Costanza, C. R., Franco, P., Lawn, J., Talberth, T., & Jackson, Aylmer, C. (2013), Beyond GDP: Measuring and achieving global genuine progress. Ecological Economics 93, 57–68.

Kuznet, S., (1934). National income 1929–1932. A report to the US Senate, 73rd congress, 2nd session. Washington DC. US government printing office.

Lawn, P. A. (2003). A theoretical foundation to support the Index of Sustainable Economic Welfare (ISEW), Genuine Progress Indicator (GPI), and other related indexes. Ecological Economics, 44(1), 105–118. https://doi.org/10.1016/S0921-8009(02)00258-6.

Lawn, P., & Clarke, M. (2008). (Eds.). Sustainable Welfare in the Asia-Pacific: Studies Using the Genuine Progress Indicator. Edward Elgar, Cheltenham, UK.

Lawn, P. A. (2013). The failure of the ISEW and GPI to fully account for changes in human-health capital—A methodological shortcoming not a theoretical weakness. Ecological Economics, 88, 167–177.

Leiter, A. M., & Pruckner, G. J. (2009). Proportionality of willingness to pay to small changes in risk: The impact of attitudinal factors in scope tests. Environmental & Resource Economics, 42, 169–186.

Li, G., & Fang, C. (2014). Global mapping and estimation of ecosystem services values and gross domestic product: A spatially explicit integration of national ‘green GDP’ accounting. Ecological Indicators, 46, 293–314.

Menegaki, A. N. (2018). The basic, the solid and the full Index of sustainable economic welfare (ISEW) for Turkey. Environments, 6(24), 1–18. https://doi.org/10.3390/economies620024.

Menegaki, A. N., & Tiwari, A. K. (2016). An Index of Sustainable economic welfare in the energy-growth nexus for American countries. Ecological Indicators, 72(1), 494–509.

Menegaki, A. N., Marques, A. C., & Fuinhas, J. A. (2017). Redefining the energy-growth nexus with an index for Sustainable Economic Welfare in Europe. Energy, 141, 1254–1268.

Menegaki, A. N., & Tsagarakis, K. P. (2015). More indebted than we know? Informing fiscal policy with an ISEW index for Greece. Ecological Indicators, 57, 159–163.

Menegaki, A. N., & Tugcu, C. T. (2017). Energy consumption and sustainable economic welfare in G7 countries; A comparison with the conventional nexus. Renewable and Sustainable Energy Reviews, 69, 892–901.

Miller, T. R. (2000). Variations between countries in values of statistical life. Journal of Transport Economics and Policy, 34(2), 169–188.

Mota, R. P., & Domingos, T. (2013). Assessment of the theory of comprehensive national accounting with data for Portugal. Ecological Economics, 95, 188–196.

Neumayer, E. (2000). On the methodology of ISEW, GPI and related measures: Some constructive suggestions and some doubt on the ‘threshold’ hypothesis. Ecological Economics, 34, 347–361.

Nolan, B., Whelan, C.T. (2009). Using non-monetary deprivation indicators to analyze poverty and social exclusion in rich countries: Lessons from Europe?, UCD school of applied social science, wp09/11. Retrieved 2, Aug 2014, from http://www.Ucd.ie/t4cms/wp11%2009%20noaln%20whelan.Pdf.
Nordhaus, W., & Tobin, J. (1972). Is growth obsolete? In: Economic growth, national bureau of economic research series, no 96e, N. York: Columbia, University press.

Nourry, M. (2008). Measuring sustainable development: Some empirical evidence for France from eight alternative indicators. Ecological Economics, 67(3), 441–456.

OECD (2013). OECD Factbook. Retrieved 1, Aug 2014, from http://www.oecd-ilibrary.org/sites/factbook-2013-en/06/02/03/index.html?contentTypeType=&itemIdId=content/chapter/factbook-2013-50-en&containerItemIdId=content/serial/18147364&accessItemIds=&mimeType=text/html.

OECD. (2012). The value of statistical life: A meta-analysis, env/epoc/wpnen(2010)9/final. Retrieved 21, Aug 2014, from http://www.OECD.Org/officialdocuments/publicdisplaydocumentpdf/?Cote=env/epoc/wpnen(2010)9/final&doclanguage=en.

Ortiz, I., & Cummins, M. (2011). Global inequality: Beyond the bottom billion: A rapid review of income distribution in 141 countries, INICEF. Retrieved 2, Aug 2014, from [http://www.Unicef.Org/socialpolicy/files/global_inequality.Pdf].

Packard, A., & Chapman, R. (2012). An evaluation of the wellington regional genuine progress index. New Zealand Geographer, 68, 1–13.

Pandey, K. D. (2014). The Human costs of air pollution: New estimates for developing countries, Working Paper, OECD.

Posner, S. M., & Costanza, R. (2011). A summary of ISEW and GPI studies at multiple scales and new estimates for Baltimore city, Baltimore County, and the state of Maryland. Ecological Economics, 70, 1972–1980.

Pulseli, F. M., Bravi, M., & Tiezzi, E. (2012). Application and use of the ISEW for assessing the sustainability of a regional system: A case study in Italy. Journal of Economic Behavior & Organization, 81, 766–778.

Rackwitz, R. (2006). The effect of discounting, different mortality reduction schemes and predictive cohort life tables on risk acceptability criteria. Reliability Engineering and System Safety, 91(4), 469–484.

Rheinberger, C. M. (2009). Paying for safety: Preferences for mortality risk reductions on alpine roads, Fondazione Eni Enrico Mattei working papers, working paper 338. Retrieved 21, Aug 2014, from http://agencysearch.umn.edu/bitstream/54350/2/77-09.Pdf.

Rowlingson, K. (2011). Does income inequality cause health and social problems?. Retrieved 2, Aug 2014, from http://www.Jrf.Org.Uk/sites/files/jrf/inequality-income-social-problems-full.Pdf.

Smeeding, T. (2006). Poor people in rich nations: The united states in comparative perspective. Journal of Economic Perspectives, 20, 69–90.

Svensson, M. (2009). Precautionary behavior and willingness to pay for a mortality risk reduction: Searching for the expected relationship. Journal of Risk and Uncertainty, 39, 65–85.

Szalavitz, M. (2011). Why the happiest states have the highest suicide rates, time April 25. Retrieved 2, Aug 2014, from http://healthland.Time.Com/2011/04/25/why-the-happiest-states-have-the-highest-suicide-rates/.

Talberth, J., Cobb, C., & Slattery, N., (2007). The genuine progress indicator 2006: Redefining progress, Oakland CA.

UNICEF, (2007). An overview of child wellbeing in rich countries. Retrieved 2, Aug 2014, from http://www.Unicef.Org/media/files/childpovertyreport.pdf.

WDI (2014). World Development Indicators. Retrieved July 2014, from http://data.worldbank.org/products/wdi.

Wilkinson, R., & Pickett, K. (2006). The spirit level, why greater equality makes societies stronger. Retrieved 2, Aug 2014, from http://www.Tantor.Com/extras/b0505_spiritlevel/b0505_spiritlevel_pdf_1.Pdf.

World Health Organization. (2014). Heat, health assessment tool. Retrieved 21, Aug 2014, from http://heatwalkingcycling.Org/index.Php?Pg=requirements&Act=vsl.

Xu, L., Yu, B., & Yue, W. (2010). A method of green GDP accounting based on eco-service and a case study of Wuyishan, China. Procedia Environmental Sciences, 2, 1865–1872.