

Technology development and technology transfer - Insights from the German experience

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About NewClimate Institute



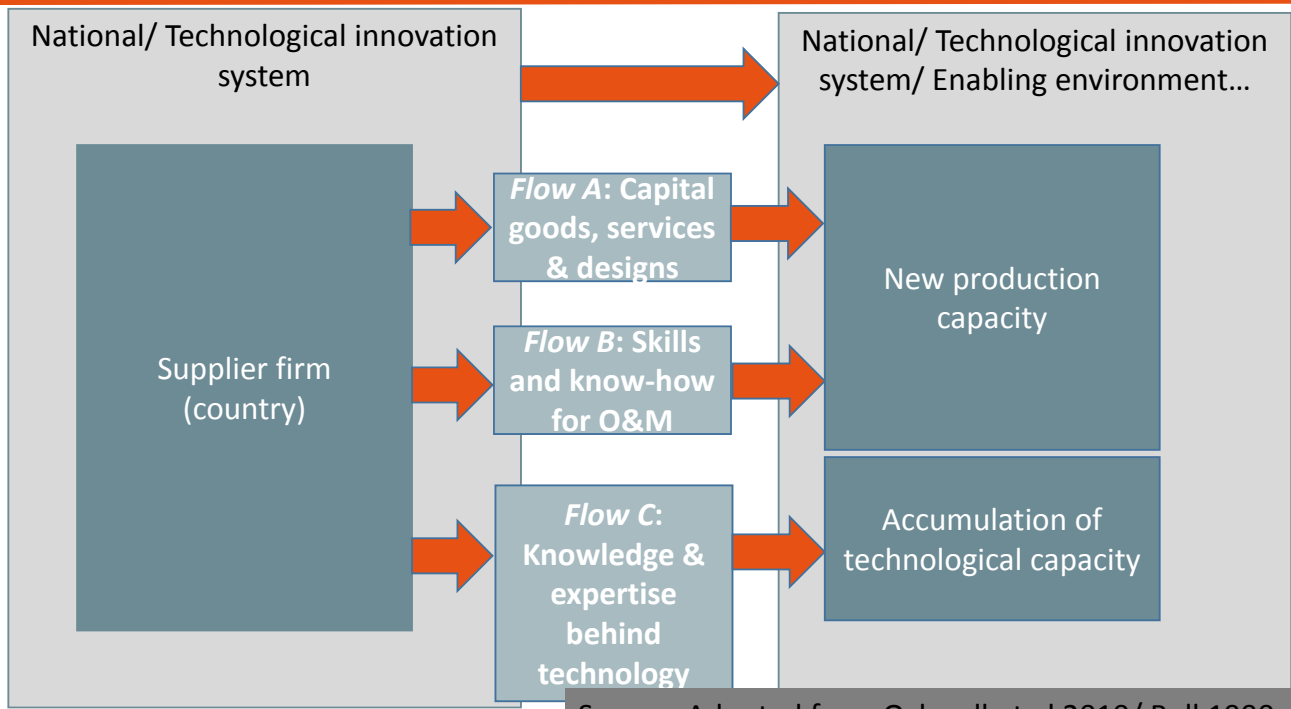
- » Non-profit research institute founded Nov. 2014 by 7 former Ecofys colleagues
- » Offices in Berlin and Cologne (Germany)
- » Areas of expertise
 - » Climate negotiations
 - » Tracking climate action
 - » Climate and development
 - » Climate financing
 - » Carbon market mechanisms



MitigationMomentum

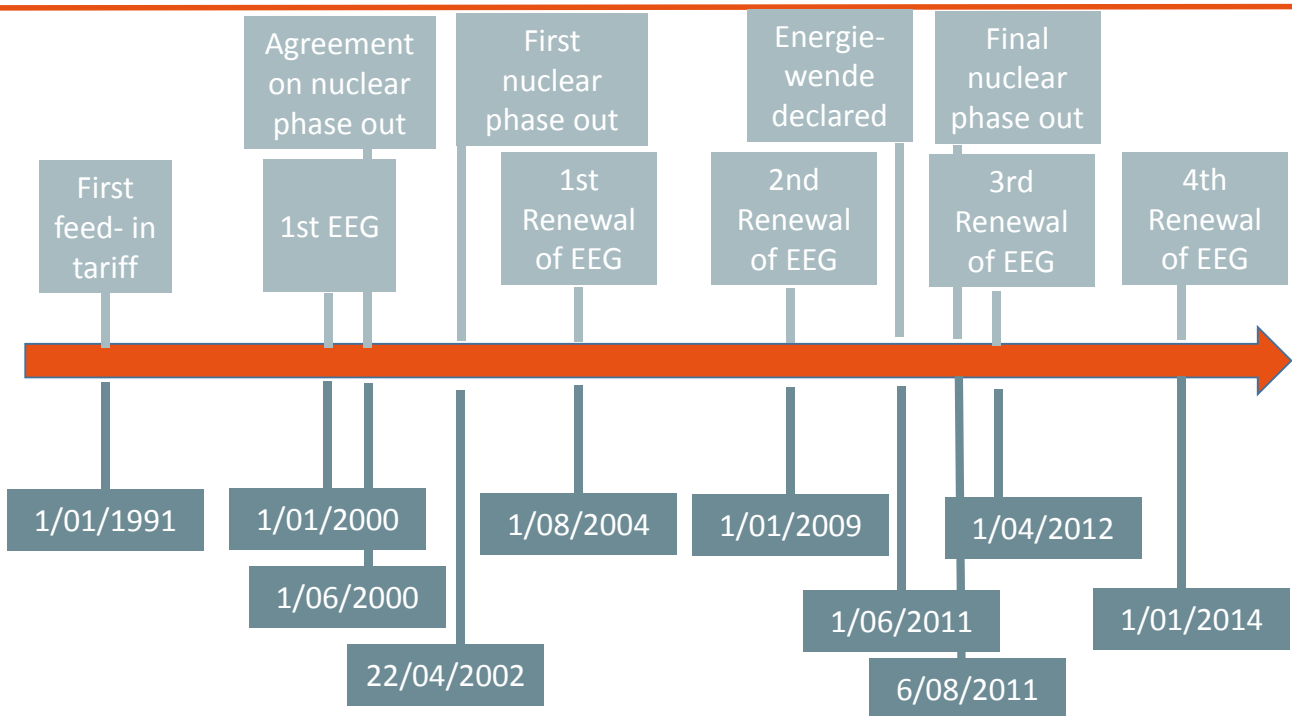


Technology transfer conceptualization

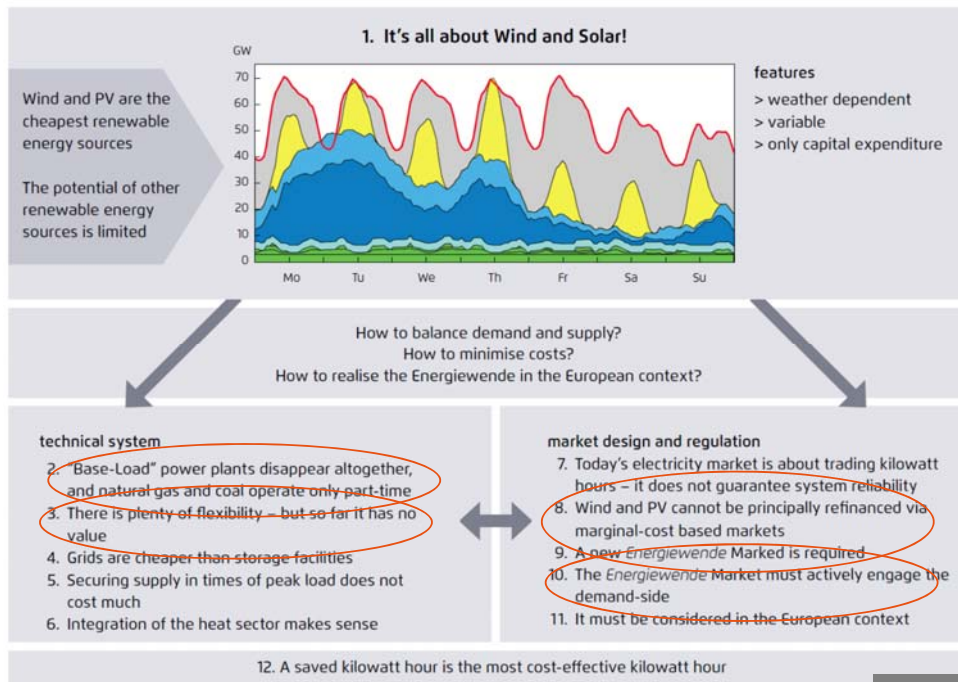


Source: Adopted from Ockwell et al 2010/ Bell 1990

Timeline of Energy transition in Germany

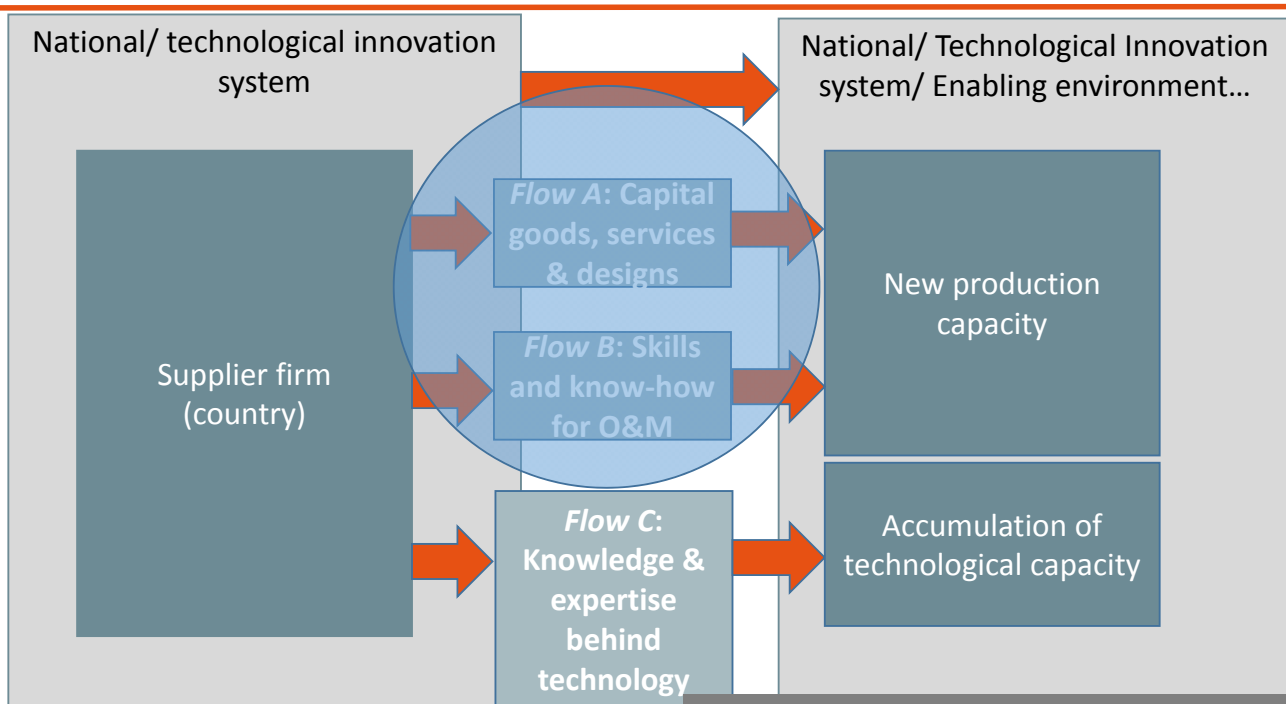


The Energy transition challenges in Germany



Source: Agora 2013

Technology transfer conceptualization



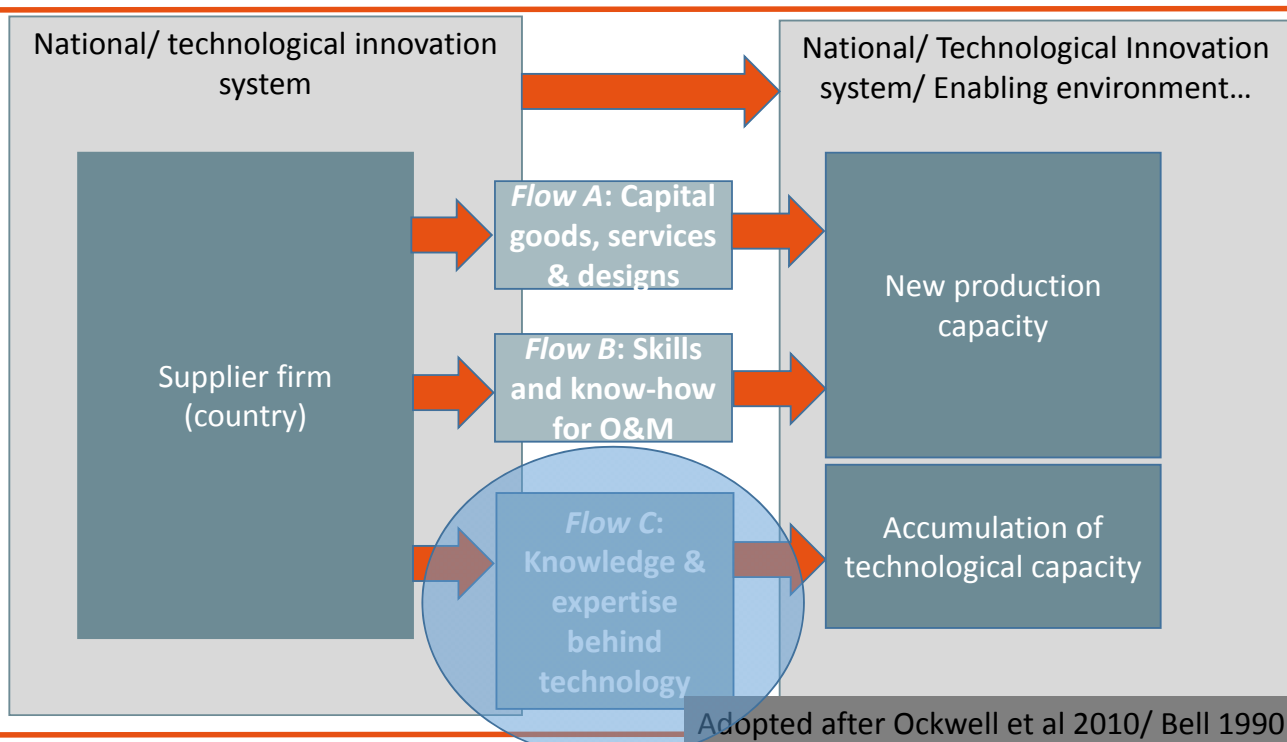
Adopted after Ockwell et al 2010/ Bell 1990

- » Export initiative for renewables - renewables made in Germany (BMWi)
 - » Since 2002, funded by the BMWi
 - » Aim: coordinate activities of institutions in Germany
 - » For German companies – provide support for entering new markets
 - » For international companies/ institutions – support identification of partners
 - » Indicators of Success: 86% have found new business partners
- » Provision of finance through DEG and KfW
 - » International project and export finance
 - » Private sector promotion in developing and emerging countries
- » Chamber of commerce (AHK) in countries
 - » Support of companies in the country
 - » Organization of workshops/ events to connect to sell technology in the market

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Technology transfer conceptualization



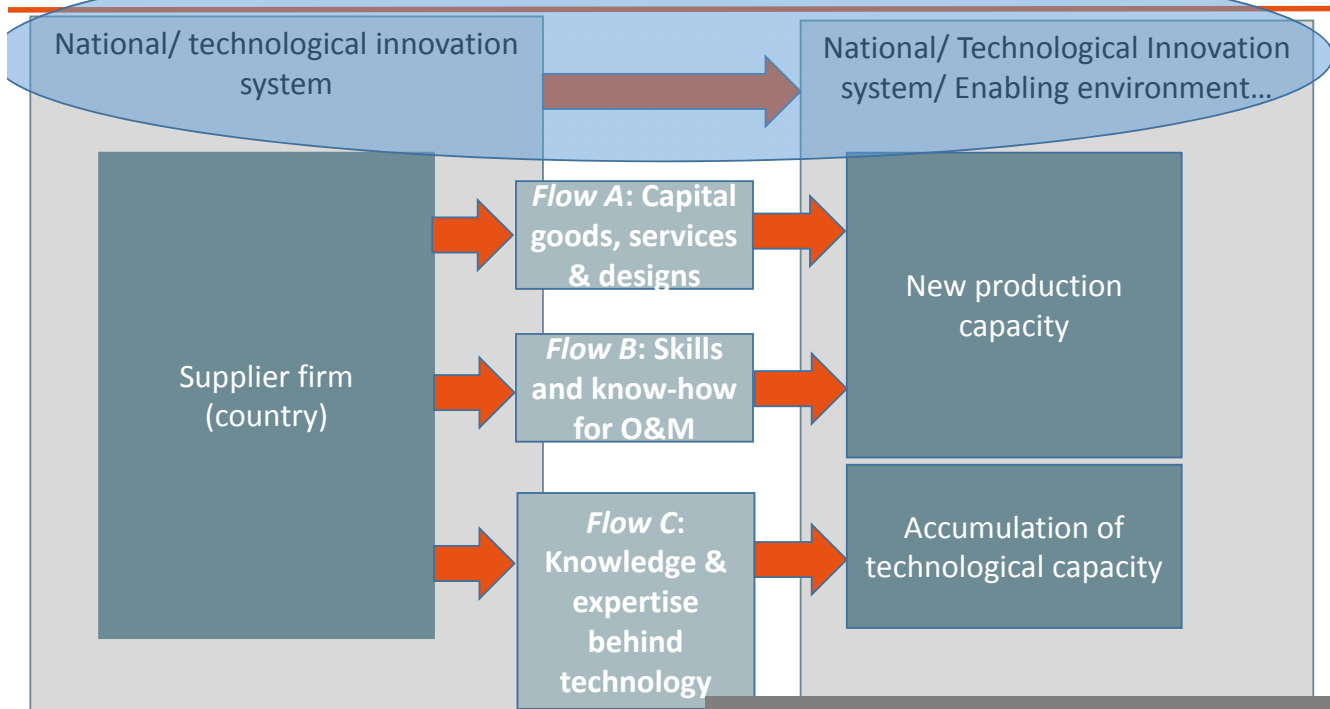
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- » German government with same role as in Flow A and B – not much additional for Flow C
- » More important role of private sector actors
 - » Companies use divers set of often unconventional mechanisms to acquire knowledge
 - » German situation
 - » The early stages of RE technology development large amount of medium sized manufacturers (e.g. Fuhrländer, Vensys, etc...)
 - » Not big enough to export to international markets, and thus found other ways to expand to these markets
 - » Used licensing to enter into international markets and then were even bought later
 - » Example Goldwind (China)- acquired Vensys
 - » Example Suzlon (India)- First licensing then acquisition of manufacturers of different parts
- » However flow C often stands in contrast to national business interests (fundamental barrier)

Technology transfer conceptualization

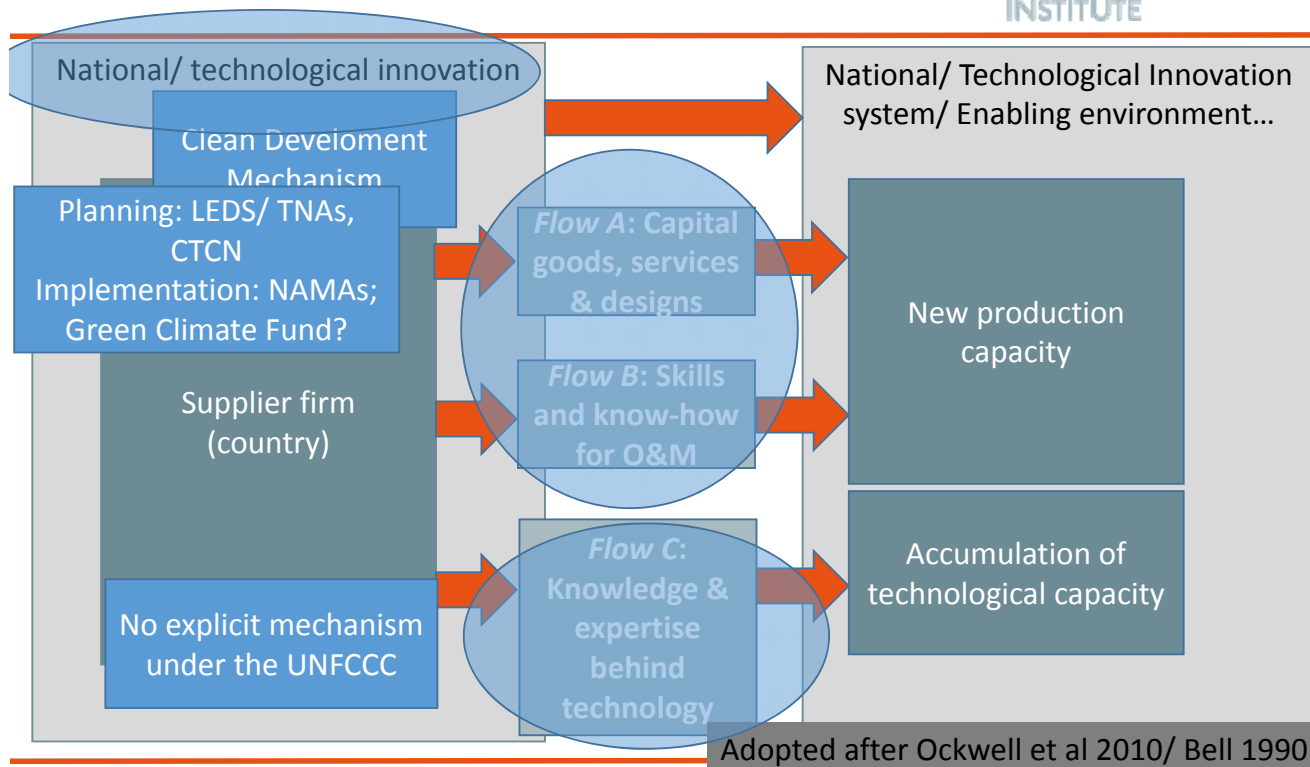


Adopted after Ockwell et al 2010/ Bell 1990

- » Supporting country governments
 - » Role of German based institutions (esp. GIZ) in supporting country governments (e.g. as technical experts in energy ministries)
 - » Funding through national sources such as German International Climate Initiative (IKI) or the Nama Facility
 - » More than 80% of mitigation projects focus on mitigative capacity
 - » Focus on LEDS, NAMAs and private sector involvement
- » Knowledge sharing of transformation of complex energy systems
 - » Globalization of energy transition and its technical and market design challenges

- » Wind and Solar will likely play an important role world wide (low cost, abundance of potential)
- » Early stages of development will likely be able to still accommodate RE (depending on interconnectivity)
- » However as penetration increases, energy systems need to be rethought fundamentally from what they are today
- » Flexibility options need to become important parts of technology transfer (demand side management, storage, etc..)
- » -- Including lessons of the energy transition for proper market design early on can decrease problems in the future

Technology transfer and international mechanisms



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Summary

- » Technology transfer needs to go beyond simple transfer of technological artefact
 - » The build-up of indigenous capacity is essential to technology absorption
 - » German companies have shown that TT can be very multifaceted, ensuring that more complex knowledge is also transferred
- » Enabling environment development is at least as important as technology transfer itself
 - » There is a need to transfer the knowledge of the energy transition globally to allow learning from the system change experience early on
- » Barriers go well beyond the financing of the technological artefact itself and differ largely by country
 - » Multi faceted responses involving capacity buildings and policy development both at the private and public level are needed – financing alone will not do

- » Agora Energiewende, 2013. 12 Insights on Germanys Energiewende. A Discussion Paper Exploring Key Challenges for the Power Sector (25 July, 2015).
- » Bell, M., 1990. Continuing Industrialisation, Climate Change and International Technology Transfer.
- » IEA RETD, 2012, Overcoming Environmental, Administrative and Socioeconomic Barriers to Renewable Energy Technology Deployment, http://iea-retd.org/wp-content/uploads/2013/07/RENBAR_Guidelines_IEA-RETD_2013.pdf (26/07/2015)
- » Ockwell, D.G., Haum, R., Mallett, A., Watson, J., 2010. Intellectual property rights and low carbon technology transfer: Conflicting discourses of diffusion and development. *Global Environmental Change*, 20, 729–738. http://ac.els-cdn.com.proxy.library.uu.nl/S0959378010000385/1-s2.0-S0959378010000385-main.pdf?_tid=ca4aba645349003d051cc73c00dde813&acdnat=1337802627_80977aabed02efb85a6516a0da6af d2a (5/23/2012).

Thank you for your attention!

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