

Pergunta 3

- Código em R:

```
1 install.packages("ggplot2")
2 library(ggplot2)
3
4 # Ler dados do ficheiro electricity.xlsx
5 dados <- readxl::read_excel("/Users/franciscoheleno/Documents/Coding/R/Projeto PE/Projeto-PE/Ex3/electricity.xlsx")
6
7 ano <- 2015
8 countries <- c("IEA Total", "Italy", "Latvia")
9
10 data_per_year_per_country <- subset(dados, PRODUCT=="Renewables" & COUNTRY %in% countries & YEAR>=ano)
11 data_per_year_per_country$share <- as.numeric(data_per_year_per_country$share)*100
12
13 # Construir gráfico
14 ggplot(data_per_year_per_country, aes(x = as.Date(paste(YEAR, MONTH, "01", sep = "-")), y = share, color = COUNTRY)) +
15   geom_line() +
16   geom_point() +
17   scale_y_continuous(limits = c(0, 100)) +
18   labs(title = "Monthly Evolution of the Proportion of Electrical\n Energy produced from Renewable Sources",
19        subtitle = "From 2015 to 2022",
20        x = "Time",
21        y = "Proportion of produced Electrical Energy (%)") +
22   scale_color_manual(values = c("IEA Total" = "gold", "Italy" = "brown1", "Latvia" = "cyan4")) +
23   theme_minimal() +
24   theme(
25     plot.title = element_text(hjust = 0.5, face = "bold"), plot.subtitle = element_text(hjust = 0.5, face = "bold"),
26     axis.title.x = element_text(face = "bold"), axis.title.y = element_text(face = "bold"),
27     legend.title = element_text(face = "bold")
28   )
29 )
```

- Gráfico produzido:

