Indian Public Policy Review 2022, 3(6): 45-66
https://doi.org/10.55763/ippr.2022.03.06.003

IPPR

Understanding environmental protection expenditure in India: Trends, provision, and priority

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Abstract

Environmental protection (EP) refers to actions targeted to maintain or restore environmental quality associated with various economic activities through financial provision and initiatives. India's suboptimal performance in EP and climate action so far raises an enquiry into the nature of priority assigned and provisions made for environmental protection expenditure (EPE). This paper examines the recent trends of EPE in India and finds a visibly lower share of EPE in total expenditure and lower rate of growth in comparison to other heads under Classification of the Functions of the Government (COFOG). Capital expenditure on EP has been less than current while subsidy, fund transfer, loans and advances have been near zero. The allocation for environment is inadequate in comparison to other budgetary heads. India fares poorly in EPE when compared to the leading OECD countries, who are global trendsetters for EPE. The current study points at the need for identifying EPE as a core priority area for designing sustainability policies for the long run, by suitably redesigning budget allocation and fund disbursement for implementation of environmental programmes.

Keywords: Environmental protection expenditure (EPE), COFOG, OECD, budgetary allocation, sectoral share, capital expenditure, current expenditure

JEL Codes: C32, E62, H50, H53, H59, Q56, Q58

Publication Date: 27 November 2022

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1. Introduction

1.1 The idea of environmental protection expenditure

Climate action and environmental protection (EP) are becoming increasingly more important with the rising frequency of extreme events, continuous environmental degradation and the impending climate crisis. The human ecological footprint has exceeded the biocapacity and resulted in large scale loss in biodiversity, change in land use patterns, disease, death, and displacement induced by natural disasters, climate change, and environmental stress.

The idea that the growth in the world's output of final goods and services through technological progress can make economic growth an indefinite possibility, is being reconsidered. Co-existence with nature has been recognised as fundamental to human existence in an inevitably finite economy ("The Economics of Biodiversity: The Dasgupta Review," n.d.). This has resulted in an increasing need for designing policies that are focussed on sustainability and resilience of the economic and ecological systems. The need for mainstreaming EP and climate change in economic policies has gained critical importance globally.

EP refers to actions targeted to maintain or restore environmental quality through changes in consumption patterns, production techniques, treatment of residuals, and so on. It further aims at prevention of degraded land and damaged ecosystems. As per the Classification of EP Activities (CEPA 2001), there are nine major domains of EP, namely, (a) protection of ambient pollution and climate; (b) waste management; (c) waste water management; (d) protection and remediation of soil; (e) protection and remediation of groundwater and surface water; (f) protection of biodiversity and landscape; (g) noise and vibration abatement; (h) research and development (R&D) on environment and (i) other EP activities not elsewhere classified.

The aim of EP activities is to collect, treat, reduce, and eliminate pollutants and prevent further environmental degradation. Environmental protection expenditure (EPE) is the sum of capital and current expenditure on the above actions, and thus forms a part of the public budgets in terms of immediate, medium, and long-term measures for prevention, reduction, elimination, and mitigation of environmental problems emanating from human activities of production and consumption.

EP current expenditure includes the costs of operation and maintenance in process, equipment and technology in order to prevent, reduce, and dispose of pollutants and other environmental losses. On the other hand, capital expenditure for long term investment includes financial and materials cost that aim at the creation of new permanent resources and/or revamping old resources through reconstruction, extension, modernization, restoration and adaptation that help improve the degraded environmental quality (Broniewicz 2011).

The process of arranging and allocating public funds for EP and attaining sustainable development has been initiated in the Organization for Economic Cooperation and Development (OECD), European Union (EU) and many other countries where commitment to domestic and international objectives like EP have become part of national policy responses and provisioning of funds.

There are several ways by which public funds influence inclusive growth. It boosts long-term growth by increasing the economy's productive capacity, supporting the accumulation of human capital, and improving returns on private investment in addition to productivity gains (OECD 2020). EP is a major area that may be successful through effective state intervention and provisioning of funds. Through strategies like risk sharing, credit enhancement, or subsidies to reduce borrowing costs in communities that cannot pay the full costs of investments, public monies may be utilised to make it simpler to borrow money on the financial markets for environmental projects.

Therefore, good management of public expenditure programmes is a crucial component of successful and efficient environmental policy (Hepburn 2010). While EP is an issue with a plethora of legislative requirements, institutional frameworks, and transboundary arrangements, the national governments can play a critical role by spearheading adequate programs and policies along with making the requisite budgetary provisions.

Expenditures for education, health, R&D, dissemination of information, households, and environment protection, along with subsidies and social aids are accepted as expenditures for goods pertaining to significant positive externalities. Expenditures on these heads have definite impact on the macroeconomic growth process. However, studies have shown that total public expenditures increase the ecological deficit, by adversely affecting environmental quality, whereas EPE specifically can create a positive effect on it. Fundamentally, EP has the power to improve social welfare (Pearce and Palmer 2001) and thus must be considered crucial for Sustainable Development.

The content and direction of public expenditure like EPE is of crucial importance, as compared to general public expenditure per se (Basoglu and Uzar 2019). Moreover, dependence on concepts of corporate social responsibility, altruistic shareholders, and customer desires will not produce the best results when it comes to environmental conservation. Because businesses lack the incentives to absorb externalities without government involvement, relying on the 'free market' or 'knowledge provision' to provide good results in the environmental sector is very doubtful (Hepburn 2010).

It has also been found that public spending on environmental preservation may have strong positive impact during financial crises and has no negative impact on economic performance. A study using a panel econometric model carried out in eleven Central European nations showed that economic growth is positively impacted by the rise in public spending on EP. The analysis period is diverse, since it includes both the time before and the time of the global economic crisis. The findings show that during a crisis, public spending on environmental protection has a higher impact on GDP. In fact, its beneficial effects have been the best in countries whose economy have been impacted by the global financial crisis (Krajewski 2016).

Budget planning and preparation are prime levers in environmental action programmes, with green budgeting as a recent policy focus developed to align public revenue and expenditure processes towards environmental and climate goals. These may be strengthened further by transparency, industrial mandates and evaluation processes, citizen involvement, and so on.

Several studies have been conducted on public sector efficiency, the GDP effects of public spending, and the cyclicality and long- and short-term relationship between government expenditure and output for the developed countries of EU (Donath and Milos 2008; Szarowská 2018). While public expenditure can be a powerful tool for mitigating uneven economic shocks and act as an automatic stabiliser in the development process (Szarowská 2013), it may be ridden with several problems in many countries. Therefore, careful designing of public expenditure, prioritization and allocation of funds according to heads is essential for effective policy implementation.

Developing countries like India face several basic economic challenges, such as poverty, inequality, malnutrition etc., and generally assign comparatively lower priority to expenditure heads like environmental management and/or protection. However, EPE is of paramount importance for maintaining environmental quality, and thereby sustaining life and livelihood for millions of people in developing societies. There are studies that have shown how municipal environmental protection spending have contributed to a decrease in industrial pollution emissions, although the benefits of governance varied between clusters of cities (Fan et al. 2022).

1.2 Objective of the study

The present desk research aims to examine the patterns of EPE in India during the current decade of the millennium, using secondary data available on national and international databases. A comparative analysis of financial disbursement on EP is made with other major heads of government expenditure in order to understand the priority of EP vis-à-vis other heads and thereby identify the policy gap, if any. Since budgetary allocation forms the basis of actual spending, a scrutiny of the budget may add insights into the fiscal priorities for environmental action.

India's performance in sustainable development may be studied as an indicator of the policy outcomes of climate action and environmental commitments, channelised through EPE. Finally, an examination of the EPE patterns in OECD countries (who have been pioneers in identifying EPE as a policy priority) may help find directions and set goalposts for future decisions regarding the same in EPE-deficient countries like India.

1.3 Methods and materials

Classification of the Functions of Government (COFOG) was developed by the OECD in order to classify the expenditure of the government according to purpose based on the System of National Accounts (SNA) (UN, Department of Economic and Social Affairs). Central government spending by function is the breakdown of expenditures based on the activities supported by governments. This internationally comparable classification system refers to the data on expenditure for general government, excluding local bodies.

The ten first level COFOG heads are general public services, defence, public order and safety, economic affairs, EP, housing and community activities, health, recreation-culture-religion, education, and social protection (OECD 2011). The second level classification splits these ten further into up to nine sub-groups (Appendix 1, table A1), such as the components of EP as listed earlier.

The National Accounts Statistics (NAS), 2021 published by the Ministry of Statistics and Programme Implementation (MOSPI), Government of India provides the detailed data for government expenditure by COFOG for the period 2011-2019 (CSO 2021). Taking this as the base, calculations have been made to examine various dimensions of EPE, such as time trend, shares in total expenditure, year-on-year rates of growth, break-up according to heads, etc.

Subsequently, a comparison is made across the ten COFOG heads, with an aim to identify the priority assigned to EPE, and a correlation matrix has been used to analyse the interrelationship between these categories of expenditure. The enquiry has been narrowed down further to five COFOG heads that are potentially growth-enhancing public expenditure: education, health, social protection, recreation-culture-religion, and environment, with an aim to understand the socio-economic priorities in India.

The general budget 2020-21 has been used to study the budgetary allocation for EP. Finally, the OECD database has been the source of data for EPE and total expenditure in the selected countries that have been compared with India in this study.

2. Expenditure on environmental protection in India

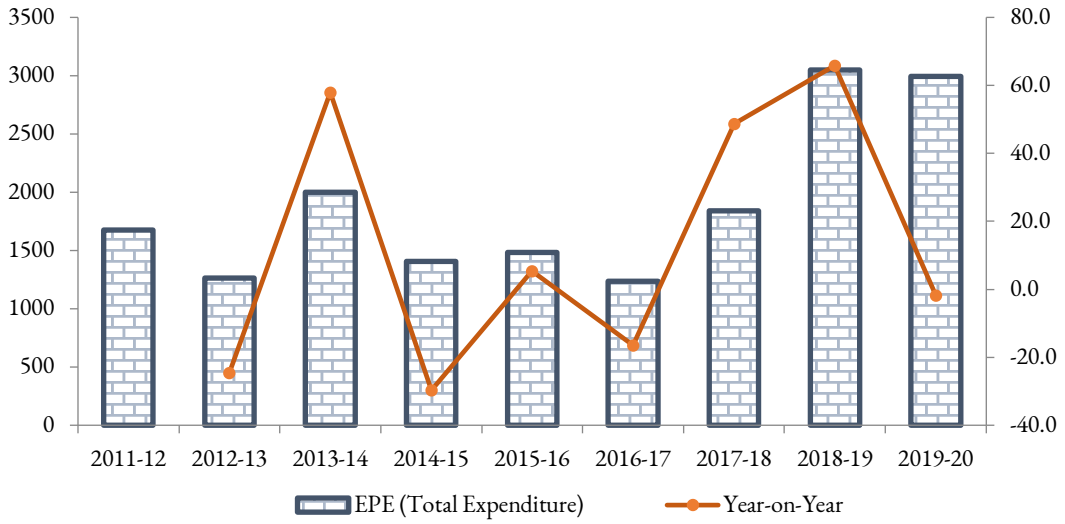
2.1 Time trend and year-on-year growth

Despite a commitment to adhere to the global goals and meet the environmental targets, India has spent a meagre amount on EPE during 2011-12 to 2019-20, with the figure remaining mostly below Rs 2000 Crores, in constant prices adjusted by the GDP deflator (figure 1).

- Except for the years 2013-14 and 2015-16, the EPE has been lower compared to previous years, with year-on-year rates of growth recorded in negative at times: -24.5% in 2012-13, -29.7% in 2014-15, and -16.5% in 2016-17.
- With a major rise of 48.7% in 2017-18 and subsequently 65.8% in 2018-19, EPE has fallen again by -1.8% in 2019-20, although the figure is higher than those in the earlier years.

The significant rise in EPE during 2013-14 and the period from 2017 to 2020 may be attributed to the launch of some environmental policy initiatives and heightened expenditure in response to extreme weather events. The launch of the environmental projects peaked around 2014-15, and later after 2017, which coincides with the end of India's suboptimal performance in the Millennium Development Goals (MDG) and the initiation of the global agenda for the Sustainable Development Goals (SDG) (United Nations).

Figure 1. EPE and year-on-year growth in India



Source: NAS, 2021
Note: EPE figures are in Rs. Crores, in constant price

At the same time, there have been frequent floods (12 in 2013-14, 15 in 2016-17, 5 in 2018-19, and 32 in 2020) and cyclonic storms (5 in 2013-14, 2 in 2016-17, 12 in 2018-19, and 7 in 2020) ravaging various parts of India during this time, along with earthquakes, landslides, wildfire, drought etc. (IDMC, 2020). These events might have drawn immediate attention to the need for climate action and environmental quality improvement.

Some of the major initiatives of the period include:

- National Afforestation Programme (launched 2014) for climate change adaptation and mitigation for vulnerable ecosystems including communities and species and for enhancement of carbon sinks,
- *Namami Gange* (2014) under National Council for Rejuvenation, Protection and Management of River Ganga (reconstituted from National Ganga River Basin Authority (NGRBA) in 2016,
- National Adaptation Fund (2015) to meet the adaptation costs in vulnerable states,
- National Clean Air Programme (2017) to tackle air pollution all over India,
- Ministry of *Jal Shakti* (2019) to manage water resources,
- *Kisan Urja Suraksha Utthan* (2019) to introduce solar energy in agriculture etc.

However, the dips in EPE in the intermediate years point at the absence of a consistent expenditure policy and systematic programme implementation for reduction and mitigation of environmental problems and strategies for restoration and adaptation of degraded environmental quality over the medium or long run.

2.2 Current and capital expenditure accounts of EPE

Disaggregated trends may be observed in terms of the components of EPE, namely, current and capital expenditures, subsidies, transfers, loans and advances etc., which are major public instruments of developmental expenditure (including EP) (Table 1).

Table 1. Environmental protection expenditure in India (Rs. Crores, in constant price)

Environmental Protection Expenditures	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Total Expenditure	1676	1264.8	1996.5	1403.4	1480.2	1236	1838.4	3048.3	2993.6
Current Expenditure	1076	843.5	1296.5	774.6	995.0	1058.4	956.0	1025.1	1308.6
(% share in Total Expenditure)	64.2	66.7	64.9	55.2	67.2	85.6	52.0	33.6	43.7
Capital Expenditure	600.0	421.3	700.0	628.8	484.3	177.6	747.3	1746.7	1327.9
(% share in Total Expenditure)	35.8	33.3	35.1	44.8	32.7	14.4	40.7	57.3	44.4
Net Investment in Stock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(% share in Total Expenditure)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Loans and Advances	0.0	0.0	0.0	0.0	0.8	0.0	135.0	276.6	357.2
(% share in Total Expenditure)	0.0	0.0	0.0	0.0	0.1	0.0	7.3	9.1	11.9
Subsidy	2.0	0.9	2.6	0.8	0.0	0.0	0.0	0.0	0.0
Current Transfers to Local Bodies	68.0	197.2	71.3	70.3	119.3	182.1	177.4	193.2	370.8
Capital Transfers to Local Bodies	12.0	0.0	0.0	0.0	0.0	0.0	0.0	19.2	2.4
Loans & Advances to Local Bodies	0.0	0.0	0.0	0.0	0.0	0.0	135.0	276.6	357.1

Source: Authors' calculation based on NAS, 2021 data

Note: EPE figures are in Rs. Crores, in constant price

At the times of spikes in overall EPE in selected years, there have been rises in capital expenditure and its share in total as well, with the highest recorded in 2018-19 (57%), followed by 2014-15 (45%). This is an exception to the trend of average shares of capital expenditure, that is generally much lower (around 35%) than current expenditure (around 65%). Capital transfer to local bodies have been almost nil during this period.

The current transfer to local bodies has grown somewhat consistently, which might have been triggered by the need to tackle immediate natural disasters and short-term environmental programmes. However, medium- and long-term policies of capital transfer to states and local bodies are required for practising fiscal federalism in the domain of EP, as much as it is needed for any other developmental investment.

The impacts of environmental mismanagement transcend state and national boundaries, making it impossible for environmental challenges to stay local. When environmental deterioration starts in one location, it spreads to a much wider geographic region, including not only local governments but

also state and federal ones, and necessitates their participation. Consequently, the idea of environmental federalism necessitates a review of the proper jurisdiction for the administration and delivery of environmental goods and services.

In this situation, it will be vital for the central government to play a role in regards to environmental regulation, that necessitates taking charge of those activities that have significant environmental 'spill over impacts' beyond jurisdictional boundaries. In accordance with the minimal standards set by the federal government, state and local governments can regulate environmental quality and services. They also need to develop and implement programmes. As a result, there is a need for distributed environmental governance at many levels of government, and federal systems are particularly well-suited to handle this task.

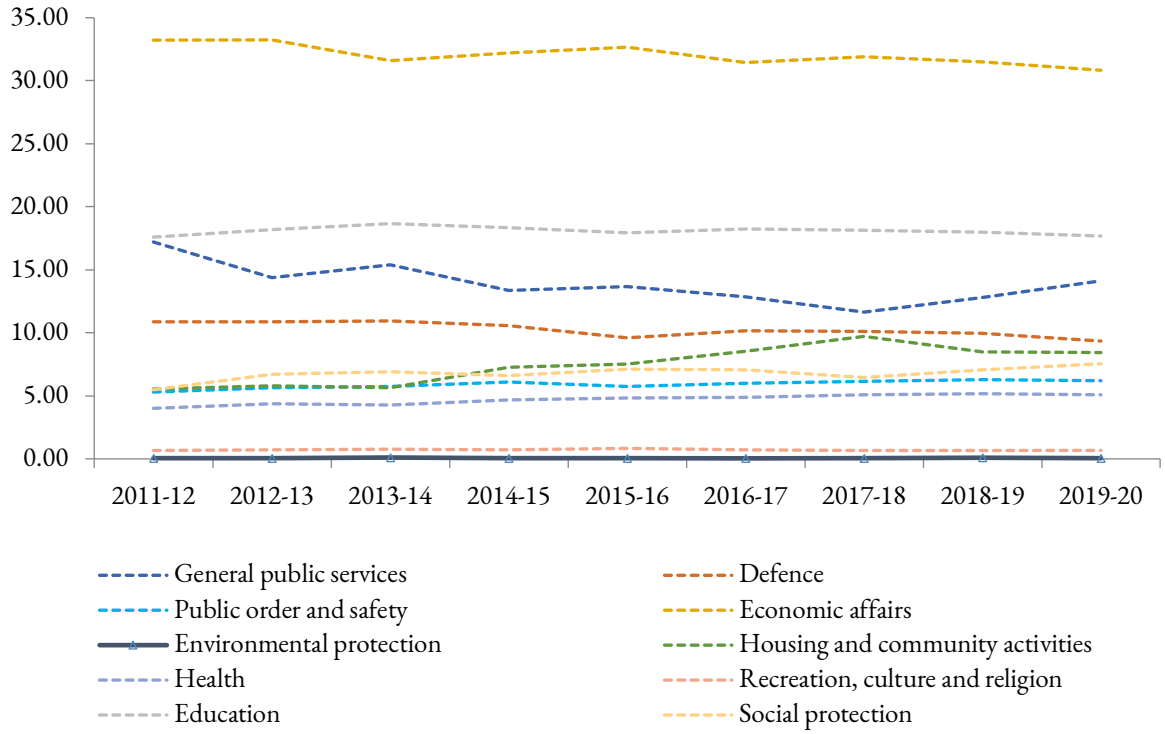
India surely has not built a robust system of fiscal federalism. There has been no investment in stocks during the entire period. Loans and advances have not been expended till 2016-17 and subsidy has been abysmally low and/or negligible except for a few initial years. The period from 2017-18 has recorded some loans and advances and capital transfer to local bodies, which may indicate a minor shift towards long-term investment in EP in India; however, the amounts in question remain very small.

2.3 Share of EPE in total expenditure

EPE has received the least priority among all ten heads of COFOG in India (figure 2). Its share in the total expenditure has been the lowest, at around 0.08% on an average with further dips to 0.05% in 2015-16 and 0.04% in 2016-17. The highest share recorded so far is 0.09% in both 2013-14 and 2018-19, which is way below a less-significant economic head called recreation-culture-religion that hovers around 0.6% to 0.8%.

The major economic heads are economic affairs (30-33%), general public services (12-17%), defence (around 10%), housing and communication (5- 8%) and public order and safety (5-6%). Among the socio-economic heads, education has the highest share (17-18%), followed by social protection (5-7%), health (4-5%), recreation-culture-religion (0.6-0.8%) and EPE with the lowest share (0.04-0.09%) during this period. Lower share of health expenditure is likely to aggravate the problems induced by poor environment, for the two are closely connected.

Figure 2. Share of EPE and other categories in total expenditure in India



Source: NAS, 2021

2.4 Correlation between EPE and other heads

The pattern of expenditure under the ten COFOG heads shows varying degree of interconnectedness (table 2). While the major economic heads have stronger correlation, expenditure on the socio-economic variables reveals weaker correlation among themselves. From the estimated values of the correlation coefficients, no relation has been detected between economic heads and social heads. Consequently, it would also mean that increasing social heads of expenditure will hardly impact the environment and there is no question of positive impact even so. This implies that protecting environment requires direct intervention and fund disbursement for the best results as a sustainability policy.

As observed earlier, EPE in India has been dominated by current expenditure and may have an overlap with public service, order, and safety. No correlation has been found between EPE and housing and community services, which include two essential components like water and sanitation. The degree of correlation significantly reduces when environment is compared with other socio-economic heads, namely, health, education, and social protection. There is no correlation between EPE and recreation-culture-religion. The data has already revealed a greater share of the latter in total expenditure over the entire period, thereby indicating a socio-economic bias that puts EP at a lower priority than recreation-culture-religion in particular, and other heads in general.

Table 2. Correlation matrix for COFOG expenditure heads in India

	Environmental protection	General public services	Public order and safety	Defence	Economic affairs	Housing and community activity	Health	Recreation, culture and religion	Education	Social protection
Environmental protection	1.000									
General public services	.810** (0.008)	1.000								
Public order and safety	.708* (0.033)	.809** (0.008)	1.000							
Defence	.719* (0.029)	.800** (0.010)	.992** (0.000)	1.000						
Economic affairs	.690* (0.040)	.835** (0.005)	.988** (0.000)	.977** (0.000)	1.000					
Housing and community activities	0.568 (0.111)	.702* (0.035)	.970** (0.000)	.973** (0.000)	.970** (0.000)	1.000				
Health	.681* (0.044)	.800** (0.010)	.997** (0.000)	.986** (0.000)	.995** (0.000)	.978** (0.000)	1.000			
Recreation, culture and religion	0.589 (0.095)	.769* (0.015)	.909** (0.001)	.873** (0.002)	.930** (0.000)	.884** (0.002)	.929** (0.000)	1.000		
Education	.695* (0.038)	.818** (0.007)	.997** (0.000)	.990** (0.000)	.990** (0.000)	.973** (0.000)	.997** (0.000)	.929** (0.000)	1.000	
Social protection	.694* (0.038)	.850** (0.004)	.969** (0.000)	.946** (0.000)	.963** (0.000)	.909** (0.001)	.969** (0.000)	.950** (0.000)	.976** (0.000)	1.000

Source: Authors' calculation

Note: *p<0.05, **p<0.01; figures in parentheses indicate standard errors

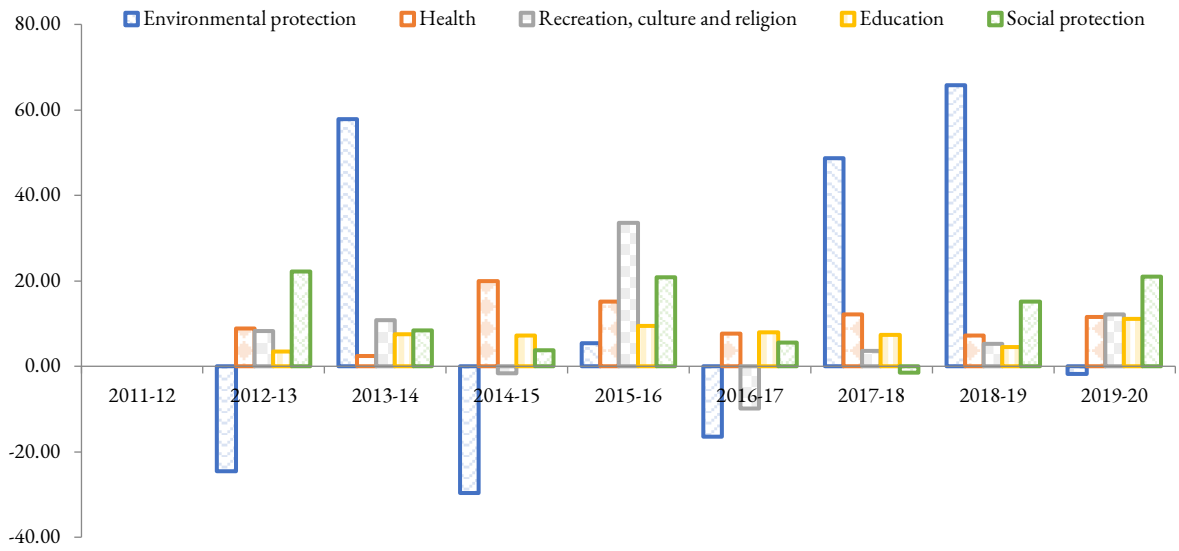
2.5 EPE and other socio-economic heads

Although the overall growth in EPE during 2011-12 to 2019-20 has been comparable (79%) with education (75%) and recreation-culture-religion (74%), the absolute amount for EPE has been significantly less. On the other hand, health and social protection have recorded higher rates of growth (122% and 140 % respectively), as well as larger absolute amounts. Moreover, the year-on-year growth of EPE has fluctuated the most among the five socio-economic variables (figure 3); as stated earlier, there have been sharp rises in EPE in 2013-14 and 2018-19, resulting in 57.85% and 65.82% year-on-year growth respectively.

EPE recorded maximum fluctuations and negative rates of growth, such as, -24.53% in 2012-13, -29.71% in 2014-15, -16.5% in 2016-17 and -1.79% in 2019-20. Expenditures on health and education have recorded positive rates of growth, varying from 2.4% to 19.9% and from 4.5% to 11% respectively. Health expenditure declined, though positive, in 2013-14 and 2018-19 whereas expenditure on education dipped in 2018-19.

Expenditure on social protection has recorded higher rates in general, with a maximum of 22.19% in 2012-13 and 21.01% in 2019-20. The remaining head -- recreation-culture-religion -- has been allocated higher shares of funds, with a growth rate as high as 33.59% in 2015-16, and a positive growth rate in most of the years (except for minor declines of -1.57% in 2014-15 and -9.8% in 2016-17).

Figure 3. Growth of expenditure on socio-economic categories in India



Source: NAS, 2021

Overall, EPE turns out to be the least prioritised head of expenditure, with major negative and minor positive rates of year-on-year growth, both among all ten COFOG categories as well as among the five socio-economic heads of developmental expenditure. While growth in education and health expenditure is an indicator of human development, deprioritised EPE may threaten the journey towards sustainable development.

3. Budgetary allocation for climate and environmental actions in India

3.1 Regulatory and financing mechanisms for EPE

The Indian Constitution initially contained no specific provision for environmental preservation, albeit it was implied in the Preamble and Directive Principles of State Policy. The concept of environmental rights (in the Fundamental Rights) and obligations (in the Fundamental Duties) have since been introduced to the Constitution as a result of the state's gradual realisation of its obligation to safeguard the environment.

The 42nd Constitutional Amendment amended the Directive Principles of State Policy to include direct environmental protection in the form of Article 48-A. According to the article, "The State shall endeavour to safeguard the country's forests and wildlife, and to maintain and promote the environment." ('Environment Protection under Constitutional Framework of India,' n.d.).

Even though the Union and the States each have a certain amount of environmental authority, the Union nevertheless has the lion's share of the decision-making power. Additionally, the State list includes the third-tier subject of local government. Although the 73rd and 74th Constitutional Amendment created a Constitutional basis of authority for local governments, they are under the power and jurisdiction of the state governments that govern them, especially in the matters related to environmental expenditure. They do not draw their authority from the Constitution itself, but rather from the State governments that govern them ('Indian Institute of Ecology and Environment New Delhi - www.ecology.edu' n.d.). In addition to the Union list, the Union government also has the upper hand in matters pertaining to the Concurrent List. Both the Parliament and the State Legislature can pass laws on concurrent subjects, but if there is a disagreement and no room for harmonic interpretation of the provisions, the legislation passed by the Parliament takes precedence. Only the Parliament has the remaining authority to enact legislation on subjects not covered by either of the other two lists, and one of these subjects is environment. When combined with the legislative authority granted by Article 246 of the Constitution and read with list I and list II of Schedule VII, the ownership of public lands and natural resources by the states defines the division of environmental and natural resource-related duties between the federal government and the states (Srivastava et al., 2012).

The Union Ministry of Environment and Forests (MoEF) was set up in 1985, and is the highest administrative body to oversee and safeguard environmental protection and establish a legal and regulatory framework for this purpose. The Environment (Protection) Act of 1986 empowers the central government to safeguard and enhance environmental quality, control and/or decrease pollution from all sources, and ban or restrict the establishment and/or operation of any industrial facility based on environmental considerations.

Section 3 of the above act enables the Union Government to take all such measures as it deems necessary or expedient for the purpose of protecting and improving the quality of the environment and preventing, controlling, and abating environmental pollution. It covers matters like protection of forests, wildlife, conserving mines, population control etc. Here too, in the instance of conflict between Union and any State government, the decision of the Union government prevails.

In the situation of national emergency, Parliament has the power to legislate the state subjects also. The division of these legislative powers is essential to make provisions which can deal with environmental problems. Currently at the federal level, four ministries, namely, the Ministry of Environment, Forest, and Climate Change (MoEFCC), the Ministry of New and Renewable Energy (MNRE), Ministry of Earth Sciences (MOES), and the Ministry of Jal Shakti (MJS) are primarily responsible for environmental policy -- and consequently for EPE (Dareen 2021).

Most environmental programmes are financed by the Centre and, to a lesser extent, by the States. Nevertheless, these are mostly overseen and managed by the state governments. Various state environmental programmes pertaining to water, land, agriculture, public health and sanitation,

preservation, protection, and enhancement of stock, as well as the prevention of animal illnesses, are funded by the Centre (Dareen 2021).

The term 'green finance' describes financial arrangements that are specifically intended for use with environmentally friendly initiatives or projects that incorporate issues of climate change. Green financing has been emphasised in India since 2007. In a notification titled 'Corporate Social Responsibility, Sustainable Development and Nonfinancial Reporting - Role of Banks' published in December 2007, the Reserve Bank highlights the significance of global warming and climate change in the framework of sustainable development ('Landscape of Green Finance in India 2022').

The National Action Plan on Climate Change (NAPCC) was created in 2008 with the goal of outlining the broad framework for policies for reducing the effects of climate change (Jain, 2020). As a coordinating body for the many agencies in charge of green financing in India, the Climate Change Finance Unit (CCFU) was established inside the Ministry of Finance in 2011. In May 2016, the government-backed Indian Renewable Energy Development Agency (IREDA), which promotes renewable energy projects, declared its intention to establish India's first green bank. The 'credit enhancement programme' was created specifically by India Infrastructure Finance Corporation Limited (IIFCL) to finance sustainable infrastructure projects with bond tenors longer than five years (Jain, 2020).

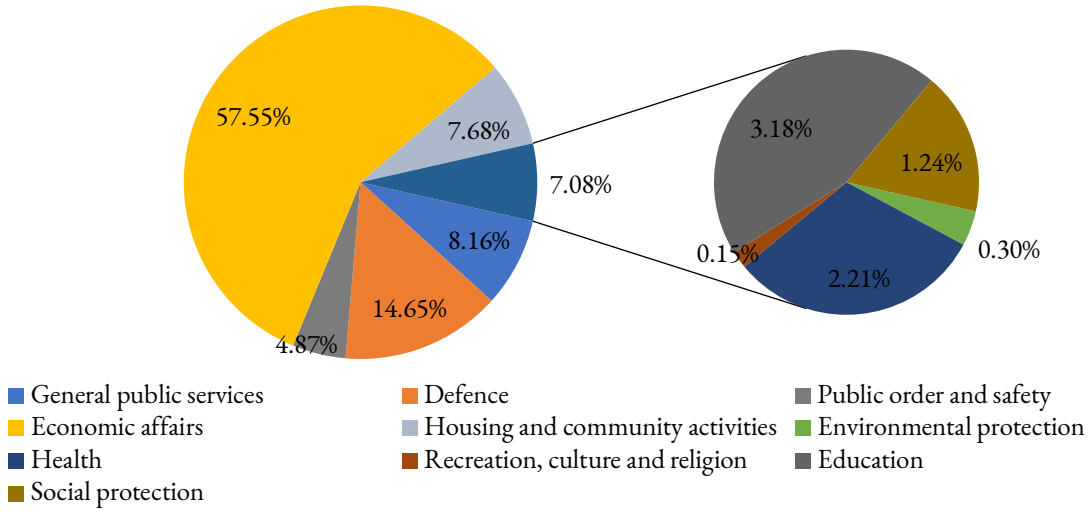
3.2 Recent trends in budgetary allocation

Environmental goals, such as, those of green transition, solar energy expansion, blue economy, clean air, climate adaptation and mitigation etc. need to be supplemented by adequate funding in order to steer the economy to a sustainable future. The lower priority for EP becomes visible in the budgetary provision for EP activities in India.

Despite the alarming condition of the current pandemic and occurrence of multiple climate-induced extreme events recently, the union budget of the Government of India for 2021-22 does not show the expected priority for EP. There are wide variations in the fund allocation for different ministries assigned to take up economic development across various sectors.

The Ministry of Environment, Forests and Climate Change (MOEFCC), Ministry of Earth Sciences (MOES), Ministry of *Jal Shakti* (MJS) and Ministry of New and Renewable Energy (MNRE) that are entrusted to lead short-, medium-, and long-term environmental programmes, have been allocated a remarkably low share of the budget compared to other ministries dedicated to core economic and social sectors. The total allocation, disbursement, transfer to states and funding of various programmes related to climate and environment have got a meagre share of 0.30% in the budget, out of a total 7.08% share of the five socio-economic heads (figure 4).

Figure 4. Shares of environment and other heads in budgetary allocation in India



Source: Authors' calculation based on the Union budget for 2021-22, GOI, 2021

A detailed scrutiny of the budgetary allocation reveals a clear deficiency in allotments: Rs. 2,869.93 Crores to MOEFCC, Rs. 1,897.13 Crores to MOES, and Rs. 5,753 Crores to MNRE, all of which are marginally higher than the previous allocations. MJS, which handles the high-profile *Namami Gange* project, received Rs 9,022.57 Crores for water resources, river development, and Ganga rejuvenation, as well as Rs 60,030.45 Crores for drinking water and sanitation. However, the latter is not directly related to natural resource conservation and EP (GOI 2021).

Among the total fund allocated to MOEFCC, long-term projects like National Clean Air Programme (NCAP) received Rs. 460 Crores; Central Pollution Control Board (CPCB), Rs. 100 Crores; Green India Mission - National Afforestation Programme, Rs. 246 Crores; and National Adaptation Fund Rs. 80 Crores. The total disbursement to states is not large, for example, a sum of Rs. 47,436 Crores was transferred *to all 27 states* for afforestation under the Compensatory Afforestation Fund Act (CAMPA) 2016.

Environmental education and research, which are important drivers of sustainability and lifestyle change (WBCSD 2021) have not received adequate shares too. The allocation for environmental knowledge and capacity building has decreased continuously, from Rs. 86 to 40 to 70 Crores over 2019-20, 2020-21 and 2021-22 respectively (MOEFCC 2021). The Green Skill Development Programme (2017), aimed to train 5 lakh youth in forest and environment sector by 2020-21, is funded out of the Environmental Information System (ENVIS) which had a meagre allocation of Rs. 24 Crores in 2018-19 (MOEFCC 2018).

MNRE has assigned Rs. 1,299 Crores for wind energy and Rs. 2,149 for solar power in 2020-21, which seem to be inadequate in view of the major thrust put on these sources of non-conventional and renewable energy at a time of green transition.

The fund allocated by MJS for cleaning Ganga has reduced to Rs. 800 Crores compared to Rs. 20,000 Crores at the time of its inception in 2014. Other projects of MJS, such as, River Basin

Management (Rs. 200 Crores), National Hydrology Project (Rs. 200 Crores), Flood Management and Border Areas Programme (Rs. 750 Crores) and the *Har Khet ko Pani* irrigation programme (Rs 1.050 Crores) have received insufficient funds too (Dareen, 2021).

The above examples reveal that India's key environmental and climate action programmes are inadequately funded. While climate resilience and EP are globally accepted goals, the nature of the local problems is more complex in developing countries. It requires larger funding, state initiative and efficient implementation, without which achieving the global goals are near impossible.

4. EPE of selected OECD countries as goalposts

Environmental commitments shown by the OECD countries can serve as goalposts for other countries. Prioritising EP and adequately allocating funds for the same under the COFOG framework have set global examples of how governments can design environmental policies and expenditures. Developing countries like India can gain insights by analysing the relevant data of the OECD countries, as countries closer to India's GDP do not suffice for such efficiency markers. Lack of systematically compiled data is another constraint in studying other developing countries comparable with India.

Studies have shown that countries may mimic the EPE patterns and environmental behaviour of other countries (Gallo and Ndiaye 2021). Since the OECD has been a global leader in committing to policies that foster economic prosperity, equality, opportunity, and wellbeing, it may provide lessons for the lagging countries in deciding public expenditure patterns and designing public policies.

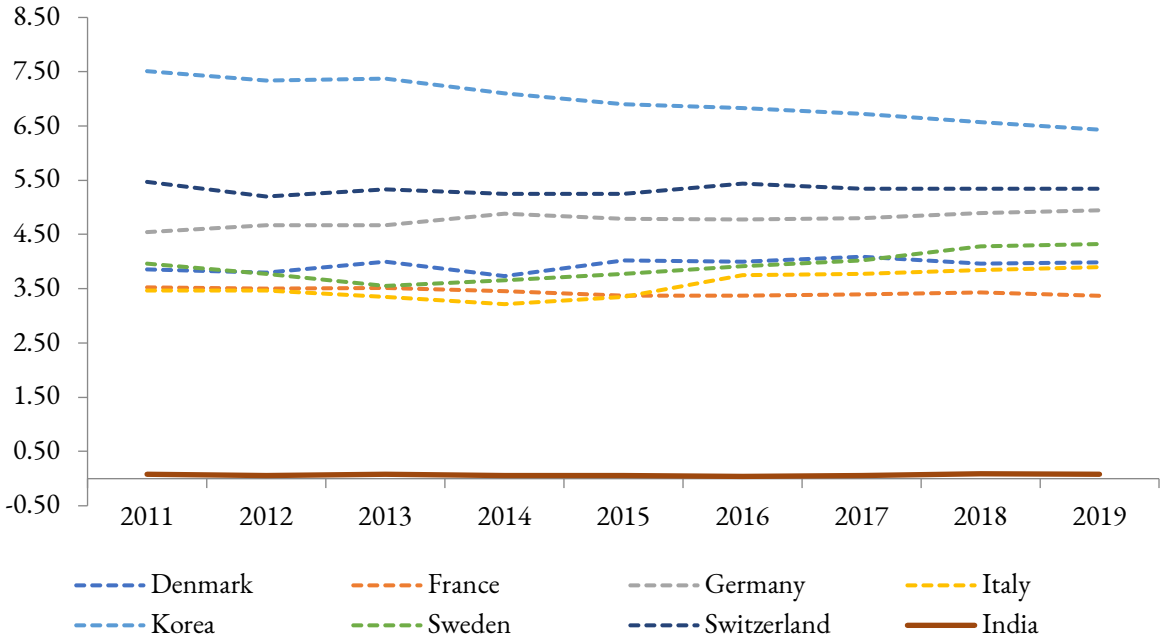
Aligning environmental considerations across all policy domains of the budget, including green budgeting and EPE, is an announced goal of the OECD through the Paris Collaborative (2017), with the larger goal of achieving the key targets of the Paris agreement (COP 21 2015). Many of the OECD countries have identified environment and climate as crucial components of budgetary provisions, almost equivalent to transport, health, and finances for other economic activities in terms of incentives, expenditures and so on, and have started to systematically reflect and/or align environmental expenditure in performance budgeting systems.

A close look at the environmental expenditure data of some selected OECD countries reveals their environmental commitment and clear patterns in budgetary allocations, which may serve as standards for countries that remain poor performers on these metrics, like India. Leading OECD countries have allocated significant shares of total expenditure on EPE: Austria (1.06%), Belgium (1.665%), Denmark (0.97%), Finland (0.565%), Germany (1.38%), Netherlands (3.32%), Norway (1.675%), Sweden (0.545%), and Switzerland (2.085%) during 1995-2014 (Basoglu and Uzar 2019).

The average shares of EPE have increased significantly thereafter in the OECD countries (figure 5). South Korea spends the highest share (around 7%) on EPE, followed by Switzerland (around 5.3%), Germany (around 5%), Denmark (around 4%), Sweden (around 4%), Italy (around 3.9%), and France (around 3%). In comparison, the share of EPE in India is at around 0.08% of the total expenditure. The data clearly shows that these countries have aligned their expenditure with the global

goals for climate action and environmental management and protection, whereas India is yet to prioritise environment in the developmental policy plans.

Figure 5. Share of EPE in total expenditure in OECD countries and India



Source: OECD, Government at a glance, 2019

5. Concluding remarks

Ensuring ecological human rights falls well within the domain of responsibilities of the government; this includes environmental management, restoration of degraded ecosystems, climate action, and so on. Good governance includes appropriate funding and financing as much as regulatory provisions in matters related to environmental quality.

This paper reveals a visibly lower priority on environment vis-à-vis other COFOG heads in India, which may be termed as an entitlement failure if access to clean environment is accepted as a basic human right. The results of the current study present a grim picture of India's environmental commitment in the form of inadequate fund allocation and a low share in total expenditure (compared to other heads in general, and social indicators in particular).

That a head like recreation-culture-religion has received greater policy attention than environment is a signal of deprioritised policy practice for climate resilience and environmental quality. The deficient budgetary allocation clearly shows what India spends on the environment, and what the major environmental heads and programmes including environmental research, education, and skill development need.

India's performance in the MDGs and SDGs remains short of the global targets. SDGs 11 to 15 and the associated indicators address the challenges related to climate and environmental actions, such as waste management in sustainable cities, sustainable consumption and production for creating a

circular economic system, abatement of pollution and environmental hazards, actions against natural disasters, protection of landscape and biodiversity etc. The actual scores show that there is a long way to achieve the target scores (SDG 11: 79/100, SDG 12: 74/100, SDG 13: 54/100, SDG 14: 56/100 and SDG 15: 66/100) (NITI Aayog 2021). The inadequate fund allocation for EPE and its low and dwindling share in total expenditure over the years may explain, at least partially, India's poor performance on SDG achievement.

Environmental programmes often fail to achieve their targets because they are underfunded and the budget planning is annual in nature. Periodic assessment and management of green budgets through a medium-term expenditure framework (MTEF) is one suggested framework for increasing efficiency in public expenditure budgeting on EP (OECD 2011). Strengthening governance in EPE may help streamline environmental management within the framework of mainstream public finance.

Neglecting EPE on maintaining environmental infrastructure and/or investing in further development for decades has led to a serious need for capital investments in EPE in India. Development of local capital and financial markets must be prioritised within the existing systems of finance, with use of intergovernmental transfers and fiscal autonomy prioritised wherever possible. Decentralised responsibility, intergovernmental transfers, and appropriate budgetary provision can result in incentivising EP, integrating climate change and environmental commitments to the fiscal federal framework (Kaur and Chakraborty 2020).

There can be additional factors at the levels of organisations, social institutions, technological advances, and so on that can influence decisions on EPE.

- Studies have shed light on the underlying micro-mechanics of how environmental justice affects company environmental investment, with timely repercussions for environmental regulators (Zhang, Yu, and Kong 2019).
- There have been studies on the role of gender on the designing of environmental sustainability strategies. Female executives in business organisations have a positive impact on the organisation's environmental performance owing to their enduring cultural ideas about religion, morals, and superstition. Their favourable attitude toward the environment translates into higher spending on sustainability (Adomako and Amankwah-Amoah 2021).
- Institutional frameworks and quality governance are supplementary factors for achieving successful outcomes of EPE in mitigating environmental degradations. Micro-level studies on the effectiveness of EPE on problems like air pollution have shown that EPE alone cannot result in improved air quality (Gholipour and Farzanegan 2017). Developing the appropriate institutional support structure under the overarching role of a welfare state is crucial for building a background for environmental quality and climate action.
- Results have also shown that the process of tracking financial flows with requisite division of biodiversity is a step in the right direction in the context of optimal resource mobilisation for EP (Rachel, Craig, and Deirdre 2021).

- A study on the Chinese economy has also found significant positive correlation between internet penetration and the government's environmental protection expenditure, indicating that it leads to responsive governance toward EP. Such results provide insights on the connection between information and communication technology (ICT) and sustainable development (Zhang, Zhang, and Gong 2022).

At a time when the international community is trying to develop strategies for reaching the agreed goals like low carbon pathway and net zero emissions, (IPCC 2021), it is critical to identify the role of the government, its expenditure patterns, and impacts on the long-term growth of developing economies like India.

With India's commitment to meet the global goals, negotiations have begun on climate action and finance mobilization dialogues (CAFMD) with other countries. If India has to take a pro-active role in the impending green transition, EP must be identified as a core priority area in formulating long-term sustainability policies and meeting funding requirements arising thereof. India must break the past trends of underfunding and deprioritizing EP and assign suitable importance to EP in its budget allocation, fund disbursement, and environmental programme implementation.

Among the various COFOG heads, especially, the ones under socio-economic indicators, EPE may be prioritized over heads such as recreation-religion-culture, which do not contribute to long-term economic growth. Expenditures on health and education are crucial for economic development and have an immediate as well as long-lasting effect on the economic growth process. The expenditures on health, education, and environment may be considered with equivalent significance. Although environment is not a contributing factor in measuring human development, it has a direct impact on human health, and thus contributes to endogenous growth of an economy.

Expenditure to protect the environment needs to be increased substantially in order to bring in parity with other heads and build a policy framework that is conducive to environmental sustainability and long-term development. It is noteworthy that heads like social protection, public order and safety, general public services have been identified as important components of public expenditure, while EPE has received the lowest share consistently. The expenditure patterns for these need to be reviewed and redesigned in order to make room for EPE.

In the face of the enduring climate crisis and environmental collapse, the world's greatest democracy must design the blueprint for simultaneously achieving economic development and environmental sustainability, despite all its structural and institutional constraints.

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Appendix

Table A1. First and second level COFOG

First level	Second level
General public services	Executive, financial, fiscal, legislative and external affairs; Foreign aid; General services; General public services; Basic R&D; Public debt transactions; General transfers between different levels of government; n.e.c.*
Defence	Military and civil defence; Foreign military aid; R&D in defence; n.e.c.*
Public order and safety	Police, fire-protection, prisons, court and legal services; R&D in public order and safety; n.e.c.*
Economic affairs	General economic, commercial and labour affairs; Agriculture, forestry, fishing and hunting, fuel and energy, mining, manufacturing, construction, transport, communication and other industries; R&D in economic affairs; n.e.c.*
Environmental protection	Waste management; Waste water management; Pollution abatement; Protection of biodiversity and landscape; R&D in EP; n.e.c.*
Housing and community activities	Housing and community development, water supply, sanitation and street lighting; R&D housing and community amenities; n.e.c.*
Health	Medical products, appliances and equipment; Outpatient, hospital and public health services; R&D health; n.e.c.*
Recreation, culture and religion	Recreation, sports and cultural services; Broadcasting and publishing services; Religious and other community services; R&D recreation, culture and religion; n.e.c.*
Education	Pre-primary, primary, secondary and post-secondary non-tertiary education; Tertiary education; Education not definable by level; Subsidiary services to education; R&D education; n.e.c.*
Social protection	Sickness, disability, old age; Surviving family and children; Unemployment, housing and social exclusion; R&D social protection; n.e.c.*

Source: OECD, Government at a glance (https://www.oecd.org/gov/48250728.pdf)

(*n.e.c: not elsewhere classified, for the respective head)